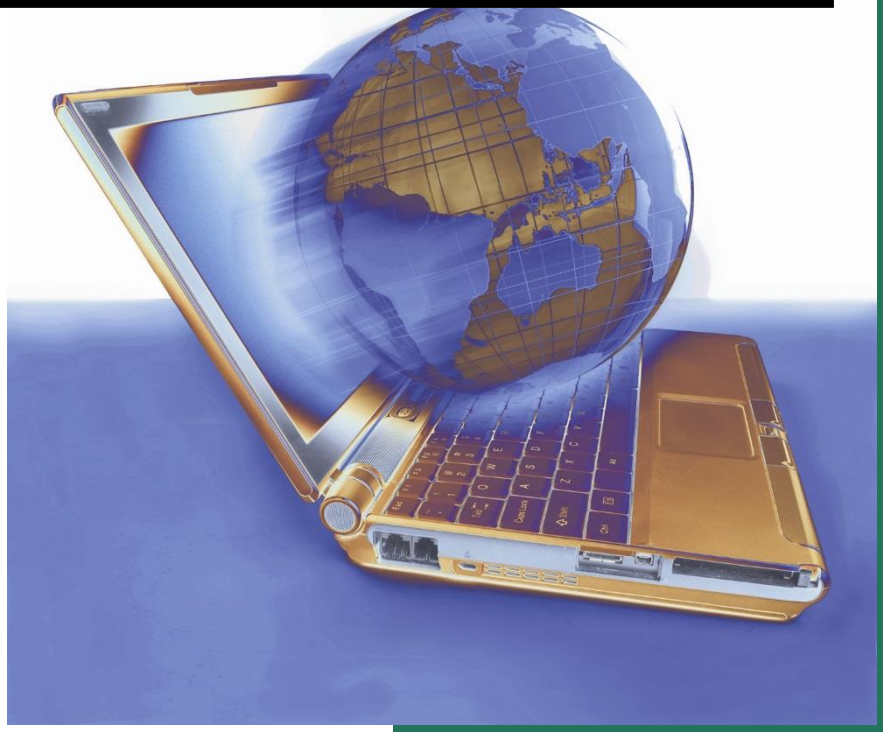
2017

School initiated learning at home in a digital age



Louise Starkey, Hiria McRae and Allan Sylvester
Victoria University of Wellington
8/11/2017

Contents

Introduction

A current inequity in educational outcomes is the lower achievement of students from low socio-economic households and those of Māori or Pasifika ethnicity when compared with other students in New Zealand (Nusche, Laveault, MacBeath et al, 2011; Snook & O'Neill, 2014). Access to the internet provides an opportunity for students and their families to participate in learning at home which could contribute to reducing inequities. This is one part of the rationale underpinning current initiatives that support families from low decile communities to purchase netbooks for student learning. How home learning can be designed to improve outcomes for learners is the focus of this study which explored student, parent and teacher experiences of home learning with netbooks.

Context of the research.

In 2007 a cluster of 13 mainly decile 1a schools formed a network with the aim of improving student achievement. The area has a significant population of Māori and Pacific Island families, many of which are recent immigrants. The stated purpose of the network of schools is to provide an education that enables students to become successful, lifelong learners and digital citizens. The intention is that students within the network have equitable access to the digital environment through the assisted purchase of netbooks; students and whānau are engaged in rich and meaningful learning conversations and tasks, and teacher professional practice is challenged and supported. In 2014 a trust was formed to support the goals, in particular the advancement of digital power in schools and the community.

The purpose of this project was to evaluate the introduction of netbooks for learning within the Network of schools. The evaluation includes a multilevel analysis of student achievement data and an in depth examination of home learning to develop a theory to practice model for quality home learning. The research is focused on the questions: How has the introduction of Netbooks influenced student achievement and how can the introduction of netbooks with internet access influence home learning in a low socio-economic community? It is proposed that these questions will be explored over four years. The first year (2015) the data collection and analysis tools will be trialled. The second year data was gathered analysed and theory of practice model developed. This report is from the end of the second year of the study.

Existing knowledge of home learning.

Existing research literature that considers the impact that parental involvement in homework (home learning) has on student achievement is fraught with complexity. Meta-analyses on the effects of homework on school achievement show small to medium positive effects (Cooper et al, 2006; Hattie, 2009; Sheerens et al, 2007). However, the meta-analyses include a mixture of different specifications of homework in a range of contexts with differing results. Scheerens, Hendriks, Luyten, et al, (2013) reviewed the meta-analyses and summarised that homework effort and amount of content covered in homework tasks were more powerful associates of achievement than time spent or frequency of homework assignments. This suggests that quality of task design could be more significant than quantity.

A synthesis of research that focused on the involvement of parents in homework identified a number of positive and negative outcomes that differed according to the age of the student and the subject of the homework (Patall, Cooper, & Robinson, 2008). They developed a summary of the potential effects of parent involvement (Table 1). The authors concluded that different types of parental involvement and the parent's skills in the subject area influence achievement outcomes which changes as children move through schooling. The parent's skills and knowledge base are directly influenced by (but not limited to) their own educational experiences.

TABLE 1
Potential effects of parent involvement in homework

Positive Effects
Accelerates learning (cf. Epstein et al., 1997)
Increases time spent studying
Makes homework study more efficient, effective, and focused
Enhances proximal achievement-related outcomes
Improves homework completion (cf. Cooper et al., 2000)
Improves homework performance (cf. Callahan et al., 1998)
Promotes positive affect
Enhances positive mood and attentiveness during homework (cf. Leone & Richards, 1989)
Enhances enjoyment during homework (cf. Shumow, 1998)
Improves attitudes toward homework and school (cf. Cooper et al., 1998)
Facilitates communication between parent and child (cf. Hoover-Dempsey et al., 2001)
Enhanced expression of parent beliefs and expectations about school
Enhances feedback, reinforcement, or both for desired homework behavior
Facilitates communication between parent and teacher (cf. Epstein & Van Voorhis, 2001)
Improves behavior during homework and school (cf. Sanders, 1998)
Enhances development of self-regulation and study skills (cf. Xu & Corno, 1998)
Negative Effects
Interference with learning (cf. Epstein, 1988)
Confusion of instructional techniques (cf. Cooper et al., 2000)
Help beyond tutoring (cf. Cooper et al., 2000)
Emotional costs and tension (cf. Levin et al., 1997)
Increased fatigue, frustration, disappointment
Increased tension between mother and child
Increased pressure on student to perform well (cf. Cooper et al., 2000)
Increased differences between high and low achievers (cf. McDermott et al., 1984)

(P1041, Patall, Cooper and Robinson , 2008)

The resources, knowledge, cultural values and experiences of the family (the cultural capital) available in the home can influence the learning that occurs through homework. A Dutch study found that when homework was given to all students the achievement of students from low socio-economic/migrant households fell further behind that of peers from higher socio-economic families (Rønning, 2011). The primary school students in the study from low socio-economic/migrant households were found to receive less help with homework from their families. In a New Zealand context children in low socio-economic households may be experiencing overcrowded living conditions with parents who work shifts or multiple jobs for minimal pay and attend a number of schools as the family moves house frequently. Alternatively they may be living in a household with parents who are studying in higher education.

There is limited research available on home learning and Pasifika, low socio-economic or migrant families in the New Zealand context. However, research has identified that Pasifika primary students' learning literacy was likely to be enhanced when Pasifika values, language identities and cultural knowledge were made an implicit part of teaching and learning practices. (Fletcher, Parkhill, Fa'afoi, Taleni, & O'Regan, 2009). Although learning is not enhanced when teachers make assumptions about Pasifika students home contexts (Spiller, 2012). This aligns with research into Maori achievement in school (eg. Bishop and Glynn, 1999; Macfarlane and Macfarlane, 2012). Carefully designed home learning could aim to integrate home values and knowledge with school based learning, giving equal value to both.

Migrants unfamiliar with New Zealand learning methods or schooling context face additional challenges with home learning. The home reading practices of Samoan immigrant parents and their children were explored in a thesis by Valentine (2013) who sought to investigate cultural values and understandings associated with learning to read. The parent participants applied their knowledge from their own learning experiences and had limited understanding of contemporary school reading practices in New Zealand. This reduced the effectiveness of the home learning programme.

Netbooks have been introduced to a cluster of schools in a low socio-economic context within Auckland (Manaiakalani project). This initiative is undergoing evaluation with the focus on examining the goals of accelerating student achievement in reading, writing and mathematics. The research findings suggest that student writing achievement was accelerated across the school year in 2013, however when the improvement was measured again at the start of 2014 there was a large drop in achievement particularly for the year 4-5 students who had also made the most significant acceleration the previous year (Jesson and McNaughton, 2014). This drop over summer happened across the different measures and the measurement used was a comparison of a 'norm' score. The influence of netbooks at home on literacy learning through the use of has been investigated by Jepson et al through 2013-14 TLRI funded research. The results of this study have yet to be published.

The design of the home learning activities has been found to influence the effectiveness of home learning. In a study by Van Voorhis (2011) teachers carefully designed homework tasks that included family involvement. Students in the intervention study spent no longer on homework than a control group and attained higher standardised test scores. As a result of this study the researchers suggested that; the home learning tasks should be clearly targeted to a learning objective and pretested, family should not be expected to teach school skills, all families should be able to participate, and the task should define the role of the parent or family member and the student within their interaction. Involving parents in effective home learning requires more than carefully designed learning activities.

How parents perceive and negotiate their role in home learning could be useful knowledge for teachers who are designing learning activities. In a study of parent-child homework negotiations in Swedish families, Forsberg (2007) analysed video of the home environment and found that parents wanted their children to do homework independently, therefore they controlled the completion of homework, or helped the student complete it- either of which positioned the child as 'irresponsible'. This research was situated within the cultural context where the Swedish discourse on parental involvement links good parenthood with involvement in children's education. The families in this study were volunteers from a middle-class population who identified themselves as "normal' families without any major problems' (p212).

In the New Zealand context, the iwi based Ka Awatea research project examined the elements of home and school life that contributed to Māori academic success (Macfarlane, Webber, Cookson-Cox et al, 2014). The findings identified five aspects that contributed to student success; Mana whanau, mana motuhake, mana tangatarua, mana tū and mana ūkaipo. Within mana tangatarua the participants believed that:

> Families are primarily responsible for "success as Māori" and should model what this looks like. Schools contribute largely to Māori students' "success in the non-Māori or 'generalist' world" because they offer students many opportunities to be innovative and creative, to try new things and to take risks (which many Māori families cannot offer them – so they value education for this very reason). Therefore, schools offer students new experiences that "unleash their potential" to bridge their two worlds and increase their "range of opportunities" in terms of "possible futures". (p175)

How different cohorts of parents in New Zealand perceive and negotiate their role in home learning is likely to influence the type of support children receive for home learning and would be a useful consideration for a theory of practice model of home learning task design.

The research into home learning is from a perspective of the school teacher setting tasks that students complete at home. This positioning of the relationship between home and school is one that has been explored from an economic and sociological perspective (eg. Avvisati, Besbas, & Guyon, 2010), there is limited research available that explores alternative models such as one that emphasises a partnership model between the home and school.

Research that explores home learning through the use of digital technologies tends to consider particular technologies or programmes. For example, the use of a web based learning environment for mathematics homework that scaffolded learning and gave immediate feedback was found to be more effective for

students learning than traditional paper and pen problems. (Mendicino, Razzaq, & Heffernan, 2009). The use of the interweb for home learning in a triad partnership model between the teacher, student and parent(s) from low socio-economic communities is a yet unexplored area in the research literature.

The context and content and design of homework, how expectations are understood by the children and their families, what is being measured as achievement outcomes and the research design and analysis can influence a researcher's conclusions. For example, a study in Switzerland that which explored the frequency, effort, time spent and positive or negative emotions associated with French as a second language homework found differing achievement results depending on how the data was analysed (Trautwein, Schnyder, Niggli, Neumann, & Lüdtke, 2009). Research has therefore presented differing and sometimes conflicting results when examining whether homework influences academic achievement of students. This research will situate the findings within context to reduce ambiguity in findings.

While the research suggests that homework is unlikely to significantly benefit students from low socio-economic households compared to their resource rich counterparts, this may not be the case when homework is reframed as home learning, and the activities are carefully designed to leverage the affordances of the resources and knowledge available in the home. This reframing aims to improve student achievement through bridging knowledge valued at school and knowledge valued at home and by strengthening the partnership between the school and parents inherent in the tomorrow's schooling model in New Zealand.

Research Methodology

Complexity theory provided a framework to evaluate how the introduction of netbooks with internet access can influence home learning in a low socio-economic community. A complexity theoretical model for educational research can be construed as having five overlapping constructs; dimensions, connections, context and history, change, and emergent knowledge. The first four constructs provide a framework to consider how and what knowledge emerges within complex organisations.

Complexity theory recognises that the emergence of knowledge occurs through the connections between the parts or participants (actors) in a system at multiple levels (Davis & Sumara, 2006) and learning networks beyond the system. Human relations lie at the heart of complexity theory where the agency and mutual influence of individuals and groups create a responsive process (Stacey, 2001). It is through the interactions that new knowledge emerges; this could be between people (such as teachers, students, parents and leaders), ideas, policies (including curriculum), technologies or physical spaces (each of which can be an 'actor' in a system). Thus emerging knowledge within schools is influenced by the parts, participants and processes within the system. Within a complex organisation (such as a school) innovations and ideas are introduced or emerge, with some being developed and trialled creating diversity in practices or beliefs and others being retired. The process and decisions are likely to be unique to each specific context dependent on history, culture and other variables such as the preferences and experiences of the people, the learning community and resourcing available. Through the process of diversity and redundancy knowledge emerges.

To enable an interpretive inquiry within a complex context, a socio-material framework that situates the findings within their context was applied to reduce ambiguity (Fenwick, 2010). This involved analysing the roles and relationships between the actors within a case study including the people involved (teacher, student and parent) and the e-learning portal. This approach allows the key actors voices to be dominant while to some extent mitigating the inevitable interpretation bias of the researchers.

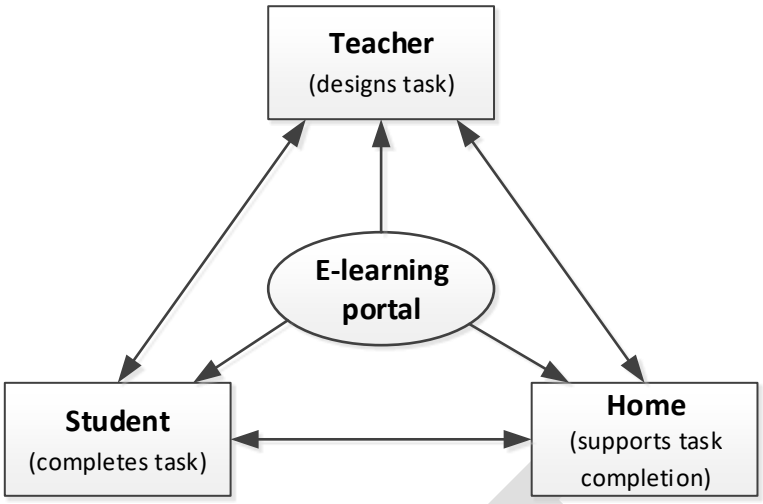


Figure 1. Socio-material actors and relationships within the study of home learning in the digital age.

The aim of this research is to explore the conditions within which home learning is likely to directly or indirectly improve achievement outcomes for students in low socio-economic households. To enable this to happen the research seeks to understand how a small group of culturally diverse families position homework within their role as parents or caregivers of school children. The research questions are matched with data source and how the findings will inform practice in Table 2.

Table 2: Research framework- developing home learning model.

Research questions	Sub questions	Data source
How can the introduction of netbooks with internet access, influence home learning in a low socio-economic community?	What do teachers and families think about the role of families in homework/home learning?	Interviews in 2016.
	What role do digital resources and technology play in home learning?	Recorded home learning tasks in 2016 and interviews analysed against model and digital age learning matrix [and digital literacies?].

Participants in the study:

The research included a purposeful sample. In the first phase of recruiting participants, the researchers explained the research to the participating schools and invited teachers of year 4-8 classes whose students use netbooks for learning at school and home, to take part in the first year of the study. From this pool of teachers, students and their families were invited to participate. The researchers selected a sample size of six students. Samoan and Tokelauan speaking research assistants supported the home language of families. One of the researchers was also a fluent speaker of te reo Māori. All participants were required to give informed consent to participate and were able to withdraw or discontinue from the research at any stage of the process. The teachers were aware of who took part in the research.

The teachers identified a home learning task as the key focus for data collection.

For each student participant data included:

- Home learning task set by the teacher.

- Home learning conversations (recorded on netbooks along with screen shots- software piloted in 2015).
- Interview with student(s).
- Interview with family member(s) participating in home learning.
- Interview with the teacher.

The participating students had software (eg. Screencastify) loaded onto their netbooks that allowed the capture of their screen activity and conversations during home learning. A researcher met with the parent and the child to explain the process and ethical considerations prior to the research beginning.

Questions at the interviews included:

1. describe the home learning tasks- what were you being asked to do?
2. What did you learn from this activity? (broad prompts to explore intended and unintended learning including digital competencies, cultural values…)
3. How could the activity be improved? (design, implementation, resources etc).

At the conclusion of the home learning activities a researcher interviewed the teacher to explore:

1. The home learning tasks- reasoning underpinning design and intended learning.
2. Evidence of student learning because of the home learning.
3. What the teacher learnt as a result of the home learning.

Analysis of data.

The data was analysed through thematic coding using Nvivo interpretive data analysis software. Initial coding focused on the questions asked during the interviews and the research questions, this was followed by a second level of coding that identified underpinning themes across data sources. The third examination of the data was undertaken using an abductive reasoning process that considered the data within the context of existing homework literature. Patton (1987) referred to the process as qualitative content analysis that involved identifying coherent and important emerging codes, themes and categories, and patterns in the data where the researcher looks for "quotations or observations that go together, that are examples of the same underlying idea, issue, or concept" (p. 149).

Findings

This report describes the findings of how the introduction of the use of netbooks, specifically Chromebooks as a home learning tool, supports student success. 6 students, 4 teachers and 6 parents from a group of schools were interviewed about their experiences with using Chromebooks as part of their home learning. First participants described the task design of the home learning as well as the types of tools used. Participants also identified a set of constraints and enablers as well as possible improvements for successful home learning through the use of Chromebooks.

TASK DESIGN

Students shared that work set was to be completed individually and they had choices in topics and how to present. Teachers shared that students were given timeframes and home learning was divided into literacy, numeracy, follow-up practice of class work, current events and a research topic. Teachers presented home learning on a range of online tools and also provided online resources and students had the choice to explore further.

So, in terms of home learning I give them feedback when I receive the submissions they click on submit it comes to me, I give feedback send it back to them and they'll get an email instantly to say I've commented, so that's how I give them feedback. (Teacher, School A)

It's pretty much based on what we do here at school. (Student, School A)

The websites we need to find our information is already there for us. (Student, School A)

Always maths…always things to do with the (current topic) or their family and kind of like a social studies kind of (topic) as well. There's quite a lot, there's maybe about 8 different tasks or something. And it kind of covers a lot of different you know it's not writing, it's not computer it's a range of tasks which is good. (Teacher, School B)

One teacher shared their students enjoyed the research and current events aspects of their home learning.

Students love researching and also our current events here. I've noticed a lot of students like 'Kiwi Kids News' which is a watered down version of stuff.co.nz, so it's the kids version of the news so it's written in child speak. (Teacher, School A)

One parent also shared that their child had an opportunity to experiment with software explored at school.

Lately they've been with their (extension) class, just been learning how to manipulate the different software, their movie making software I've seen her do. (Parent, School B)

Students also described their home learning in the following ways.

We usually do our learning contract. We finish it off at home, our normal work. We get our learning contract every week and we have to finish it by Friday. We use our time at home to finish it off. (Student, School C)

You do it with your family and they can help you they can be there to support you just like your own teacher. (Student, School C)

I usually go on (an online application) to read, I like reading and writing and I mostly like going on the news site…it's interesting. (Student, School C)

You get to share with your family what you're doing at school because they're never at school with you. Like seeing like what you're doing but you can show them what you're learning and what you're doing when you're not at home. (Student, School C)

I usually go on and do spelling and some reading, and some writing. (Student, School A)

For homework we did te reo Māori, Kiwi Kids News, Olympics, our values, narrative writing and spelling and our reading logs. (Student, School A)

One parent described a wide range of activities their child explored during home learning.

[They explore] word processing and carrying it through all the different sort of Microsoft or those different applications, lots of research and I think lately they've been with their [extension] class, just been learning how to manipulate the different software, their movie making software I've seen her do. It's the same I get when we're home she's straight on her Chromebook, she's on it for a good chunk of the night I like to think that she's doing her homework and I think most of the time she is because I haven't heard anything from school that she's not. (Parent, School B)

One student described how their home learning sometimes included engaging with their family.

One thing we had to teach the family some Māori phrases and vocabulary pronunciation and stuff like that. At this other one was like games… you have to play a fast game with mum. (Student, School B)

USE OF TOOLS

Students, parents and teachers described the range of tools students used in their home learning.

It's like a website where you can go on and read people's books and write and they can read yours and it's interesting. (Student, School C)

I have not Facebooked my parents, but you know the school has a Facebook page. (Teacher, School B)

Well using our Chromebooks is much easier because we don't have to write anything out and because it's easier to find information. (Student, School A)

Student, School A: It's an easy access for us because sometimes we don't like really have pencils at home it will just make us struggle to finish.

I can tell when a student has gotten their work done because there's a share button. They'll share and you can see all the names and documents been shared. I don't have an issue with that because, I think sharing the knowledge is fine you know. And all they're doing is seeing another person's (work) and say oh I can do that too. (Teacher, School A)

Research using Google to research different kind of looks like PowerPoint presentations for some of their assignments. I see them doing writing in Word. (Parent, School B)

I've produced these two mad computer children and my child shows a real interest and a real talent in using computers he really loves it. There's a bit of negotiation on how that's used. (Parent, School B)

CONSTRAINTS

Students described the least amount of constraints with the use of Chromebooks for their home learning, specifically their only issue was not having access to the internet at home. Parents provided the most types of constraints which also included access to the internet at home; lack of knowledge, capability and confidence in using Chromebooks; language issues; limited personal connectedness activities; limited understanding of the purpose of some home learning tasks; and limited feedback from teachers. Teachers also shared the view that parent confidence in using Chromebooks and language barriers were issues, as well as there being a concern of how Chromebooks were cared for at home; and limited whānau support and engagement.

Access to the internet

Limited access to the internet was an issue for some families.

I don't have internet so I just ask (my teacher) face to face or write it on a piece of paper. (Student, School A)

Access to the Chromebook properly at home is what is hard because we can't get internet in our house. (Parent, School A)

In addition to limited access to the internet, one parent shared about how their older children wished they'd had access to Chromebooks earlier.

Two of (my children) didn't have the opportunity to use Chromebooks, they did (have) computers at college but, there was no Chromebook to help them with their learning and they'd moan. Because they said if there was Chromebooks they might have achieved more than what they got today in college. One of them, especially said that because he's very much closed up he can talk to the computer like he can type it in and say how he feels or how the homework is, and answer questions about the homework, but to share in front of the class he couldn't even though he's got Level 3 now. (Parent, School A)

Limited capability and confidence

One student spoke about how they wanted to support their parent's understanding of using devices at home.

They [could] learn more about how to use the Chromebook, to use the internet, teach them to do things on there. (Student, School C)

Another parent sought similar support from their child.

I know the keyboard, but I don't know how to turn it on the Chromebooks and such. She showed me time and time again and so she said "Okay mum, you just sit there and I'm going to do this". She showed me her homework. (Parent, School A)

Some parents described their lack of knowledge or confidence to support.

I didn't, how to access on the computer. I you know, the whole how to, I knew how to type the words in, but not how to get on to the Chromebooks and stuff. (Parent, School A)

Sometimes she asks me for help like "Mum can you help me with this one?" you know sometimes, I don't know. (Parent, School A)

I see them. Some of the stuff they do is you know more advance than what I do, so in a lot of ways I think that my kids actually know more than me and I'm kind of in that phase where I'm actually going to them for help with computer stuff now, so that's kind of the things that I am seeing them doing from there, when I see them on their computers. (Parent, School B)

Their maths is so different to how I learnt maths so I feel incapable with helping them in maths. (Parent, School B)

(My husband) struggles with how it's so different now to how we learnt maths and how they learn maths now kind of thing. He finds that the barrier for him to be able to support the kids. The other barrier for him is that he doesn't speak Māori as well so he's kind of you know to some extent he does, he's really supportive when they have homework. (Parent, School B)

(When my child asked for help) I said "Okay, but you do realise that your mum is not a computer literate". I know the keyboard, but I don't know how to turn on the Chromebooks and such. (Parent, School A)

The Chromebooks side of things I didn't understand but, the wording and that I could help her with that. (Parent, School A)

I look at but sometimes I don't understand but for her she's fine. Sometimes (she asks) "Mum can you look at this?" but me I don't know, it's just it's up to you do you think its right okay it's up to you. I just leave it to her other times I work with her. (Parent, School A)

One teacher agreed.

(At) parent teacher interviews, I'll say hey you know you can support here in homework, (they reply) yes I'll do that but…some of them feel very intimidated that it's a Chromebook, and I'm like it's just an device the work is still the same. (Teacher, School A)

Language barriers

Some parents were second language learners of English who did not understand their children's home learning tasks, while some parents and teachers of students in Māori medium settings saw understanding of te reo Māori as a barrier to supporting their children's learning at home.

Second language learners of English shared their difficulties and need for support.

> *Maybe support like my understanding (of language it's) not enough for me. (Parent, School A)*

> *My problem is, my barrier is the language that's why same with my daughter is a second language, (who needs) more reading. But, I try and encourage her like "please can you read". (Parent, School A)*

> *Sometimes it's hard to me I can't know the words but, I understand the meaning of the word but I can't talk to explain her. (Parent, School C)*

Teachers and parents of Māori medium students shared their language difficulties.

> *We do everything in te reo Māori and for some of our families it's really hard to understand. And I think that could be a big barrier. If we're sending it all out in te reo, unless we see that face to face, or an email, or some form of communication asking, 'I don't know what to do, what does that mean?' we can freely give that over. (Teacher, School B)*

A parent also commented.

> *As a family we struggle with the mahi kāinga (home learning) in te reo because there are often words that are just we just don't actually know the meaning. (Parent, School B)*

This parent added.

> *Reports are only in te reo Māori which I found a real barrier for me that information needs to be in whatever the language the parents are comfortable with. (Parent, School B)*

Another parent stated that she didn't see learning through the medium of te reo Māori as restrictive in accessing information online.

> *So far it hasn't kind of restricted (my child) but maybe there's some stuff that she doesn't understand that she's reading and thinking that's when I get 35,000 questions fired at me. (Parent, School B)*

Another parent stated they worked on te reo Māori issues together.

> *(New Māori words are difficult). I love the task that he does here at school and what he brings home, learn from that. Sometimes I'm a bit lost in the context of it. His dad translates any words or makes sense of. As a family we struggle with the (home learning) in te reo because there are often words that are just we just don't actually know the meaning…we'll open up another avenue for me to support him.*
> *(Parent, School B)*

An associated language barrier issue identified by two Maori medium teachers was the use of the English language.

> *I think a big issue that we have is that a lot of the English is the writing that the teachers get (from students) are text language you know like the letter 'u' instead of 'you'. But at the end of the day they can still identify words, so they are coming with the language, but its pidgin and slang. (Teacher, School B)*

> *When we're doing research it could be a pamphlet or something, where they have all their questions out there…where we have all those questions in (te reo) Māori and then it could just me writing up the English. So I don't speak (English) but I might go 'Kei whea a Matariki i tēnei wā?', so then I'll write 'Where is Matariki?'…so it's hard it's really hard, I find it's ongoing. (Teacher, School B)*

So I write a lot of English on the board so kids would know that the name of a rooster like, "He aha te kupu Māori for rooster?" so that they know, at least they know they can go find it what that word means. Another thing I try to do with the kids is just write key words into the google search or into the search or into the search that they're doing it helps. (Teacher, School B)

This same teacher shared that they weren't sure about other possible strategies.

I think if you know you got to find another way of doing it. That's how I do it. Like I just had a student today going 'I don't know the name of my whare tupuna?' And I went, 'Did you look on line?' 'Yup, had a look online on Māori maps'. So I went, 'What question did you ask Google?' He goes, 'Ko wai te ingoa o tēnei whare tupuna?" (Someone asked him, 'In English?' He just couldn't. (Teacher, School B)

Learning new terminology was also difficult.

It's like words like 'correlated', or 'influence', 'discourse' just finding what (Māori word that) suits. Understanding the word was actually quite hard…a Māori word. (Teacher, School B)

One teacher surmised that this was a potential research area.

I think that that's a research topic about looking at Māori Medium and IT, you know like actually creating a model. (Teacher, School B)

Limited personal connectedness

One parent was concerned about a lack of personal connectedness through the high use of digital devices by their children.

That's probably my biggest concern is I don't want them to feel like they have to be connected to everybody 24/7 and I don't want them to lose the value of that kanohi (face). (Parent, School B)

One parent perceived that their child may not be reading for enjoyment.

I've noticed my kids don't read… very rarely see my girl with a book in her hand walking around…'m a little disappointed in that but then I think she's reading all the time when she's doing her research. (Parent, School B)

Clarity of home learning tasks

One parent shared that sometimes they didn't understand the home learning tasks their child was given.

The task…like for me, like I look at it but, sometimes I don't understand but for her she's fine, sometimes just "mum can you look this" but me I don't know, it's just up to you do you think it's right okay it's up to you. I just leave it to her. (Parent, School A)

Another parent added that they wanted more feedback from teachers about home learning.

We don't get a lot of feedback actually on what is produced or what happens to that mahi kāinga or what you know it's just kind of done around the time that it's meant to be done. (Parent, School B)

Limited whānau support

One teacher shared that they had a concern about care of devices in the home and the need to devise a protocol of care.

Years 6,7 ,8 it's a bit different, because they get to take their chrome books home if the parents have requested that and there's certain stipulation so we really wanted them to go home. But I guess because of the behaviour that's been happening at home we've had to bring them all

back in…it's been a bit hard for our pouako (teachers), it's about how well are they utilizing at home? Are they being monitored you know, so there's those issues that have actually happened. (Teacher, School B)

One teacher explained that the use of chrome books for home learning was mixed due to limited access to a range of supportive resources including whānau.

It's only it's only just come into this year in terms of that so it's about work wasn't being done, yet a lot of work was been on chrome books. Some kids have books at home, but it wasn't necessarily to do with the home learning, and we really want the whānau to have that ' mana' of you know being the care taker of those…have the confidence. (Teacher, School B)

ENABLERS

Access was an overarching enabling theme for students, parents and teachers. For students specifically, they appreciated access to view their peers' work; accessing support from their teachers; having choices and autonomy; and support from home. Parents agreed that access to information and their teachers beyond the classroom were positive enablers for their children's home learning and nurtured autonomy and independence. Parents offered support where they could in many forms. Teachers appreciated and encouraged parental involvement and contribution to student learning.

We think that actually our whānau has a massive contribution that we have to play in (education) as well, and I get quite frustrated when the onus or the responsibility is seen as being completely on the school and I see that working both ways like sometimes it can be from you know parents, sometimes it can be from schools. (Teacher, School B)

Access

One student liked being able to access and share other people's work online.

It's like a website where you can go on and read people's books and write and they can read yours and it's interesting. (Student, School C)

Another student appreciated the set up support from their teacher to access information.

The websites we need to find our information is already there for us…our teacher sets up our homework on Hapara, a student dashboard. It's a website where you can access all your work that they have set out for us. (Student, School A)

One parent appreciated the access to information the Chromebook provided their child.

It's much easier than before…no Chromebook it's very hard… like sometimes we went to the library to give for help and now it's much easier. (Parent, School A)

Another parent appreciated access to teachers through devices.

Probably the best thing it's just the accessibility to the kaiako (teachers)…if she's unsure about something on her homework or something's wrong I know that I can just email or text or come up to kura (school) and the teachers really make themselves really available and are very I think kind of solutions focused you know that's probably the biggest best thing. (Parent, School B)

One parent saw access to home learning through the Chromebook motivated their child to engage with their work.

Most of her motivation I think is due to the fact that she has access to her mahi all the time and it doesn't matter where in the world they are they can just log in and straight into their work…before she got her Chromebook we were lucky if she was finishing one home sheet a term, there was just sort of no motivation to get the paper stuff done. (Parent, School B)

One parent recognised that the Chromebooks offered access to wider information.

I was so use to the paper and for them going into the encyclopaedia to get their notes, but not to the computer as such so (my child) is just one of the lucky ones that got to do her homework on the Chromebooks. (Parent, School A)

This same parent saw the benefits of Chromebooks for learning.

To me, I like looking at Chromebooks, I like looking at computers. I would push for it to be you know, given to schools to help. Because, like my other son said "Mum, maybe if I/we had Chromebooks back then it would have helped me, I could have talked to the computer and did my homework with the computer without me having to answer any questions". (Parent, School A)

Supportive teachers

Students, parents and teachers commented about the range of support given by teachers in using the Chromebooks.

What I do find real helpful probably the best thing it's just the accessibility to the teachers. I know that if she's unsure about something on her homework or something's wrong I know that I can just email or text or come up to school and the teachers really make themselves really available and are very I think kind of solutions focused. (Parent, School B)

They've got access they can email the teacher so it's actually relieved a whole lot of stress in our household that they've got that avenue themselves when they're not at school or at home doing their homework. If they're not sure about something they can email the teacher themselves. (Parent, School B)

One student and teacher from one school shared how teachers were facilitators.

They take the groups the teachers...that's all they do. (Student, School C)

Actually quite correct there…our role is to kind of be there to guide and support but quite often the students support each other as well so they come out with whatever their enquiry is and then they have to work out what, how they're going to achieve that who they need to talk to whether inside the school or outside the school and so they do the whole project and often the years 7 and 8 or there's experts within that group that will support the students. (Teacher, School C)

One teacher had an open door policy.

My thinking is if you have time doing nothing at lunch time, my door is always open to them. So it's just combination of getting them to take responsibility as well for their own learning. (Teacher, School B)

Another teacher spoke about how postgraduate study supported their use of digital technology in their teaching.

When we did the post grad…that really helped us to affect a lot of what we were doing…it really helped us to be more receptive to the research around it. (Teacher, School B)

One teacher saw home learning as supporting students' progress.

I think it's quite successful in this classroom because, I follow it up and not only that I'm giving feedback so at the end of the week I'm going through students work and giving them feedback about their next steps. (Teacher, School A)

Parental and home support

Two teachers shared that parental involvement contributed to student success.

If I really think about the lack of success, the lack of success is a result of the lack of active parents. (Teacher, School B)

That's a big issue…it really does affect them because when they go home they don't really have active parents…but their independent. (Teacher, School B)

Those that turn up sort of just, you know that they're real active parents. You've got parents that actually take the time to communicate or you communicate with them and it's just constantly happening…that it's for the benefit of the child. (Teacher, School B)

Every term we have a goal setting hui with every parent, so that also monitors whether those parents come on board, we can have those conversations with them. That's really good, that's really helpful. But unfortunately parents have not had opportunities to come every term so if they're not coming, how can we set goals, how can we make that communication between school and whānau. (Teacher, School B)

Some parents stated that they wanted to contribute to their child's education however they could.

We've both got skills and knowledge we want our kids to have but it's natural for parents to always want more for your kids than what you have want to be more and better than what you are as people… to be the best version of her kind of thing. I feel like we've got lots to contribute. (Parent, School B)

I think my support is more around time limits and making sure he's on task. He talks a lot about games…There is times for games like you know it's like you can go on the computer or you can go on the T.V. (Parent, School B)

Another parent sought help if they couldn't support.

Quite often I won't know the answer either, but I'll try and put him in contact with somebody who can help him or we'll try and find the answer together and I'll give suggestions about what he might be able to google to find the answer things like that. (Parent, School B)

Students, parents and teachers shared that parental support often involved learning about their own cultures. One student spoke about their mother teaching the Samoan language in the home.

(My mum) always helps me with my Samoan stuff. I get to learn new things about that. I'm not very fluent in Samoan. Sometimes at home when I speak English she doesn't, she wants me to speak Samoan she doesn't want me to forget when I'm older. (Student, School C)

This same student and their teacher spoke about their mother's cultural capital contribution to the school.

She was there for Samoan language week she took a weaving class. (Student, School C)

That's a great way when you're weaving and talking that's another really great way to not only learn a really special skill but to be talking and learning the language. (Teacher, School C)

One teacher shared that their students brought knowledge from home.

I think it's what my students come up with you know. 'Oh mum, said this about such and such or dad said this', you know. Like one student said to me, 'Oh my dad said something about the haka, and I said where did your dad learn that? Oh, I don't know.' (When) he told me, (I said) at least I know that you're talking to your dad then. (Teacher, School A)

Students and parents described different types of support they received at home.

(My brother) helped me with the writing by giving me different types of words in more detail…We had to write a narrative…There were just some sentence starters and we could make up the stories ourselves…He wrote the story for me and then I had to read it and then like try and imitate his style. (Student, School A)

(My mum) helped me with my topic by telling me what's better like appropriate for my homework. Like for an example I did two pictures and asked her which one was better. (Student, School A)

I usually just send her some of my work so she can have a look at them, kind of like my personal teacher. (Student, School B)

Q: Do you work with different people like on your home learning, like do you get in touch with your mates at school or do you talk to other people online?

Students, School B: Nope, no just family.

It's stuff they need to get resources for, then I help them with that like you know like I had to go get a plant for one of her assignments so you know that's a job I can do you know. (Parent, School B)

If they're struggling with their maths all I can do is let the teacher know that they're struggling with it and that I don't know how to help them what can we do kind of thing, but that's pretty much it. I'm not sitting down with them every night on there I guess making sure that they know that if they have questions and they're stuck they can let me know we can try and figure out how to work it out together. (Parent, School B)

Definitely dad he's really practical, where I am sort of like sometimes I can get a little too far ahead for her. He's the one that comes in and sort of explains it in layman's terms. That's always been his role and then sometimes I can sort of get really fresh and use sort of funny examples but yeah dads always the next go to guy. Sometimes he can be the go to guy because she doesn't want to come to Mum because Mum's going to make it hard. (Parent, School B)

I think it's actually nice when you know it's the stuff you can help them with too. (Dad) gets to feel like he's contributing to their learning as well. The kid's big brother and big sister until recently they both have just moved out, but they were kind of you know be available to help them as well and sometimes it's nanny or Koro as well they ring, depending on what the homework is but we kind of draw on anybody and everybody to help them so. (Parent, School B)

Some parents had mixed feelings as to how their cultural capital could be shared.

She didn't want simple questions, she wanted questions like to me, it was kind of like too serious the way she wanted it written. It depends on what kinds of questions. Because if it's personal no. If it's just the basic you know siblings and whatever their schoolings go then that's fine. (Parent, School A)

Mine is sort of a lot of passive support, so I'm not over her shoulder telling her what to do it's more of a, we've got a really open relationship and she has no problems asking me for help and that's when I help her, and it's mostly in sort of leading her into a direction that she might want to look at and with her research with her collecting and all of that's where most of my help comes in, it's like all the little scenic grammar and structuring and stuff like that. But, yeah it's mostly getting her to think what she needs to do and sort of dropping those ideas maybe one or two ideas that usually enough for her to go away and start researching her stuff. (Parent, School B)

We've got our real strong Tikanga Māori base and that's always been something that I've never expected the school to sort of teach her, to give her the basics but anything more …that's my job to teach her. (Parent, School B)

Student independence and autonomy

Teachers, parents and students commented on student independence and home learning.

My thinking is if you have time doing nothing at lunch time, my door is always open to them. So it's just combination of getting them to take responsibility as well for their own learning. (Teacher, School B)

(She) always does her own stuff all the time. (Parent, School A)

They have complete ownership of what they want to enquire about in that area, I'm not going to dictate to them and say find this, this and this and then the way they present it is the way they want to as well. (Teacher, School A)

Student, School B: Mum, sometimes I ask Mum.

Student, School B: But usually I just figure it out myself.

The routine for me is that I get home quite late from work, when I get home they are pretty much always on their Chromebooks. (Parent, School B)

But, both my kids are really kind of self-motivated with their homework and, I say that to think looking back to what I was like, I must've really dragged the chain, but we never have to tell them to do their homework they just go along and do it so I don't know if that's because they like being on the Chromebooks and so they enjoy it I don't know. (Parent, School B)

So I do kind of try and help them in that because of, I work in publishing so I can't help but turn you know the editing things, but I just have to resist just doing for them you know try and show them you know where they need to look again you know, so I'm not doing their work. (Parent, School B)

I've noticed with my girl she is quite self-motivated and I say that it's due mostly part to having access to her work on her Chromebook all the time and sometimes I think it is a little bit unhealthy for her, because she's one of those, she's just one of those kids that will just carry on doing it until her work is done. (Parent, School B)

I feel like we've got lots to contribute, and I want her to be able to do that at the same time I don't want her to grow up to be what she thinks I want her to be I want her to figure that out for herself what she wants to do what she wants to be however she wants to live and I suppose it's just us using what skill and knowledge we have, to give her the right tools to be able to do that. (Parent, School B)

To be honest he's pretty good at researching at managing himself on the computer so in fact he's teaching me a lot. (Parent, School B)

Student choice and agency

Teachers and students spoke about choices they had with their home learning and use of devices.

It's called a passion project… (we work on things we're interested in and that we like to do outside of school and we write about it like our talents and stuff and what we want to look into, to know more about. (Student, School C)

I generally prefer that (home learning) be on paper…we give that option whereby they can do all their research at school. They can find all that access to that information at school and yet they could do everything on their books at home. (Teacher, School B)

I like hard covered books. (Student, School A)

Student, School A: It's pretty much the same for me.

Q: Why do you like the hardcover books?

Because it's easier and because I just like reading books like that. (Student, School A)

We have nine options and we have six things to do and for the other ones we just have to complete everything. (Student, School B)

I think the research is where they can learn, that's where they add, it's their questioning on that subject…I put down find out some information about the Cook Islands, write down five facts you've learned about the Cook Islands so it's time for them to enquire. They have complete ownership of what they want to enquire about in that area, I'm not going to dictate to them and say find this, this and this and then the way they present it is the way they want to as well. (Teacher, School A)

IMPROVEMENTS TO HOME LEARNING

One student wanted more history to prepare themselves for college.

History stuff…I like reading that kind of stuff…teach us about that stuff so when we go to college and we do history, we already know and we can relate. (Student, School C)

Improved reading and maths support could be provided at home.

Student, School A: Maybe to like read with the others not that many of us that are good at reading and work on their maths.

Teacher, School A: I would rather give them maths, because some of them are struggling with it. They can learn it with their helpers at home.

Students wanted more opportunities to research for presentations as they enjoyed these tasks. They also wanted more information about more websites to support with their reading and research. One student also wanted more support with structures of writing.

One parent had a similar view about preparation for college and support with numeracy.

(They're) all right at maths but, I don't want her to be all right, I want her to be above all right. Because if she wants to achieve more and get to college and staying in a level where it's not only average she needs to do more. (Parent, School A)

One student enjoyed games and wanted more experiences around teaching, creating and reporting on them.

One parent wanted improvements in how the home learning tasks were presented.

I do really like the task but, they're on an A4 sheet they're all squished in together and I've never really known how they want that and now that they're working on google docs… I don't want (my child) spending time on the computer going 5x5 equals… I like him sitting down next to me, me asking him the questions him telling me the answers or writing it down. (Parent, School B)

One teacher spoke about how they might change the design of home learning tasks.

I think if I could redesign and tweak the tasks. I really love using Hapara work space. There I've got a collection of resources that all students can access. So, I think in terms of redesign maybe allow student more access to a lot of things but, it's not just to online things but, I mean it's pulling from online but bringing it to us. So it's not just random stuff. I don't just put here's a website for an example the basic facts one site that I've set my students onto. (Teacher, School A)

Discussion

The findings provide insight into how Chromebooks were being used by the students in their learning at home and the role that the teacher, the students, the family and the material resources have during homework activity. In this discussion the roles and the nature of the homework tasks are considered within the context of the aims of home learning and the potential of the digital age tools.

Chromebooks support home learning. However, to maximise the benefits the findings suggest that to maximise the benefits of the use of Chromebooks for home learning requires clear communication between teachers, students and parents and whānau. It is especially important to clearly communicate the purpose underpinning the learning at home tasks and assure that a share understanding is built between teachers, students, and parents.

The teachers' role and task design.

The teachers' role was to design homework tasks and to set expectations of timeframes and completion. Within this, the teacher has the role of communicating with the children and parents about home learning. The design of homework tasks influences student learning progress and their resulting achievement (Van Voorhis, 2011).

The home learning tasks were clearly understood by the children, who acted as intermediaries in sharing the expectations and tasks with the parents. The tasks included literacy, numeracy, follow-up practice of class work, current events and research topics. These were to be completed individually and had elements of choice such as optional tasks, what to research and how to present. The teachers organised the homework using a range of online tools and provided online resources which students had the choice to explore further. Teachers gave feedback to the students through the e-learning portal. Parents relied on feedback from the teacher about whether their children were completing tasks successfully and some parents wanted more feedback from teachers about homework. The parents were not yet able to access information about their child's learning directly through the e-learning portal.

The home learning tasks were not significantly different to the type of tasks that could have been designed before the introduction of Chromebooks. The differences are that the students access information online, present online and access skills based games available through the Internet and the communication between the teacher and the student and the teacher and parents. This suggests that homework design is at a transition stage, and may be unable to move beyond this until all the children have access to Internet and netbooks for learning at home.

Students, parents and teachers commented about the range of positive support given by teachers in using the Chromebooks. Students and teachers saw teachers as facilitators and were forthcoming in offering support. One teacher spoke about how postgraduate study supported their use of digital technology in their teaching. Another teacher saw home learning as supporting students' progress enabling regular feedback about next steps in their learning.

Parents' role

Teachers believed that parental involvement contributed to student success and parents shared that they wanted to contribute to their child's education and were proactive in asking for help. There was an expectation that students would work alongside family members for extra support, and to share their learning from school

The parent's role had two aspects; supporter and teacher at home. While the support and encouragement was seen as positive by all taking part in the research, the role of being the teacher was problematic. The parents did not always have the knowledge or skills to be the teacher of the school curriculum at home. Students of parents who are unable to help with the academic aspects of the homework are disadvantaged when this is an aspect of the design of the homework task and alternative support is not available. This places the children of these families at an academic disadvantage compared to their peers (Rønning, 2011). To limit this disadvantage requires either strong support to help the parents be successful teachers at home or a change in the expectation of parental involvement

to one more aligned with the notion of whanaungatanga, focussing on non-academic support. As the students have demonstrated agency in their learning they could access enhanced academic support through the e-learning portal from peers, online resources and their teacher without the need to rely on parents as teachers of the school curriculum.

Some parents did not understand their children's home learning tasks, or did not have the skills or knowledge to help with those tasks. This was particularly the case for those who were second language learners of English. Some parents and teachers of students in Māori medium settings saw understanding of te reo Māori as a barrier to supporting their children's learning at home. Teachers understood this issue which limited students accessing information online through the medium of te reo Māori and weren't sure about possible strategies. Learning new terminology was difficult for students, teachers and parents.

Students, parents and teachers shared that parental support often involved learning about their home cultures and students brought this knowledge to school. Not all parents were comfortable sharing their cultural artefacts (oral or physical). This highlighted a concern about where the boundary was between home and school knowledge and what should be shared.

Use of digital technology and the e-learning portal.

Students, parents and teachers described the range of tools students used in their home learning, including a range of websites, resources, applications and presentation software. One student liked being able to access and share other people's work online and others appreciated the set-up support from their teachers to access online information. Parents also appreciated the access to information and directly to teachers that the Chromebooks provided. Parents also appreciated the access to information and communication channels to teachers that the digital environment provided. Parents observed that the use of devices motivated their children to engage in school learning at home. Teachers wanted to improve access with better offerings of online resources and were exploring new resources and opportunities.

Limited access to the internet was an issue for some families and some parents had limited capability and confidence in using digital tools. The teachers spent time providing assistance and advice to the parents about how to use the Chromebooks. One teacher shared that they had a concern about care of devices in the home and the need to devise a protocol of care, while another teacher explained that the use of chrome books for home learning was mixed due to limited access to a range of supportive resources.
The e-learning portal did not appear to be accessible to the parents except through their children. The portal did not appear to be used as a tool for students to collaborate on their learning. This may be an option when more students gain access the Internet for learning at home.

Student agency

Teachers, parents and students commented on student independence and home learning. Teachers and students spoke about choices they had with their home learning and use of devices. The provision of choices provided autonomy. Some students wanted more subjects covered to prepare them for high school and more reading and maths home learning tasks. Some students wanted more opportunities to research for presentations as they enjoyed these tasks. They also wanted more information about more websites to support with their reading, research and support with structures of writing. One student enjoyed games and wanted more experiences around teaching, creating and reporting on them.
Purpose of home learning.

The participants identified a common purpose for homework; to improve the educational outcomes or opportunities for the students. From a student perspective this included being ready to do well at

secondary school, for the parents it was to give the child the best opportunities in life and the teachers had a focus on achieving curriculum based outcomes. The common purpose of homework was to support or enhance achievement at school. None of the participants questioned the use of homework by the school.

The homework tasks identified within the screencasts and interview data fell into two types of tasks; skill development and individual inquiries or research projects. The skill development was aligned with traditional types of homework tasks such as spelling lists and reading logs. The use of online resources such as Mathletics allowed a different focus on skill development. The inquiry tasks involved students finding information (self-guided or teacher instructed) from the Internet and representing the information in a format such as within slides or word documents.

If the purpose of homework is to enhance academic achievement of the children, then the design of each learning activity should be carefully aligned with this goal. The focus of homework should be able to be mapped to learning or skill development that will enhance academic achievement and opportunities for the children. An emphasis on the development and implementation of higher order thinking skills such as critical thinking and creativity should be explicit in the design and the opportunity for students to learn collaboratively, to peer critique, mash together ideas from resources and develop multimedia products provide exciting opportunities.

In the digital age there are a range of tools and opportunities that were not easily accessible before the Internet matured such as gamification, online collaboration and access to resources and people which enable flexibility in learning at home. The challenge is to design home learning in a way that utilises the affordances of these tools to enhance academic achievement and thus future opportunities for the students. However, while not all the student have access to the e-learning portal at home the teachers need to design homework tasks that cater for the range of access and are manageable for the teacher and equitable for the students.

Summary

The children in this study demonstrated agency and autonomy in their learning at home. They were motivated and enjoyed using their Chromebooks for homework. The parents were highly supportive of their children's learning but sometimes felt they lacked the knowledge or skills to be able to teach them or assist with the school based tasks at home. The teachers were supportive of the parents and the students in their learning and use of the Chromebook.

There are a range of homework activities that students in this study undertook. These tasks included skill development and inquiry type projects that the students carried out as individuals supported by their family. Within these tasks the Internet was used to access information for the inquiry type projects and curriculum specific websites provided skill development activities. Presentation software was used by the students to record and present their work. The e-Learning portal enabled communication between the student and the teacher.

The Internet and e-Learning portal provide the opportunity of a broad range of learning activities, including audio-visual presentations and collaborative problem-solving. The tasks appeared to be online adaptations of traditional homework tasks, enhanced with access to online resources, presentation software, skill development games and direct communication with the teacher. This may reflect the difficulty of designing learning when not all students have access to Chromebooks for homework. The dominant language within the Internet is English which is problematic when it is used for learning in other languages. Homework for those in the Kura had additional hurdles faced by language barriers.

There was agreement across the participants in the research that the purpose of homework was to improve the academic outcomes/opportunities for the students. It was less clear how all the tasks that students were undertaking as homework were aligned with this purpose. Higher levels of thinking such as critical thinking and problem solving were not identified in the learning activities the students were undertaking, although some personalisation of learning was evident in skill development tasks such as spelling lists.

The home-school boundary is an aspect that was 'fuzzy'. The types of knowledge or information expected to be shared across the boundary and communication between teacher and parent appeared to be an area that lacked common understanding or agreement between school and home. In particular, personal family knowledge or culture was deemed to sit on the home boundary and may not be something that families like to share. Communication across the boundary about the outcomes of homework was not systematically shared with all the parents and not all parents communicate regularly with teachers. While the home-school boundary was not identified as a major issue, it underpins the decisions made during the process of designing home based learning.

Recommendations:

The following recommendations are intended to be a 'next steps' to consider in the use of Chromebooks for learning at home with the aim of enhancing student achievement. Any innovations should be monitored to ensure that the autonomy and agency of the students continues, the parents feel supported and confident and the teachers continue to be confident in their professional decision making and ability to succeed.

1. Clarify how parents and whanau can support students learning at home in ways that do not require them to be teachers at home.

   This could be developed at the school or class level and be initiated by the ideas of the students and research on the types of support that are most effective. Aspects to consider are questions parents can ask students that motivate and help children to think and share their learning, physical spaces, time and resources the children need for homework.
2. Consider how home learning tasks can incorporate features of the Internet such as access to resources and collaboration tools to enable access to academic support that does not rely on parental expertise.

   Within this avoid the potential of home**work** that focuses on low level thinking tasks that provide limited opportunity to enhance the academic development of the children. Consider how digital apps, programmes and connections can enable higher level thinking to advance learning.

   Identify the most effective and efficient academic support. This could include when, where and what teacher interventions or feedback work best and the implications of changes on teacher workload such as expectations about teacher interactions with children outside school hours that might replace to more traditional 'marking time' with handwritten feedback.

Opportunities for e-Learning homework in a digital age
Gamification (skills development)
Critique and feedback on ideas to challenge thinking (through e-learning portal and online collaboration networks)
Online collaboration for problem solving/ learning activities
Multimedia opportunities for sharing new ideas to a wide audience.

3. Establish a professional learning group of teachers to develop and evaluate homework tasks for their ability to enhance academic achievement.

   Aspects that could be considered is identifying the skills and knowledge that are best suited to homework tasks that students can complete independently or collaboratively

with peers and justifying how these enhance academic achievement. Using a matrix (For example, Appendix 1) that includes higher level thinking skills or targeting learning progressions could be approaches used.

4. Clarify the home/school boundary.

   This could be a discussion within the schools or network of schools and with the parent community to clarify the role of the school and the family in education. Expectations of the type of knowledge or information that should be shared across the home/school boundary, how and when this is shared and the expectations of the role of parents in their child's home learning across the year levels.

5. Explore how all students can gain access to the e-learning portal for home learning.

   Universal access to the e-learning portal and carefully designed homework tasks would maximise the academic advantage of students completing school work at home. Students in homes where parents may not have the knowledge or skills to tutor their children would access academic support through online resources, their peers and their teacher through the e-learning portal.

References

Avvisati, F., Besbas, B., & Guyon, N. (2010, October). Parental involvement in school: A literature review. *Revue d'Économie Politique*, (5), 759–778.

Berryman, M., SooHoo, S., & Nevin, A. (Eds.). (2013). *Culturally responsive methodologies*. Emerald Group Publishing.

Bishop, R., & Glynn, T. (1999). *Culture counts: Changing power relations in education*. Palmerston North, NZ: Dunmore Press.

Cooper, H., Robinson, J.C., & Patall, E.A. (2006). Does homework improve academic achievement? A synthesis of research, 1987-2003.*Review of Educational Research*, *76*, 1-62.

Davis, B., & Sumara, D. J. (2006). *Complexity and education: Inquiries into learning, teaching and research*. Mahwah, NJ: Lawrence Erlbaum Associates.

Eren, O., & Henderson, D. J. (2011). Are we wasting our children's time by giving them more homework? *Economics of Education Review*, *30*(5), 950–961. http://doi.org/10.1016/j.econedurev.2011.03.011

Fenwick, T. (2010). Re-thinking the "thing" sociomaterial approaches to understanding and researching learning in work. *Journal of Workplace Learning*, *22*(1/2), 104-116.

Fletcher, J., Parkhill, F., Fa'afoi, A., Taleni, L. T., & O'Regan, B. (2009). Pasifika students: Teachers and parents voice their perceptions of what provides supports and barriers to Pasifika students' achievement in literacy and learning. *Teaching and Teacher Education*, *25*(1), 24–33. http://doi.org/10.1016/j.tate.2008.06.002

Hattie, J. (2009). *Visible Learning*. Abingdon: Routledge.

Jesson, R. & McNaughton, S. (2014). Manaiakalani evaluation programme. Milestone 3- Full report. Auckland Uniservices Ltd. Retrieved from http://www.manaiakalani.org/our-story/research-evaluation

Latour, B. (2005). *Reassembling the Social - An Introduction to Actor-Network-Theory*. Retrieved from http://adsabs.harvard.edu/abs/2005reso.book

Macfarlane, A., Webber, M., Cookson-Cox, C. & McRae, H. (2014). Ka Awatea: An iwi case study of Māori students' success. [Manuscript]. Auckland, NZ: University of Auckland. Retrieved from

http://www.maramatanga.ac.nz/sites/default/files/Ka%20Awatea%20-%2031%20March_0.pdf.

Macfarlane, A. H., & Macfarlane, S. L. (2012). Weaving the Dimensions of Culture and Learning. In *Understanding Teaching and Learning* (pp. 213-224). Sense Publishers.

Mendicino, M., Razzaq, L., & Heffernan, N. T. (2009). A comparison of traditional homework to computer-supported homework. *Journal of Research on Technology in Education*, *41*(3), 331–359. http://doi.org/10.1080/15391523.2009.10782534

Nusche, D., Laveault, D., MacBeath, J., & Santiago, P. (2012). *OECD Reviews of Evaluation and Assessment in Education: New Zealand 2011*. Paris: Organisation for Economic Co-operation and Development. Retrieved from http://www.oecd-ilibrary.org/content/book/9789264116917-en

Patall, E. A., Cooper, H., & Robinson, J. C. (2008). Parent involvement in homework: A research synthesis. *Review of Educational Research*, *78*(4), 1039–1101.

Rønning, M. (2011). Who benefits from homework assignments? *Economics of Education Review*, *30*(1), 55–64. http://doi.org/10.1016/j.econedurev.2010.07.001

Scheerens, J., Hendriks, M., Luyten, H., Sleegers, P., & Glas, C. (2013). Productive time in education. A review of the effectiveness of teaching time at school, homework and extended time outside school hours.

Scheerens, J., Luyten, H., Steen, R., & Luyten-de Thouars, Y. (2007). *Review and meta-analyses of school and teaching effectiveness*. Enschede: Department of Educational Organisation and Management, University of Twente

Snook, I. & O'Neill, J. (2014). Poverty and inequality of educational achievement. In V. Carpenter & S. Osborne (Eds.), *Twelve Thousand Hours: Education and Poverty in Aotearoa New Zealand*. (pp. 19-41). Auckland:Dunmore publishing

Stacey, R. D. (2001). *Complex responsive processes in organisations: Learning and knowledge creation*. New York: Routledge.

Starkey, L. (2011). Evaluating learning in the 21st century: a digital age learning matrix. *Technology, Pedagogy and Education*, *20*(1), 19-39.

Trautwein, U., Schnyder, I., Niggli, A., Neumann, M., & Lüdtke, O. (2009). Chameleon effects in homework research: The homework–achievement association depends on the measures used and the level of analysis chosen. *Contemporary Educational Psychology*, *34*(1), 77–88. http://doi.org/10.1016/j.cedpsych.2008.09.001

Valentine, S. (2014). The voices of Samoan parents and their children: home reading practices and home-school connections. Retrieved from http://researcharchive.vuw.ac.nz/handle/10063/3606

Van Voorhis, F. L. (2011). Costs and benefits of family involvement in homework. *Journal of Advanced Academics*, *22*(2), 220–249,354.

Appendix 1. Digital age learning matrix for analysis of home learning tasks.

Learning focus:-	**Students**	**Teacher focus**
Task completion	Completes tasks as required	Sets tasks and checks completion
Skills development	Improvement in a particular skill	Measures improvement in a particular skill as a result of homework
Conceptual understanding	Develop understanding of concepts	Evaluates developing understanding of concepts and next steps
Critique/critical thinking	Compares, contrasts or questions and draws conclusion. Within or beyond tasks set. May include problem solving.	Including critical thinking within the process of learning and providing feedback on this to the student.
Context	Integrates learning from different contexts.	Uses learning/knowledge from different contexts in the design
Collaboration	Critiquing and creating with others.	Evaluating aspects of collaboration and the academic outcomes for each learner.
Creating new knowledge or reframing what is known	Creativity in thinking	Provides opportunities for creative thinking within the task design. Eg. This could include mashing together ideas or creative tools such as multimedia.

Adapted from Starkey (2011)