MINISTRY OF EDUCATION
*Te Tāhuhu o te Mātauranga*

# The Beginning of the NEN Trial Journey

## NEN Trial Evaluation Report Series: Report N$^{o}$ 2

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# 1.0 Introduction

This is the second in a series of reports developed as part of the ongoing evaluation of the NEN (National Education Network) Trial extension. The NEN Trial extension is a test-bed project for the implementation of a national network for learning. This project involves the connection of 102 schools to fibre and the KAREN network (kiwi advanced research and education network). During the period of the Trial, the evaluation team are undertaking a mixed-methods evaluation incorporating a longitudinal survey and a number of small, largely qualitative research projects. A series of short reports will be published, which present the findings from individual research projects. An annual evaluation report will be published, synthesising findings from the individual reports.

The research reported here considers the use of digital technologies in six schools within the wider Ashburton region. The Ashburton loop has been used for this research as they are a "greenfields" loop with regard to their connection to fibre; they are beginning their journey so to speak.

# 2.0 Executive Summary

## 2.1 Introduction

This report is comprised of six case studies developed after visits to six schools in the Ashburton area. Each case study follows the same format: a summary of general comments made during the interviews; a description of their use of digital technologies prior to being connected to the NEN Trial (2010); intentions for use in 2011 and their plans and aspirations for what they would like to do with in the future (i.e. 2012 and beyond). In the discussion section the data from across the six case studies have been synthesised and the implications for the NEN Trial and any future Network considered.

The Ashburton Cluster provides an unique opportunity to capture the baseline use and expectations of a group of schools as they transition from copper to fibre and are connected to the National Education Network (NEN) Trial. For this reason a group of six schools from the Ashburton Cluster were invited to participate in a research study. It is intended to revisit these schools at different times during the NEN Trial to determine the influence of their connection to fibre and the KAREN network.

## 2.2 Key findings

Key points of interest from across these case studies include:

- The already high levels of reported use of online tools for teaching and learning.
- The desire expressed to see higher levels of access to digital technologies by their students.
- The extent to which video conferencing is mentioned as a desirable tool which they intend to use more in the future.
- The desire to enable parents to have greater access to student work and the school through the Internet.
- The speed of their connections and the reliability of their network appear to have been major hindrances to the use of online learning tools and activities in many instances.
- Key concerns across these schools are the ratio of computers to students and the need for professional development for teachers.

## 2.3 Implications for the NEN Trial and beyond

There are clear intentions across all six schools to fully utilise the potential that the NEN Trial provides in terms of fast connections and a more reliable system. Understanding what they have achieved and what has enabled and/or hindered those achievements should provide valuable information to the wider N4L project.

Already there is evidence to support the importance of fibre to enable effective use of a range of digital technologies in teaching and learning. There is also evidence that, in some schools at least, there is a strong desire to engage with not only their parent communities but other school communities outside their geographical region. These along with their current use of web 2.0 technologies coupled with their stated desire to do more highlight the importance of a digital solution, which offers ultrafast broadband and the capacity for members to connect, collaborate and share in a user-friendly and cost-effective environment. Also important is the capacity for students to publish their work making it accessible to the wider community.

It will be important to determine their capacity to achieve greater levels of use once a technology solution is in place. That is to see what other factors have an influence on their success or otherwise.

## 2.4 Looking ahead

The interviews reported here were undertaken in March, 2011. It is intended to revisit these schools late in 2011 to determine what changes, if any, there have been as a result of their participation in the NEN Trial. During this visit we will also ask them about their experiences within the NEN Trial and what factors have mediated their use of KAREN. It is likely that we will ask them to reread these narratives and to comment on the extent to which things have changed in their school and the influence of the NEN Trial on any changes.

Further, our intention is to involve five of the schools in an in-depth study of the influence of the NEN Trial on classroom practices and student outcomes in a primary school context. It is possible that similar work could be undertaken with a group of secondary schools from across the clusters involved in the NEN Trial.

# 3.0 Method

## 3.1 The purpose of the interviews

The purpose of these interviews was to gain a picture of what was happening in the schools immediately prior to their connection to fibre (2010); their short term plans to utilise fibre (for 2011) and their longer term plans beyond 2012. The areas of focus were related to their infrastructure and use of digital technologies in their teaching and learning practices and administration.

In the case studies that follow each of these time periods is discussed separately. It should be noted that the timing of the interviews means some overlap between 2010 and 2011.

## 3.2 The participants

The six participant schools were purposively selected based on their size, locality, decile and type in an attempt to get a representative group of schools. The lead principal for the cluster was also consulted with regard to which schools should be visited. The principal and at least one teacher were involved in face-face interviews in each school (Table 1). The selection methods used means it is likely that there is a bias towards schools and teachers who use digital technologies relatively frequently compared to some of their colleagues.

The schools ranged from decile 3 to 9 with the majority being high decile. The number of students was generally between 101 to 300; although there were two schools with more than 300 students. Two rural schools were included in the sample.

**Table 1: Participant information by school.**

| School ID | Senior leaders | Teachers | IT Manager | ICT lead teacher | Other | Total |
|---|---|---|---|---|---|---|
| Ash001 | 2 | - | - | 1 | - | 3 |
| Ash002 | 3 | 1 | 1 | - | 1 | 6 |
| Ash003 | 1 | 3 | - | - | - | 4 |
| Ash004 | 1 | 3 | - | - | - | 4 |
| Ash005 | 1 | 1 | - | - | - | 2 |
| Ash006 | 1 | 2 | - | 1 | - | 4 |
| Totals | 9 | 10 | 1 | 2 | 1 | 23 |

Notes:
For Ash001 the deputy principal also teaches Year 6.
For Ash002 the other is the educational librarian.

## 3.2 Data collection

The interviews were semi-structured with interview protocols developed for both the principal and teacher interviews (questions available in appendices). The questions were sent to the schools in advance. The interviews took approximately 45 minutes each and were audio taped.

Responses to these questions were analysed qualitatively. No attempt was made to count responses within different categories or to aggregate the responses across schools. The primary purpose of these interviews was to draw a picture of what is happening in each school PRIOR to being connected to the NEN Trial and their intentions and/or aspirations moving forward. The narratives that follow for each school achieve this purpose.

The schools were all provided with a copy of their narrative as a validity check prior to the report being published. In some instances changes were made to the narratives as a result. This tended to be the addition of new material the interviewee had not thought of at the time of the interview.

# 4.0 Ash001

## 4.1 General comments

Prior to 2010 this school was part of an ICTPD cluster with four other schools. Although the cluster has formally ended the schools continue to meet twice a year to collaborate on ICTPD planning and ideas, and to share knowledge and resources. The focus of the cluster was not on technical skills but on the practical uses and applications of ICT in the curriculum with a specific focus on pedagogy. The school had recently been connected to fibre at the time of this visit.

Those interviewed reported that there had been an exponential growth in the skill level and usage of digital technologies by all staff and students. They mentioned that even very young students were taking ownership of and pride in their own learning to a greater extent than ever before. Further, they reported that the overall level of engagement and excitement from their students to new technologies, as they have been introduced, has also been great. There was mention of how some enthusiastic students just run with any new opportunities and are much more advanced than any of the teachers, which "*poses somewhat of a problem when the teacher must be able to monitor and control their students use*".

The teachers interviewed highlighted the responsibility of the school to build student confidence in using ICT as critical to preparing them both for their future careers in any field and academic success beyond the primary level.

The principal's main goal with respect to digital technologies is to maintain a learning environment that is adaptable to the changing needs of their students, whilst maintaining a balance in which new technology "*supplements but does not replace*" traditional teaching practice.

In 2010, following the completion of the ICTPD contract, the school undertook a full review of its curriculum and the role of ICT within it. Included in this was a full audit of its ICT hardware. This addressed: what they had on hand, what they needed or wanted in the future, and what they could realistically afford.

## 4.2 The situation before connection.

At the time of the interview all teachers were doing their lesson planning and reporting on the internal server; but this was not yet available outside of the school. The ICT lead teacher described how she and others have always gathered their lesson ideas and resources using the Internet, stating that: "*We go to Google first, before any books are opened*".

The school has used Webinars with reasonable success for staff professional development. This use of online training solutions was reported as beneficial in that it is cost and time efficient.

Further, some teachers had begun using class wikis and blogs with their students, as well as other Web 2.0 tools. These tools were reported to have offered a number of opportunities for students to develop their skills. This included the use of video and digital cameras and uploading their own work to the wikis. These wikis were mentioned as a particular highlight by all staff spoken to. This was primarily because of the level of interaction this facilitated between students and parents.

With data projectors in most classes, some teachers were already frequently using YouTube, TeacherTube and other video sites in their lessons in 2010. This was specifically mentioned as helpful with very young children who may not be able to read in that showing them something visually was seen as highly beneficial to their learning.

### 4.3 The 2011 school year

In 2011 this school migrated from School Master to the web based Assembly application for student management. At the time of our visit they were planning to unveil their new website. One of the key reasons for its development was the recognition of the importance of the school having an online presence for interaction with the wider community. One example given was the need to enable families overseas to access information regarding the school.

The school was also looking for ways to sustain the learning gained through their participation in the ICTPD cluster. The principal sees this as involving ongoing and targeted professional development. To this end a professional development day was being planned for June. During this day it was intended that all staff would visit the 'top' ICT schools in Timaru to learn about what there are doing and what could be adapted for use in their own school.

Those interviewed reported an increase in the usage of, and overall demand for, various online tools in the classroom; with an emphasis on class wikis, blogs and other Web 2.0 tools in 2011 compared with 2010. At the time of the interview the ICT lead teacher was in the process of assisting all teachers to set up their own class wikis. This was reportedly largely due to the uptake and success of her own class wiki in the previous year.

The principal reported that these advances were enabled by support from the Board and the enthusiasm of his staff, both of which he believes are critical to the success of any change initiative. In his opinion, this is particularly true for initiatives involving ICT, which require the constant up-skilling of staff and investment in new hardware.

### 4.4 Plans for the future (2012 and beyond)

A number of changes are planned for the future; many of these as a result of the ICT audit. These include:

- The school has begun acquiring interactive whiteboards for each classroom with the intention of purchasing two a year.
- At the time of the audit (2010) they had two computers in each classroom for student use. They are planning to increase this number and to ensure that the student computers in the school are up-to-date.
- The school is currently using an internal server for their school management system. They have plans to migrate this to an online solution in the next 12 months.
- They would like to explore online absence reporting systems in the future.
- They would like to be able to offer a more interactive and open environment for the entire community. They see this being part of their interactive website, where parents and other community members can access and comment on student work and other activities at the school.
- The school is hoping to increase collaboration with other schools. They do not see this as being limited to the Ashburton area alone; wanting to work on a national and international scale. This would be particularly useful, in their view, for new professional development opportunities that could be enabled by such collaboration. Such collaboration could involve increased use of online content or video conferences with similar schools to share ideas and new concepts.
- There was a desire expressed to increase the use of video conferencing to enable students to communicate with people from around the world in an e-penpal type system. It was suggested that this would expand the experiences of 'small-town children' beyond their current surroundings and expose them to a whole new world of possibilities

In order to facilitate the desired changes in classroom practice there is a perceived need for more student access to digital technologies. Of concern, is the ratio of computers to students and affordable options for improving this ratio are being explored.

# 5.0 Ash002

## 5.1 General comments

The principal discussed his/her ideal of a shift in the role of teachers from one of control to one of guidance and engagement. This is coupled with a vision of children taking responsibility for their own learning; learning that is tailored to their needs and desires. The principal sees this shift as revolutionising the way teaching and learning occurs in the school.

Further, s/he is aware of the increasing importance of online content in all aspects of life. One example given was the use of cloud and shared online spaces and how these allowed Christchurch schools affected by the earthquake to carry on learning without a building.

The main concerns expressed by the teaching staff were related to the unreliability of the network and the lack of computers for student use. They felt that affordable solutions are needed for both before they can fully utilise digital technologies.

## 5.2 The situation before connection

In terms of administration practices this school was already doing a number of things online in 2010. For example:

- Electronic absence reporting, including the ability to send text message alerts home twice a day (for lateness and absence).
- Using Musac for their SMS solution and the library management system.
- Using the online version of OPAC (online public access catalogue) in the library.
- Use of both a traditional video conferencing setup and video conferencing on PC as well. Skype has been used to interview prospective staff and for VC and correspondence students to communicate with their teachers.
- Remote access to their servers for staff. This is currently being successfully used by a small number of staff.
- Using a web-based email service, which can easily be accessed from anywhere.
- The school intranet is available 24/7 with a link from the school web page. It is password protected using email addresses and school passwords.

A number of online tools have also been used for teacher planning and professional development including:

- The Ministry of Education's webinars.
- Online seminars and video conferencing for professional development in a number of areas, not just for ICT.
- Mahara has been used by a professional development group within the school to store their professional development resources online.
- Most, if not all, teachers at the school utilise online sources in their lesson and resource planning.
- Google apps has been introduced to some teachers, but is not widely used due to network issues.
- The eTeachers and a small number of others are starting to use Educo, the Moodle site for CantaNet.

Also in the area of ICT professional development, the Teacher Librarian and two other staff members are part of a blended learning cluster which is administered by the Ministry of Education. The Teacher Librarian mentioned how useful this has been for learning how best to use new Web 2.0 tools in an educational context. Although, s/he said that the lack of computers available for student use has been a hindrance to the uptake of this new technology.

Online tools and the Internet are also being used in classroom practice including:

- Educo, Moodle.
- Web 2.0 tools[1] with several teachers reportedly experimenting with class wikis and blogs.
- The school's library uses a Wordpress Blog with an attached Delicious widget, both of which are used to bookmark appropriate online websites for student research, study and to support wide reading. This is a way of scaffolding the information seeking process for students.
- Several teachers are using other Web 2.0 tools such as Weebly, Glogster, Shelfari, Bubbleus etc.
- Data projectors are available in most classrooms so the use of YouTube and other video sites is fairly common.

In addition, this school has begun using video conferencing technology for distance learning. The school is a member of the CantaNet cluster and the Virtual Learning Network. They are currently receiving eight courses and teaching one in this manner. The numbers of students opting into this more independent style of learning is increasing each year as students realise that this offers them the opportunity to select subjects that they want to do.

### 5.3 The 2011 school year

In 2011 a campus wide wifi network is to be installed. With this in mind they are also exploring ways to give students more access to ICT and online content (e.g. subsidised laptops/ cloud solutions for email, file sharing and other online environments).

The principal is concerned that the school needs to adapt a robust system for maintaining "*some semblance of control over students' use of ICT*". This is due to the skill gap between students and teachers when using digital technologies.

### 5.4 Plans for the future (2012 and beyond)

The school would like more access to shared and blended environments. S/he believes this will open up nearly unlimited opportunities for staff and students. This would also help with another goal the school has, which is to build the confidence of staff and students in their use of digital technologies. They would also like to use e-portfolios for both staff and students and be able to allow students and parents to access work online to monitor progress and give feedback.

[1] Examples of Web 2.0 included social networking sites, blogs, wikis and video sharing sites as well as hosted services and web applications. A web 2.0 site allows users to interact and collaborate with each other as creators of content in a virtual community rather than being limited to the passive viewing of content.

# 6.0 Ash003

## 6.1 General comments

As with the other schools in this research there are relatively high levels of use of Web2.0 technologies and other digital technologies, including Mimio boards.

One concern the principal had was the cost of technical support, which is accessed from Christchurch. He expressed a desire for a more cost effective solution to support further integration of ICT in the classroom in the future. The example given was that having the server onsite has, and continues to, pose problems in terms of support as service call-outs come from Christchurch and are very expensive.

The teachers interviewed expressed concern with the variation in the extent to which ICT is integrated into classrooms, feeling there was a need for greater consistency. They reported that, while some teachers use a lot of ICT in every aspect of the classroom experience, others do not use it at all. As a result not all children receive the same level of ICT exposure.

## 6.2 The situation before connection

During 2010, the school began the installation of data projectors in classrooms and purchased Mimio boards for the teachers to share. The teachers interviewed reported that the Mimio boards have had a very strong impact on student engagement with ICT in a learning context and the teachers have begun to use them quite regularly in the classroom.

In terms of administrative practices this school has been using School Master for their SMS solution. They have experienced several issues with this system however, including teachers losing large amounts of data after entering it. This system is based on their internal server, which they upgraded to 400GB in 2010.

The teachers are doing all their lesson planning and reporting on the school's internal server. They had remote access to this server in 2010 but it was unreliable and problematic and above all was read-only access (i.e. can access work but not save any changes back up to the server). The unreliability of the network in 2010 was described by the teachers as a huge impediment to utilising ICT in their lesson planning. As a result, not many of them used it.

Professional development in 2010 was mostly in-house with the two ICT Lead teachers going to external sessions and then demonstrating to the rest of the staff back at school.

## 6.3 The 2011 school year

By the start of 2011 data projectors had been installed in all classrooms and more Mimios had been purchased. Some classrooms have begun using Wikis, Blogs and other Web 2.0 tools for student contributions and interaction. In addition, some classes use a lot of online learning games.

One teacher reported that prior to going on fibre it had been difficult to use online learning activities due to the speed of the network and the demands on it from several children trying to compete at once. The connection to fibre had been hugely beneficial in allowing the use of online activities due to the increased speed.

They are currently in the testing phases of their school's website and the hope is that it will allow interactive access to students and parents and be a space for showcasing student work and progress.

## 6.4 Plans for the future (2012 and beyond)

The principal would like the school to have Mimios, or other Smartboard technology, in all classrooms and see the use of these flourish. They would also like to be able to offer a better student to computer ratio giving students more access to computers and more time using them.

Further, they would like to utilise more publishing (video and podcast) opportunities for their students. The teachers were also eager for more accessible professional development opportunities within the ICT space.

# 7.0 Ash004

## 7.1 General comments

The principal is looking forward to the NEN Trial and expecting it "*to create its own motion*, *as one opportunity leads to new possibilities*". In order to achieve this he recognises the need for more hardware, as access and exposure to digital technologies become increasingly important.

At the time of the interview the teachers were "*anxiously*" awaiting the completion of their SNUP and connection to the fibre network. Once this is completed the principal reported "*they are anticipating big changes to the school*."

There is a desire in this school to establish an ICTPD cluster that is effectively Ashburton wide; believing this will be cost effective and enable them to share time and resources.

## 7.2 The situation before connection

In 2010, Ash004 introduced the Musac SMS for all of their assessment and reporting requirements. The package they purchased also aligns with their financial and library management systems so it was a huge gain in administration efficiencies. They had some external supplier training for the staff on the use of this system and the rest of the learning has taken place in house through the collaborative sharing of skills and ideas amongst the teachers.

Also in 2010 they began installing interactive whiteboards in classrooms. Four were installed in 2010 with a further three to be installed in 2011.

All the school's curriculum is uploaded onto their server with online templates for lesson planning. This has a teacher portal so they can access all material from across the school; removing the need to repeat work. Most of the teachers use online resources such as TKI.

Most of the teachers were already using Web 2.0 tools such as Wikis and blogs in 2010. In addition, teachers in the junior area were using Sparklebox for class resources. The teachers interviewed also mentioned using interactive whiteboard games (e.g. several from the BBC resource website, digistore, wordle etc). The teachers also mentioned student use of online research tools such as Google and Wikipedia, and using YouTube and other video sites to supplement class discussions.

In 2010 there was limited ICT related professional development at this school. However, a few of the teachers attended the ULearn, and Learning at Schools conferences and then shared the relevant resources and skills with the rest of the staff. Also, as the interactive whiteboards were introduced, teachers attended tutorial sessions on their use in the classroom.

## 7.3 The 2011 school year

From an administration perspective, the principal reported that the school hopes to introduce electronic absence reporting, as well as more comprehensive reporting on student outcomes and information using an online system. He also mentioned that they intend to use video conferencing more.

There are also plans for increasing the amount of ICT related professional development offered to staff in 2011. The principal wants to find a small group of high-end users to send to courses; who can then return to the school and become the in-house experts in specific areas such as reporting systems. To date some staff have received a day of training in the use of Web 2.0 tools in the classroom. There are plans for the rest of the staff to have this as well.

Also in 2011, teacher planning and work will be migrating to an online environment that they can access from home. Further, the principal is examining the benefits of moving their entire school server system offsite.

### 7.4 Plans for the future (2012 and beyond)

In the future, the principal wishes to provide the wider community with better access to digital technologies, not just the students. His/her concern is that many of the pupils come from lower socio-economic households and are unlikely to have access to digital technologies at home. The perceived need is to close the gap between these students and students who do have access, ensuring a level playing field.

The teachers interviewed would like to see more laptops/computers available for student use and a wireless network covering the entire school grounds. They also mentioned that having their administration systems all linked up (i.e. SMS, LMS and library) and accessible from home would make their lives much easier. In the classroom, the teachers would like access to more interactive teaching resources such as online learning games. Overall, the teachers expressed a desire to create a learning environment for the students that is open and accessible so that students are in control of their own learning paths.

# 8.0 Ash005

## 8.1 General comments

The principal has expressed his/her commitment to responding to staff and students demand for new technology and professional development requirements. S/he is very excited about the potential the NEN Trial offers to expose small town children to a wider world of possibilities; previously unavailable in the classroom.

This school is currently exploring the possibility of cloud computing as a viable solution for their school. This would remove the need to maintain onsite servers and provide much cheaper technical support given their rural location.

## 8.2 The situation before connection

During 2010 Ultranet was introduced as a tool for showcasing student work. For the principal seeing the pride students take in uploading their own work and content to show their parents and families has been a particular highlight of its introduction. Also during 2010 the school switched from School Master to Musac. However, there were interoperability issues between Musac and Ultranet which were still not resolved at the time of the interview

In terms of classroom use, the teachers reported having used a lot of material from the NZ Maths website, English online and the National Library. They have also linked into digistore images and online games such as Mathletics, Lexia and others. Through the Ultranet system they introduced virtual online classrooms linked through the schools website. This enabled them to draw down and store content to the students' ePortfolios.

The teachers at this school reportedly do all of their resourcing and planning tasks on the school's network and use Google more than books for research. The school also uses Google Calendar as an insert to Ultranet which synchronises all the schools events to the webpage

## 8.3 The 2011 school year

The school was connected to fibre in 2011 which, according to the ICT lead teacher, had enabled greater use of the Internet for resource and lesson planning. S/he explained how in previous years time had been spent bookmarking useful sites and resources that were too large for their existing connection. With the fibre connection it has become possible to effectively use them all, on-demand, in the classroom.

Over the next 12 months there are plans to increase the amount of multimedia content published by the students to the Ultranet system, and to provide for increased and easier access for parents to interact with it. These plans have also been enabled by the fibre connection as before the school did not have sufficient bandwidth to upload large files.

In addition, this year will bring increased use of video conferencing in the classroom. The principal mentioned specifically that one of their teachers is currently living in China and it would be great for her to interact with her former students and expose them to her new world.

## 8.4 Plans for the future (2012 and beyond)

The ICT lead teacher expressed a desire to have a completely virtual space for staff and students, almost like a computer game with avatar type interaction in a shared learning space. S/he also mentioned a belief that more support for arts/music will be possible through the use of video conferencing. In her opinion there is a real gap in New Zealand in terms of the funding and support provided to the arts subjects.

# 9.0 Ash006

## 9.1 General comments

In 2006, Ash006 was the lead school in an ICTPD cluster. Although the cluster no longer exists formally the collaboration has been maintained to some degree with ongoing communication between the schools and the sharing of resources and knowledge via their lead ICT teachers.

The principal of this school acts as the onsite systems administrator; directly handling most issues with servers and hardware. This has proved to be a huge cost saving for the school and has allowed them to tailor their systems to be most effective in their environments. They were connected to fibre optic in the start of 2011. Prior to this the school network was significantly upgraded and improvements have also been made to the school server.

The principal reported using a "*just in time*" philosophy when making technology available to teachers. S/he "*slowly releases new tools to 'high end' users first to promote demand amongst the rest*". In this way everyone ends up using the technology. This has proved successful with digital cameras and televisions.

Through the implementation of a "Techies" programme students from years 5 and 6 are trained and serve as the first line of technical support assisting teachers and other students with ICT related issues and training. This has been so successful that there are more students volunteering for it than the school needs. The programme was described by the teachers interviewed as a great way to recognise the ability of students who are neither sporty nor academically inclined in a traditional sense.

## 9.2 The situation before connection

At the start of the 2010 school year significant upgrades, at a cost of $45,000, were completed on the internal network resulting wireless internet access to all school buildings. This upgrade was later enhanced through the SNUP programme at the end of year.

Ash006 was the first rural school in the region to move their SMS to an offsite server using the Assembly platform. They developed their own template for the Assembly platform in order to manage the 15 buses they and a neighbouring college use. This template is now on the Assembly system and will be used for other schools requiring this service in the future. Also during 2010 the school introduced a system of email absence reporting to the main office each morning.

The introduction of a robust wifi network in the school has meant that all in-house professional development sessions are interactive with teachers bringing their own laptops and opening websites and content along with the presenter. In addition, all teachers were provided with Apple laptops. One of the teachers explained how teachers now use iChat (a video chat system) for inter-school communication. An unintended benefit is the extent to which this can be used to monitor classes when the teacher is elsewhere, but with computer access.

Most of the teachers do a lot of their lesson planning and resource searching online using TKI, integrated learning tools and other overseas resource sites. However, in 2010 the students reportedly had limited interaction with online content, especially in the younger classes. While online games and other content were used in Mathematics and English the connection speed was a hindrance to using anything streamed online or having multiple students on a game site. Also during 2010, the ICT lead teacher began using Web 2.0 tools with her students. There was also a lot of use of digital photography in the students work.

## 9.3 The 2011 school year

At the beginning of 2011 the school was connected to the fibre optic network. The school's server was upgraded at the same time. Together these two improvements have made a huge difference to the extent of use and the performance of the Internet in classrooms. As a result the use of technology is so integrated that any loss of connection can "*stop everything*" that is happening.

According to the principal both teachers and students are now dependent on the Internet for learning.

Examples of the benefits of being on fibre were given by the teachers. These included:

- A greater level of comfort in utilising ICT in their lesson plans as they can be sure that it will work when needed.
- Increased use of online games with their students. The teachers interviewed reported that the students have "*really taken to these and rush in to compete on them each morning*".
- Teachers are also beginning to use ePortfolios to showcase their students' work.
- Greater use of videos to supplement classroom teaching to the extent that they "*sometimes forget they do it*".

This increased use has resulted in improvements in staff and student ICT skills. Further, the teachers interviewed reported that the students appear to be taking more responsibility for their own learning and that the interaction, in real-time, with the outside world has been "*phenomenal*" given their relative isolation.

The ICT lead teacher also mentioned that, through a generous donation, they have started using Technics Lego to teach students the basics of programming language and robotics. This has also been a hit with the students.

In 2011, 32in flat screen televisions were installed in all classrooms. This was instead of projectors. This is part of a plan to eventually utilise Nintendo Wii in classrooms.

Changes to school systems that have been made possible as a result include:

- Updating software for all machines in the school is easier and only needs to be done once.
- An online tool allows parents to book appointments for parent-teacher interviews through the schools website; saving the teachers time and frustration.

The staff have undertaken online training using e-admin but the Principal commented that they had found it too slow and not particularly helpful. The intention for 2011 is to undertake professional development for the Assembly system. They also intend to use online learning and video conferencing a lot more for staff professional development.

### 9.4 Plans for the future (2012 and beyond)

The Principal has a vision for what the school will look like in the not-too-distant future and what is needed to achieve that. Amongst his/her plans are:

- Finding a Voip solution to cut their phone line costs.
- Moving towards more learning online (for students and staff).
- Increasing the prevalence and use of video conferencing in the school (which he realises will involve a huge investment in equipment).

As mentioned earlier the principal is exploring the possibility of using the Nintendo Wii instead of Smartboards as this is a lot cheaper and a platform most of the students are familiar with.

The teachers interviewed, as in other schools, would like to see more student access to digital technologies. They reported wanting to explore ways of using students' intuitiveness for technology so that they are engaged in learning activities; as they are engaged when playing on gaming devices such as Play Station and Nintendo.

Also highlighted was the need for more, and affordable, pedagogical and professional support so that they are aware of any opportunities and can find content relevant to their age and subject group.

They have a strong desire to begin video conferencing with international partners for the children and also to Podcast student work to the wider community.

## 10.0 Discussion and implications for the future

Each of these schools appears to be already making extensive use of digital technologies and, in particular, an online environment within their school. Those who have been connected to fibre report that this has enhanced this use even further; others appear to have high expectations of the potential of fibre and the NEN Trial. The extent to which the practices described here are fully integrated into all classrooms cannot be determined from these interviews; nor is the success of the tools in enriching learning or increasing effectiveness described.

There are clear intentions across all six schools to fully utilise the potential that the NEN Trial provides in terms of fast connections and a more reliable system. Further, the culture in these schools appears likely to be supportive of ongoing innovation and of the realisation of the potential of a national education network to transform teaching and learning. They are, therefore, likely to provide interesting case studies of practice. Understanding what they have achieved and what has enabled and/or hindered those achievements should provide valuable information to the wider N4L project.

Already there is evidence to support the importance of fibre as an enabler of the effective use of a range of digital technologies in teaching and learning. There is also evidence that, in some schools at least, there is a strong desire to engage with not only their parent communities but other school communities outside their geographical region. The development of an N4L which enables member to member communication and easy access to a range of content and services will certainly support schools in this.

Their current use of web 2.0 technologies and their desire to do more highlight the importance of an N4L solution which offers ultrafast broadband and the capacity for members to connect, collaborate and share in a user-friendly and cost-effective environment. It will be important to determine their capacity to achieve greater levels of use once a technology solution is in place. That is to see what other factors have an influence on their success.

# 11.0 Appendices

## 11.1 Principal Baseline Interviews

1. Thinking back to how things were done at your school 12 months ago, can you please describe the use of the Internet (online services and contents):
    a. administrative tasks (e.g. reporting systems, absence, SMS, LMS)
    b. professional tasks (e.g. planning, professional development)
    c. classroom activities (delivery of curriculum; student use)
    d. Please describe something that highlights best practice in your school with regard to the Internet over the past 12 months.
2. Thinking of the current situation in your school can you please describe how the use of the Internet (online services and content) across the same three categories has changed or is likely to change in the near future (in 2011)?
    a. administrative tasks (e.g. reporting systems, absence, SMS, LMS)
    b. professional tasks
    c. classroom activities
    d. Was this planned? What has enabled this change?
3. Thinking in the longer term, (i.e. 12 months or more from now), can you please describe what you would like to change/additional things you'd like to do using the Internet (online services and contents) in those areas (these don't need to be planned – can be aspirational):
    a. administrative tasks (e.g. reporting systems, absence, SMS, LMS)
    b. professional tasks
    c. classroom activities
    d. Is this planned? Is anything else needed to allow this to happen?
4. Do you have any plans to purchase additional digital technologies tools in the next 12 months?
5. Do you have any plans for specific professional learning for your staff related to the use of the NEN Trial?

### 11.2 Teacher Baseline Interviews

1. Thinking back to how things were done at this school 12 months ago, can you please describe the use of the Internet (online services and contents) in the context of:
    a. professional tasks (e.g. planning, professional development)
    b. classroom activities (e.g. delivery of curriculum; student use)
    c. Please describe something that has been a highlight with regard to the Internet over the past 12 months.
2. Thinking of the current situation in your school can you please describe how the use of the Internet (online services and content) across the same categories has changed or is likely to change in the near future (in 2011)?
    a. professional tasks (e.g. planning, professional development)
    b. classroom activities (e.g. delivery of curriculum; student use)
3. Thinking in the longer term, (i.e. 12 months or more from now), can you please describe what you would like to change/additional things you'd like to do using the Internet (online services and contents) in those areas (these don't need to be planned – just aspirational):
    a. professional tasks (e.g. planning, professional development)
    b. classroom activities (e.g. delivery of curriculum; student use)
    c. If you are intending to do different things in the immediate or long term future, what is preventing you from doing them currently?
4. What sites or services are you accessing online?