

**ELECTRONIC ASSISTIVE TECHNOLOGY TOOLS
SUPPORTING STUDENTS WITH SPECIAL
EDUCATION NEEDS AT SCHOOL**

WHAT ARE THE ISSUES FOR TEACHERS?

MINISTRY of EDUCATION

e-LEARNING FELLOW

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Electronic Assistive Technology Tools Supporting Students with Special Education Needs At School.

What are the issues for teachers?

Chapter One

ABSTRACT:

The primary goal of the project was to identify factors related to 'issues' for teachers when a student comes to class with an electronic assistive technology device used to support their learning outcomes. The function of these devices is to augment or provide alternatives to overcome constraints with communication. A secondary goal formed with the intention of how to disseminate 'findings' in ways that will assist teachers and other education personnel to develop or improve the delivery of assistive technology services for students with special educational needs.

INTRODUCTION:

Background:

I teach in the special school environment at Kimi Ora School, Wellington. All the students have high or very high complex learning needs associated with motor and linguistic challenges. It was while working at Kimi Ora School that I became interested in the use of assistive technologies to support students not only for much of their daily routine but in the context of their learning programmes. It was in this setting that I was able to consider practical

methods and experience the challenges of using assistive technologies in ways that benefited the students that was within my own capabilities.

My research project focused on the electronic assistive technologies (eAT) used by students. Several of these technologies are identified as augmentative and alternative communication (AAC) devices. The emphasis is placed on the technology as a tool chosen to support expressive communication. As these tools become increasingly complex there is often a raised expectation by equipment manufacturers and suppliers that they will enhance whole of life (social and functional) activities. In educational settings, the view is similar where there is an expectation that the assistive technology device will support and ultimately lead to success for the student. The challenge for teachers is how best to use these tools to engage and motivate students to be active learners and therefore enhance access to the New Zealand curriculum framework, through written communication, augmented and alternative speech or both.

The project was carried out in two phases. In the first phase, a review was conducted of the national and international literature that addresses teachers' issues with the expectations placed on them when using ICTs. I compared these issues with issues that teachers' may have with electronic assistive technology devices (also referred to as an augmentative and alternative communication AAC device) when used to support a student's needs.

I sought material that:

- Identified barriers and enablers to teachers' ICT uptake

- Identified processes for professional development in ICTs
- Investigated the way in which eAT devices are used to support literacy development
- Increased an awareness of the value of expressive communication in school settings for academic, social and functional activities
- Demonstrated that technologically complex devices need to be accountable, through the IEP (individual education programme) process
- Supported the need for collaborative teams to maximize the device potential for the benefit of the student
- Identified stakeholders' policies and procedures when supplying devices for student use

The literature on policies and procedures for supporting students with special educational needs was almost exclusively based in New Zealand. Literature on eAT device use in educational settings on the other hand was almost exclusively internationally based. The field of outcomes research on high eAT device use is relatively new and scattered throughout literature.

In the second phase of the project, a questionnaire was sent to schools where electronic assistive technology (eAT) devices were used for written and/or oral communication. Fourteen responses were received from five different schools, from both the South and North Islands. There was one special school, two colleges, an intermediate school and a primary school. The colleges and primary school had units attached where the students using the eAT devices spent all or part of their school day. The devices were intended

to improve access for students' 'whole of life' communication, and were used in a range of settings besides the classroom. Students with either motor or linguistic challenges and in some cases with multiple challenges are supported by these devices. In the intermediate school the students were fully mainstreamed and used their devices to overcome barriers to learning, namely written communication.

The students were not required to directly take part in the questionnaire. Input was only from the teachers. The teachers were asked about general ICT skills, impact of the device on planning and teaching practice, operation of the device and student peer support with the device. Questions around the student's IEP were asked in relation to IEP planning and if the device was featured. Other questions related to collaborative team work, device functionality, technical support and training. Teachers were asked if they knew if the student was involved in the device selection and trialing process. These questions were asked of teachers to ascertain if the teacher was aware of the device's function as a tool for communication. Without indicating anything to the teachers it was hoped that they would seek this information from the student by way of the device.

The size of the sample was small. Initially I wished to use schools where students were fully integrated into the mainstream. To do this, a request was made to an organization that has a contract with the Ministry of Health to assess requests for assistive technology for students who could qualify for assistance with 'whole of life' communication. This organization would have

knowledge of where the students attended school as well as home contact. Initially there were delays due to large workloads and a shortage of available time to check their records. Eventually they could not assist as they received no response from their client's families and therefore could not release device details.

As a back up measure, the scope of the project had been widened to include the special school and special units attached to schools. In this setting all parents gave permission for their child's device to be highlighted in the project. All the teachers agreed to take part as well.

Context:

As a teacher of students with special educational needs, I incorporate assistive technologies into my teaching and learning programme. The students in the class rely on assistive technologies to provide access to most aspects of their learning environment. There is a greater need for access than for students without a disability. When assistive technologies are provided and appropriate applications are in place, the students had opportunities to become active participants in their learning. They demonstrated greater confidence and there was a sense of empowerment. Programmes were adapted to match student's needs by exploiting the potential of these tools to provide a rich learning environment. There was encouragement from within the school for training on assistive technology device functions and applications, as well as a network of staff that planned collaboratively to support the student using the device. I was interested to find out if other

teachers had similar support in this area as well as explore any issues they may have.

Definitions of key concepts:

Disability:

When finding a definition of disability for this project I chose keep consistent with terminology from New Zealand and in particular Special Education 2000 policies. There has been a move over the past two decades to consider barriers as external to the person rather than a description in medical terms of a person's condition. There is increasing recognition that physical disability is a complex issue, (McDonald, Caswell and Penman 2001, Welham 1997, Gething 1992) and is better considered in terms of a need (Ongoing and Reviewable Resourcing Schemes 2004¹, Wylie 2002). Disability should not be considered as a condition, barrier or a deficit of a person. ORRS does not differentiate between physical, intellectual or sensory disabilities (cited in Lets Talk Special Education². 2005, p12).

Attitudes and beliefs play a great part in how a person is treated and whether barriers are created (McMenamin, Millar, Morton, Mutch, Nuttall and Tyler - Merrick 2004, McDonald et al. 2001). McDonald et al. (2001) concluded that access to the activities of daily living and active participation in their communities should be a critical element in thinking about and defining physical disability.

¹ Ministry of Education (2004)

² Ministry of Education (2005b)

The need in the case of this research project is the extra support provided by electronic ATs to increase opportunities for access to the New Zealand Curriculum as well as social and functional activities by communication with others while a student with special educational needs attends school. Without the device, the student has been assessed as being at a disadvantage in relation to their peers. With the technical solutions a device can offer comes an assumption that quality of life is enhanced. Scherer (1996) contends that “people may reject an assistive device because it identifies them as having a disability” (p.xi)

and continues on to say:

”individuals’ emotional, personal, and social goals – were being neglected in favour of technical solutions to the needs and preferences” (p.xv).

Communicative Competencies and Literacy Development:

Communication is a two-way process which consists of a number of interactions. For this to occur a person must have an understanding of the language forms used by the community in which the person lives. The skills required to be competent in literacy are “writing, speaking, gesturing, listening, reflecting and thinking” (Central Region Special Schools, 2005, p.1) and an instinctive need or desire to communicate (Beukelman & Mirenda, 1998).

Research on interactions by Light (1988 cited in Beukelman & Mirenda, 1998) identified purposes for communicative interactions e.g. communication of needs and wants, information transfer, developing personal relationships and social conventions. Light’s research indicates effort seems to be placed on

meeting needs and wants with social closeness and etiquette not being understood.

Teachers' awareness of the:

“communicative interactions and the shared understanding of the reciprocal and interpersonal roles that each partner plays assisting learners to participate in interactions as both successful initiators and responders” (Siegel-Causey & Guess, 1989, p10)

is crucial to the development of strategies and techniques for teaching literacy skills. This contribution is fundamental to the development of all students' literacy skills.

What are the solutions for those students attending school with manipulative and motor challenges that make holding a pen/pencil a challenge as well as lack of fluent speech? Downing (2000) suggests that when everything has a name and speech being the preferred method to identify and label, these students require additional support in their development of literacy. How does a student express thoughts when they want to communicate without access to assistive technology of some kind? Maro & Tufte (2000) raise the issue from a teachers point of view. How do teachers encourage the process of communication (with or without technology) within the daily classroom programme?

Technology:

Technology as defined in Technology in the New Zealand Curriculum³ (1995) is described as:

“a universal and age-old human activity. People have always adapted resources to meet their needs...” (p6)

and for people who rely on technologies to be adapted to meet their basic and functional needs there is a greater expectation that:

“the technology available today to empower and enhance the lives of disabled people is extensive, varied, exciting stuff – but there are no magic wands here. Nothing removes the disability itself, and the real solutions take flexibility, patience and some effort....even after the right technology is chosen” (AbilityNet 1998 cited in Florian, 2004, p95).

Assistive Technology:

The Ministry of Education’s Assistive Equipment Guidelines (2002)

determines that,

“assistive equipment embraces a wide range of equipment, from what is referred to as "low-tech" or "light-tech", through to "high-tech. In the education context these terms cover a range of devices from a pencil grip to a complex, especially modified computer-based system” (p.3).

These guidelines continue to clarify that the:

“use of assistive equipment supports the Essential Learning Areas and Essential Skills of The New Zealand Curriculum Framework. Assistive equipment is neither an end in itself, nor an alternative to other teaching and learning strategies. It is simply a tool” (p.3).

These tools are used to enable individuals to perform tasks that are difficult or impossible due to disabilities i.e. a device can aid in removing a participation

³ Ministry of Education (1995)

barrier to learning created by access (Florian & Hegarty 2004, Thorkildsen 1994).

Reed (1998 cited in The Assistive Equipment Guidelines Revised⁴ 2002) clarifies the terminology,

“assistive equipment is sometimes called specialised equipment or assistive technology and can be described as “simply anything that can help a person with disabilities do something they cannot do, or help them do it better than they can without it” (p3).

Reed’s above quote has evolved into,

“assistive technology is any tool or device that a student with a disability uses to do a task that he or she could not otherwise do without it or any tool the student uses to do a task more easily, faster, or in a better way” (Reed & Lahm. 2005 p.1).

In this way assistive technologies emphasise functional outcomes over every other consideration. US Federal definition of the term assistive technology considers not only the device but assistive technology as a service. It is defined by the Technology-Related Assistance Act of 1988 (Tech Act), Public Law 100-407, and the Individuals with Disabilities Act of 1990, (IDEA), P.L.101-476. Assistive Technology Device - "any item, piece of equipment, or product system, whether acquired commercially off-the-shelf, modified, or customized, that is used to increase, maintain or improve the functional capabilities of individuals with disabilities.” Equally important in the process of identifying and selecting appropriate assistive technology is the element of Assistive Technology Service, defined in the above-referenced legislation as “any service that directly assists an individual with a disability in the selection,

⁴ Ministry of Education (2002)

acquisition, or use of an assistive technology device” (Cook & Hussey, 2002 p5).

The devices referred to in this project, are of the “high-tech” assistive equipment or assistive technology as it is more commonly referred to. They are the technologically complex devices that give access to and enable a student with high and complex learning needs to have greater involvement in the classroom. Communication for students with linguistic and motor challenges requires augmentation or assistance in some way. The assistive technologies used as communication options are referred to as augmentative and alternative communication devices and can be used on a computer for written communication or are speech generated device and are tools designed as a means of expression. (Cook & Hussey 2002).

Assistive technology applications in the classroom include both hard and soft technologies. Odor (1984, cited in Cook & Hussey 2000) defined hard technologies as:

“the readily available components that can be purchased and assembled into assistive technology systems. The main distinguishing feature of hard technologies is that they are tangible. On the other hand, soft technologies are the human areas of decision making, strategies, training, concept formation, and so on” (p6).

Bailey’s, (1989 cited in Cook & Hussey) writings on soft technologies explains that they are generally captured in one of three forms: (1) people, (2) written, and (3) computer,

“These aspects of technology, without which the hard technology cannot be successful, are much harder to obtain” (p6).

Practitioners generally agree that the success of assistive technologies depends on a ratio of 10 to 1 (soft to hard technologies). Blackstone (1990, cited in Cook & Hussey) adds to this discussion by indicating that funds allocated by schools are likely to be earmarked for hard rather than soft technologies (p459). A serious repercussion of this imbalance of support for the human factors of assistive technology services is the high rates of abandonment of assistive technology equipment.

Phillips & Zhao (1993) carried out research into assistive technology abandonment (electronic devices for communication and writing included) by investigating the reasons for the abandonment, with most rejections occurring within the first year and in particular the first three months. One of the factors from the research was an indication that the user needed to be consulted more in the device assessment process. Scherer (1996) maintains that,

“the best use of technologies is achieved by matching devices to persons, not vice versa, and the use of a “person first” perspective. Doing otherwise invites the avoidance or abandonment of devices.”
(1996, p.xiv).

Augmentative and Alternative Communication (AAC):

An AAC system involves multiple communication techniques - a device is only one part of an AAC system (and generally referred to as an AT tool). AAC is more commonly considered as the process or activity (Lloyd 2004, Thorkildsen 1994). For the purposes of this project I refer to the AAC device

as electronic assistive technology (eAT) and use the term AAC device when it is referred to as such in the literature. AT is the tool with AAC being the process.

Communication may occur through spoken or other modes and individuals requiring AAC interventions need some form of 'other mode' as an adaptation to efficiently and effectively engage in a variety of interactions namely assisting with speaking and/or writing (Beukelman & Mirenda 1998, Lloyd 1997). The American Speech-Language-Hearing Association, (Mirenda, 1989) identify the primary purpose of any AAC endeavour is to,

“compensate (either temporarily or permanently) for the impairment and disability patterns of individuals with severe expressive communication disorders” (p107).

For some individuals the solution is an electronically sophisticated device (aided communication), that generates speech.

“One of the most powerful tools available to AAC users is literacy. It allows AAC users to demonstrate often otherwise hidden competencies and to communicate precisely what they are thinking” (Koppenhaver 1990 cited in Slater, 2002 p.1.).

The choice of vocabulary to be included in an AAC system is important to success (Hill, n.d.). She continues to discuss the AAC values where AAC users indicate that the most important things to them are saying exactly what they want to say and saying it as fast as they can. The technology can only provide the access, what the student also requires is to be actively engaged and continue to develop their knowledge base.

CHAPTER TWO

NEW ZEALAND GOVERNMENT POLICIES ON ASSISTIVE TECHNOLOGY IN THE EDUCATION SECTOR

INTRODUCTION: Definitions and policy

SE 2000 is the basis for the allocation of services and resourcing for special education (Lets Talk Special Education⁵ p21). The Special Education Policy Guidelines⁶ define special education as:

“the provision of extra assistance, adapted programmes or learning environments, specialised equipment or materials to support children and young people with accessing the curriculum in a range of settings”
(p1).

The specialised equipment referred to in the Policy Guidelines includes the e-At devices highlighted in this research project.

Funding and training of assistive equipment in New Zealand

A student is supplied with an item of assistive equipment after a comprehensive assessment has been completed. An item of equipment is generally funded from one of the Government agencies being the Ministry of Education, Ministry of Health or Accident Compensation Corporation (ACC). Each has specific criteria regarding supply.

Protocols have written between the Ministries of Education and Health and between the Ministry of Education and ACC.

⁵ Ministry of Education (2005b)

⁶ Ministry of Education (2003b)

The Operational Protocol on Assistive Equipment Services and Environmental Support Services for School Students with Disabilities. Between the Ministry of Education and the Health Funding Authority (Disability Support Services) became effective in November 1999. The purpose of this protocol is to

“clarify respective funding roles and service provision responsibilities specifically for assistive equipment services and environmental support services for school students” (Specialised Assessor Equipment Manual and Protocol, 2000 p.1.).

This protocol further defines each stakeholder’s responsibilities as:

“the Health Funding Authority is responsible for purchasing environmental support services to meet everyday disability support needs of children” (p.5).

and

“The Ministry of Education is responsible for funding the purchase of equipment which assists in removing barriers to education achievement for school students with special education needs (p.5.).

To determine funding responsibility Health is responsible if both living and learning needs are met by the equipment. Education is responsible if the principal need is to remove barriers to educational achievement by the supply of an item of specialized equipment. Put more simply, if the device is for ‘whole of life’ activities then the responsibility falls within the Health sector to fund the equipment. Ministry of Education funding covers equipment used at school and on occasions when it is agreed that the student’s learning programme should continue outside school hours. In most cases the complex assistive equipment comes in the form of an electronic notetaker supporting written communication.

The Health sector (Enable Funding and Accessable) of the Equipment Manual identifies:

“3.19 Communicate the expression of core needs and feelings: Equipment may be provided to enable a person to compensate for difficulties with functional communication by the use of augmentative solutions” (p.5).

This clarifies that the purchase and supply of an electronic assistive technology device that either augments or provides an alternative form of communication device in most instances will come from the Health sector, not Education.

A student who has a disability as the result of an accident and who have been accepted as clients of ACC are not eligible for funding support for equipment from the Health Funding Authority, (Equipment Manual 2000 p5).

“ACC funds assistive equipment which supports rehabilitation”
(Assistive Equipment Guidelines⁷, 2002, p.17).

The Operational Protocol between the Ministry of Education and ACC (2000) applies to school students who have cover under ACC legislation and who have special education needs, and is

“for specialist services which are not available from within SE 2000 initiatives” (p1).

Ministry of Health - policy on assistive technology device training:

The Specialised Assessor Equipment Guidelines clarify payment for training in section 6.5:

⁷ Ministry of Education (2002)

“training will only be purchased in the use of complex communication and information processing equipment. Initial training only will be approved. Training the person to use equipment is the responsibility of the supplier and/or the Specialised Assessor. The Specialised Assessor must ensure that the person and their caregivers (paid and unpaid) are trained in the use and care of the equipment.” (p14).

AAC devices used by students in the educational environment (as part of communicating the expression of core needs and feelings) have been provided by an assessment team. A speech language therapist assigned to the student is generally the person who receives the identified initial training on the device along with the student. It is along this chain of who should require training that the lines are blurred. Under the Ongoing and Reviewable Resourcing Schemes ⁸ the device when used at school is the responsibility of the school.

Ministry of Education - policy on assistive technology device training:

While it is the role of the school to ensure all staff are skilled in the use of technologies found in all schools e.g. computers (Digital Horizons⁹ 2003a), the Special Education Grant provides support for the student with special educational needs. ORRS provides specialist services for students in this scheme. A specialist teacher (0.1 or 0.2 position) is expected to have a role as key support in the assessment team for assistive equipment.

⁸ ORRS Ministry of Education

⁹ Ministry of Education (2003a)

These policies for training and support are for equipment assessed as aiding the overcoming of a barrier to learning as identified under the Ministry of Education provided assistive equipment.

There is a legal requirement of schools to identify students who have special needs and develop and implement teaching and learning strategies to address the needs (National Administration Guideline¹⁰ (NAG)1993). Group Special Education have in place training and support for students identified as needing additional assistance with overcoming barriers to accessing the curriculum (Ministry of Education 2003b). It is difficult to identify who is responsible for the training and support for teachers where the assistive equipment is funded from the Ministry of Health. In fact it seems to fall into a vacuum.

The IEP Guidelines¹¹ (1998) under the section Use of Equipment, makes no distinction of the equipment source but identifies the need that,

“for some students with special educational needs, access to equipment (also known as assistive technology) is an essential element in their IEP. When selected and used effectively, equipment contributes to learning outcomes.”

Assistive technology is measured in its assessment to fit a student’s needs and is accounted for in a student’s Individual Education Programme (IEP).

¹⁰ Ministry of Education (1993)

¹¹ Ministry of Education (1998)

CHAPTER THREE

Expectations of teachers with ICT use in the classroom and the issues for teachers that these expectations may generate.

Will the expectations and ISSUES for electronic assistive technology devices be the same as for ICTs? I suggest YES, but is there more?

Deciding the possible ISSUES:

The initial search through the literature was to identify expectations of teachers using ICTs and then determine the issues teachers may have with these expectations when integrating ICTs into teaching and planning for the benefit of all students in the general classroom environment. This led me to ask “what are the effective teaching practices when using ICTs and what constitutes ICT professional development for teachers?” Once identified, I then looked to see if there would be common themes with the expectations and issues for teachers of students who need to use electronic assistive technologies (eAT) to access the curriculum.

I searched for literature looking for electronic assistive technologies (eATs) and AAC devices used in school environments to determine what the expectations and issues would be for teachers.

What does the literature consider is effective teaching practices integrating an electronic device into the classroom and a student’s learning programme. Finally I looked for evidence of ICT / eAT professional development. This

would lead me to question if the literature would mirror the issues for teachers using ICTs in general and would there be additional issues?

General ICT use in the classroom:

Much has been written on the expectations of teachers' use of ICTs when working towards integrating these ICTs tools into teaching and learning for the benefit of students (Scrimshaw 2004, Barnett 2003, Digital Horizons 2002, Gray 2002, Selby 2001, Lai 1999). Scrimshaw (2004), Barnett (2003) and Gray (2002) also highlight the importance of the time factor to not only learn new technologies but that there is a need to have time for planning and preparation to effectively integrate ICTs across the curriculum. Issues with ICTs can be divided between the technical aspect of the equipment and the human factors of professional development (Cook & Hussey 2002).

Literature suggests that professional development around the pedagogy of ICTs and eAT device use is very similar with barriers highlighted as attitudes, beliefs, practices, knowledge and skills development (Hegarty 2004, Grassman 2002, Lai 1999, Beukelman & Mirenda 1998). An exception to this is the responses from teachers within the Ministry of Education's report on 'What makes for Effective Teacher Professional Development in ICT' (Ham, Gilmore, Kachelhoffer, Morrow, Moeau and Wenmoth 2002). Effort has been made to address the hard/soft technologies imbalance using ICTs in general education. When asked about the effects of the ICTPD programmes, teachers responded positively with regard to views on working with ICTs and how they were used with their students. Teachers' reflections recorded words such as

“awareness”, “confident”, “less frustration”, “effective” and “more committed” (Ham et al 2002). The most issues these teachers had were with dealing with equipment breakdown / technical problems and a lack of time to continue with the need to up skill.

Factors identified as enabling confident ICT use by teachers (Scrimshaw 2004, Gray 2002, Dawes 2001), are support with technical problems such as unreliability or expensive repairs, as well as collaborative support from senior management and teacher networks to develop confidence in developing best pedagogical practices that satisfy the expectations placed on them. Teachers’ reflective practice and understanding of learning should in some cases assist them use ICTs more effectively in their teaching and learning programmes (Hasslebring 2001).

Barriers and enablers to ICT uptake. Teachers’ relationships with technology:

- ownership of up to date technology – if full access to computers then teachers become confident in use
- sense of purpose - educationally effective
- adequate training – need to teach how to use it
- realistic time management
- inclusion in supportive community of practice

These factors are seen as overcoming constraints to ICTs uptake (Dawes 2001). He continues to point out that:

“the number of schools using ICT to good effect at the end of last century could be seen as a tribute to the persistence of teachers in spite of adverse conditions” (p.62).

Similar enabling factors are considered necessary when including a student’s electronic assistive technology device in the classroom programme (Hasselbring 2001).

Electronic assistive technologies, augmentative and alternative communication (AAC) devices included:

The expectations from within New Zealand for teachers when a student uses assistive technology in the high technology classification come from a variety of sources. There is an expectation that the teacher uses pedagogical skills to include the student (IEP Guidelines.¹² 1998) and that professional development for regular and special educators is provided (Special Education Policy Guidelines 2.4.¹³ 2003b). The IEP Guidelines - Use of Equipment also state that:

“equipment provision on its own does not lead to learning gains. Learning outcomes are only achieved when the student and their support team have been trained to use the equipment and supported to incorporate the use of the equipment in the overall education programme”.

These policies for training and support are for equipment assessed as aiding the overcoming of a barrier to learning as identified through the Ministry of Education provided assistive equipment.

¹² Ministry of Education (1998)

¹³ Ministry of Education (2003b)

A review of the literature indicates issues for teachers using computer application with students with disabilities are in the areas of technology training and support. Without this, barriers to utilization are reported (Behrmann 1995, Hutingger, Johanson, & Stoneburner 1996, Lesar, 1998 cited in Judge 2001). Judge continues to identify the barriers that teachers have when using ICTs are the lack of time, training and technical support to not only use the technology but also effectively integrate the tools into the curriculum.

Heggarty (2004) and Judge (2001) comment that the development of skills in ICTs for staff, in practice is a difficult thing to do. They consider that it is equally difficult for teachers to feel that they have a key part to play in developing the scope and quality of the ICT provision in their school when working with student's with special educational needs.

Effect of technology on all learners:

Schools report that technology is having a positive effect on children's learning and their perception of themselves as learners, which is why children with disabilities benefit from the use of assistive technologies (Isakson 2005, Hauser 2001). The application of assistive technologies is dependent on the knowledge, skill and inventiveness of the teachers who use what they have learned from higher education, their teaching experiences, and their attendance at continuing education programs and in-service classes (White, Wepner & Wetzel 2003, Zabala 2002, Hasselbring 2001, Blamires 1999)

Are the issues similar or different for teachers when the ICTs are electronic assistive technologies?

White, Wepner & Wetzel (2003) identified that there is an ever-increasing population of students with special educational needs who desire a full education and need technology to assist them in achieving their goals. They add that the education community at large needs to be committed to assist these students, and teachers must be better prepared to use available assistive technology resources.

If there are issues around the eAT device use for a teacher could it be that there is a predetermined view of its usefulness? Put another way is there a lack of understanding for the initial reason for the device being matched to the students needs? (Blamires1999). Having knowledge or at least an interest in the reasons by being a member of the student's IEP team should make a difference (Schlosser 2001, Soto 2001, Beukelman & Mirenda 1998). White, Wepner & Wetzel (2003) explain that:

“when a student's Individualized Education Program requires assistive technology equipment and software, a teacher must know its application and use. Time is an important issue; any delay between acquisition of technology and its actual use by the student reduces their learning time and enthusiasm” (p.2).

Hasselbring (2001) also discusses the importance of time in a student's learning programme. He highlights the issue of learning with understanding and how it develops from a base of factual knowledge. To learn complex ideas and concepts takes time and repetitive practise. He suggests that teachers have to be more realistic about the time it takes to learn with

understanding. Learning the literacy skills to effectively use a communication device is a process that takes considerable time (Beukelman & Mirenda 1998).

Lilley (2004) also suggests that when teachers focus on a computer as word processing and a tool for presenting information, they do not have the depth of understanding that ICTs (eAcs) are central to many special needs pupils who have little or no expressive language. Lilley (2004) adds that knowledge of the function of the technology to be used to introduce ways of using augmentative and alternative communication approaches, facilitate social communication and interaction, will help include pupils in the wider community. However, the results from a survey of teachers by McGhie-Richmond & McGinnis (cited in Schlosser, McGhie-Richmond, Blackstein-Adler, Mirenda, Antonius & Janzen 2000) seem not so positive when they found that in educational settings:

“children who use AAC systems have restricted opportunities and access to academic activities in the classroom” (p.33).

Training of a team - Professional development:

The Enhancing Effective Practice in Special Education Pilot Study¹⁴ (2004) identified that teachers need to have strong pedagogical practice and support to be effective in their teaching and learning programmes when meeting the needs of their learners. To successfully integrate ICTs into all facets of learning requires a whole school commitment and is the responsibility of every member of the staff (Lilley 2004). Teachers are essential to the achievement

¹⁴ Ministry of Education (2004)

of a good education, but there has been a change in the role of the teacher. What has changed is the increase of others who facilitate in the role of learning, from teacher aides, specialist teachers through to adults working with students on special projects that are supported by the culture of the school. Teachers required to work with others require collaborative skills with a variety of communities (CSUN 2004, McDonald et al 2001). In the classroom situation this includes the opportunities for peer tutoring (Davis 2001).

The Ministry of Education's policy on training in The Assistive Equipment Guidelines (2002) highlights expectations by identifying several success factors that benefit a student using assistive equipment. Pertinent to this project are the factors where:

“the students and their support team are committed and motivated.”
(p.7).

Among those identified as members of the support team are the specialist teacher, teacher, and teacher aide. Also pertinent is:

“all key support people are trained in how assistive equipment is used”
(p.7).

Continuing with training in the Assistive Equipment Guidelines¹⁵ (2002) is the section on who should be trained:

“training should be provided to all those who support the student, including parent(s), peers and school staff. It is important that the class teachers (and specialist teachers for students in the Ongoing and

¹⁵ Ministry of Education (2002)

Reviewable Resourcing Schemes) are skilled in the effective use of the assistive equipment so they are able to incorporate its use into their whole-class planning. It is not considered satisfactory to train just the teacher aide” (p.22).

Feedback from teachers in the recently published Local Service National Profiling National Report ‘Lets Talk Special Education’¹⁶ (2005b) indicate they:

“want more training in special education and in how to include students with special education needs” (p.63)

and

“specific training for teachers and teacher aides especially in adapting the curriculum and the classroom environment” (p.74).

Training teachers, to realize the potential for AAC and assistive technologies is part of the process of developing knowledge and understanding of literacy (Hasselbring 2001). Any form of training development in literacy learning and other curriculum areas is essential and needs to be conducted in a meaningful manner (Grassman 2002, Soto, Muller, Hunt & Goetz 2001, Schlosser 2000, Thokildsen 1994).

Collaboration and support for teacher:

A student needs an IEP (Individual Education Programme) when extra assistance, adapted programmes, learning environments, specialized equipment or materials to support them in special or regular education settings may be required. Planning is required to provide guidance for a student and over the time spent in school a large number of people from a

¹⁶ Ministry of Education (2005b)

variety of organizations will be required for input into maintaining the student's identified learning outcomes (IEP Guidelines¹⁷ 1998). Students using high performance AT devices require support from a team who need to integrate sometimes more than one complex technology to participate in the classroom. (Grassman 2002, Soto et al., 2001, Zabala & Carl 2003). The core IEP team consists of the student, parent/caregiver and classroom teacher. Others may include family, whanau support, specialist teacher and other school personnel, specialist service provider, therapists (speech, physio and/or occupational) and teacher aide.

Wylie (2000) in her review of Special Education 2000 commented that professional development for teachers was an essential component for improving access to education for students with special needs. One issue she highlights is:

“research on professional development suggests that the most effective kind comes when school staff are supported over time, identifying their own priorities, getting useful advice and resources from the professional development team, trying them out, discussing them with the professional developers, making further changes etc” (p96)..

The aim of an IEP team is to work as a group with the student's goals as the common purpose and the educator playing a primary role (Zabala & Carl 2003 Lahm & Sizemore 2002). Lahm & Sizemore (2002) make the point that working as a team is generally considered the ideal method of decision making but differences between team members training and philosophies impact the decisions made by the team and often the team approach to

¹⁷ Ministry of Education (1998)

assistive technology planning and implementation may not be consistently put into practice.

Team Dynamics: One framework that highlights developing and maintaining a cohesive team is the Fundamental Assessment Process (FAP) (California State University 2005). Step four of the framework is titled Develop and Nurture Team Members and discusses the importance of building relationships, trust and developing a better means for communication. Consideration should also be given to conflict resolution. Without a cohesive team the student's device and applications to integrate it into the student's programme may not be as efficient as it could be.

Beukelman and Mirenda (1998) describe team dynamics in more depth. They suggest that when a group comes together for a common purpose such as supporting an AAC device use in the school environment, barriers to learning are discussed. Barriers can be divided between access and opportunity factors. Access barriers are directly related to the student whereas opportunity barriers are imposed by other persons. Opportunity barriers fall into four categories including practice barriers, attitude barriers, knowledge barriers and skill barriers. From this a Participation Assessment Framework (PAF) has been developed to guide decision making and AAC intervention. Schlosser (2000) identifies the PAF as a:

“tool for supporting a team's coming to consensus about the student's level of integration and participation. It then provides a baseline from which the team can agree upon goals and expectations” (p.34).

Practice barriers are not policies but are defined as procedures or conventions common in the school. Attitude barriers occur when a person presents a barrier to participation (reduced expectations). Knowledge barriers can be viewed as a lack of information by a member of the IEP (or school) team resulting in limited opportunities for participation (instructional strategies and resources). Skill barriers can be identified as the inability to implement knowledge.

Suggestions to overcome opportunity barriers are training in device use and applications, workshops and mentoring using adult learning strategies (Hasselbring 2001, Schlosser et al 2000). When identifying that the above strategies are some of the methods necessary as professional development components for effective collaboration Schlosser et al (2001) wrote:

“workshops alone do not result in a reduction in barriers or an increase in participation” (p.35).

But a fear factor still exists among teachers regarding the implementation of assistive technology (Blamires 1999). It was noted in White, Weper & Wetzel’s (2003) survey that once used, assistive technology is recognized by teachers as a positive educational aid in the classroom.

Higher Education's Role / Pre-Service Education

Teachers, especially those in the beginning stages of their careers, have many demands on their time. White, Wepner & Wetzel (2003) and Hasselbring (2001) indicate that future teachers need to be provided with a basic understanding about assistive technology and augmentative and

alternative communication devices and their applications in literacy development. Internationally some universities are realizing this as they begin integrating assistive technologies into their education courses. Although assistive Technology is not specifically highlighted, parents and educators in the Lets Talk Special Education National Profiling Report¹⁸ (2005b):

“believe all people who deliver or administer special education would benefit from more training. They think this training should be a requirement-not an option-at least at during pre-service training” (p.78).

“Many parents believe principals, teachers, resource teachers, specialists and teacher aides don’t get the right training both pre-and in-service” (p.71).

Often the learning programme for students with special educational needs requires modifying in some way. Incorporating the device and understanding the purpose for the device is an integral component of curriculum adaptation Tinker (2001).

Measurement of service and ongoing performance of device:

Thorkildsen’s (1994) research on the quality of assistive technology devices reports that manufacturers have a responsibility for:

“service, training and ongoing performance evaluation” (p50).

The majority of eAT devices are manufactured internationally. New Zealand’s geographical distance from these manufacturers and suppliers requires

¹⁸ Ministry of Education (2005b)

agents to operate in New Zealand on their behalf. This can cause issues for students and their teachers when a device requires repairs or maintenance and is not available for extended periods of time.

Chapter Four

Methodology:

The research project has been written as a result of undertaking the following activities.

1) Reading a wide range of current literature on:

- ICT professional development for teachers
- electronic assistive technologies including electronic augmentative and alternative communication devices used in school situations
- Collaborative teamwork and planning required to support a student using an AT device
- the relatively new field of measuring assistive technology outcomes

The literature was viewed along content lines and reviewed at face value which makes this project more subjective than objective, and

2) Conducting a survey of teachers' opinions on integrating an electronic AT device into the classroom programme and any issues they have with the device. Data collected was a combination of qualitative and quantitative. There was more emphasis on the qualitative data as this enabled interpretation of what the teachers were saying.

Research in the field of electronic assistive technologies is relatively new. A portion of the course requirements for the Assistive Technology Applications Certificate Programme (ATACP), administered by California State University at Northridge (CSUN) was an investigation into policy, practices and

outcomes measurement of AT devices. This course comprised of 72 hours of on-line work, an 8 hour project as well as 16 hours face to face class time. Readings on current research were provided with many bearing relevance to this research project. The CSUN conference in March 2005 also provided opportunities to attend workshops on the dissemination of research methods in relation to electronic communication devices as well as assistive technology pedagogy related to students in educational settings.

Relevant literature was sourced from Christchurch College of Education library, Massey University library and the library attached to the equipment supply company Enable (Ministry of Health) in Palmerston North. The internet was another source used. Originally the ERIC and Power Researcher search engines were used with adequate material provided but mostly these articles were purchase only through Taylor Francis Ltd. UK. The University & Research Directory (www.accinstitute.org) criteria proved to be too involved to provide fruitful searching. The most productive search engine was Google when specific key words were used. Articles and research findings were either delivered at conferences or published in the Journal of Special Education Technology (eJournal) www.jset.unlv.edu and www.thejournal.com T.H.E. Journal ONLINE (Technological Horizons in Education).

The questions for the survey were based on previous surveys that most consistently identified issues found in educational settings, in relation to communication devices, their integration into classroom settings and collaborative teamwork. Thorkildsen's Research Synthesis on Quality and

Availability of Assistive Technology Devices (1994) was where I began searching for indicators with a relevance to education that would provide a starting point for the creation of the questionnaire.

Research Sub Questions:

1. How do teachers currently rate their overall skill levels in ICTs in general as well as the use of eATs in their teaching practice?
2. To what extent is the teacher involved in the process of planning for equipment use in the student's IEP?
3. Do teachers believe the device creates any constraints in meeting learning outcomes for students with special educational needs in their classrooms? Are there any enablers to learning?
4. Is there an understanding of the expressive communication value of the eAT to meet the students' needs?
5. Who provides the assistive package and on-going support for both the teacher and the student?

Sourcing the devices:

The project was multisited, dependent on where the student attended school. The geographical region for the project ranged from Christchurch, Wellington and Wanganui. Fourteen questionnaires were returned from teachers working in mainstream and special school classrooms where students were assessed as having a need that was supported by an electronic assistive technology device to provide augmentative and alternative communication.

It was hoped that the initial information regarding the identity of the schools where the devices were used would come from the various stakeholders providing electronic assistive technologies. Agencies identified were Group Special Education (Ministry of Education), Talk Link Wellington, Enable Ltd (Ministry of Health) and Accident Compensation Corporation. Contact was made with all except ACC to release information of devices and the schools they were in. Of the agencies contacted only GSE was able to provide relevant information.

Questionnaire:

The purpose of the questionnaire was to give teachers an opportunity to make suggestions and possibly recommendations regarding their understanding of what is expected of them with their involvement in incorporating a technologically complex device that supports the learning outcomes for a student with special educational needs.

Several of the questions were designed to lead the respondent into thinking about the purpose of the device as well as considering the practicalities of the device function. Often an eAT that is assessed as an ideal match with the student comes at a cost in terms of the space it takes up, maintenance and time to set up and programme various functions.

Before I designed the questionnaire I read articles on the subject (Bryman 2001, Bell 1999). The majority of the questions required teachers to respond with a yes or no. Additional space was allocated for comments.

The questionnaire was divided into five sections:

- Teachers' perceived ICT skills in general. Training on device applications. How the device impacted on the teacher's practice and how it was applied to assist in the student's programme. Peer support for the student and the device.
- the effectiveness of the original technology selection to meet IEP goals as well as collaborative planning for device integration
- device outcomes in relation to enhancement of the students learning programme and impact on classroom planning.
- The way the student uses the device, issues around compatibility and student involvement in the device selection.
- Knowledge of the supplier of the device, specific device training and follow up support, device reliability and opportunities for feedback was also collected. This information is important as assistive technology devices are funded and supplied by different agencies depending on certain criteria.

(see Appendix 1)

It was hoped that the teachers would identify constraints and enablers with their experiences when working with electronic assistive technologies as well as:

- identifying processes for professional development in ICTs
- investigating the way in which communication devices are used to support literacy development
- the value of communication devices in school settings for academic, social and functional activities

- accountability of technologically complex devices, through the IEP process
- the need for collaborative teams to maximize the device potential for the benefit of the student
- identifying stakeholders' policies and procedures when supplying devices for student use

In keeping with Beukelman & Mirenda's (1998) Participation Model a number of questions were chosen to reflect teachers' opinions on the device assisting in overcoming barriers to access. I was also interested to see if any of the opportunity barriers / enablers would emerge (skills, beliefs, knowledge and practices) and shaped these questions to give teachers opportunities to comment on each of their responses.

1. Teacher ICT / electronic assistive technology (eAT) use:

The questions in this section related to perceived skill levels using ICTs as well as the AAC device. The amount of training on the device use including possible programming if appropriate was requested as well as any training on adaptations to lesson planning to incorporate the device were asked in this section. Literature on issues for teachers was used as the reference point for the questions¹⁹. The last question of this section asked if peer involvement with the student and the device was encouraged IEP Guidelines²⁰ – Designing the Programme and Provision of support personnel. The reason for

¹⁹ Enhancing Effective Practice in Special Education, MoE 2005, Ham et al. 2002, Assistive Equipment Guidelines p23

²⁰ Ministry of Education (1998)

including these questions was that inclusion does not mean only access to schooling but being engaged as well (Blamires 1999).

2. The student's IEP and electronic assistive technology (eAT) device:

These questions were created from the Ministry of Education's IEP Guidelines. Use of Equipment in the Designing -The Programme section refers to the close link between equipment use and the IEP process, as well as the support team meeting to plan strategies to incorporate the use of the equipment in the overall education programme.

3. Classroom programme:

The sections, Implementing the Programme and Reviewing and Evaluation from the IEP Guidelines were used along with literature on student use of AAC device use in general education (Isakson, 2005, Soto 2001, Downing 2000, Maro & Tufte 2000).

4. Student use of electronic assistive technology (e-AT):

Questions on device input, trialling and feedback from the student to the teacher were considered important as literature suggests consumer satisfaction goes a long way to preventing abandonment of the device (Riemer-Reiss 2000, Beukelman & Mirenda 1998, Scherer 1996).

I also wanted to see if the teachers answering the questionnaire would understand that the student was assessed as having the device to support their communication needs and in particular expressive communication

needs. Would teachers ask the students these questions and expect them to answer by way of their device if necessary?

5. Support Package and Training:

Of the issues that were identified in the literature review was the desire to receive training and support (Gardner 2005, Ham et al 2002). There is a concern that on average one third of all devices (eAths included) are abandoned, mostly within the first year and especially within the first three months (California State University – Northridge (CSUN) 2004, Phillips & Zhao 1993). Device effectiveness should also be accountable and effort is being made to encourage measuring outcomes on the device rather than assessing the students ability to use the device once the successful application has been made (DeRuyter 1997).

Piloting the Questionnaire:

Various staff at Kimi Ora School volunteered to pilot the questionnaire and provided feedback on aspects of ambiguity and relevant value. Two of the staff were the school's occupational therapist and speech language therapist. The occupational therapist has knowledge of device functions and offering access suggestions. The speech language therapist had pre-service training in the process of augmentative and alternative communication as well as experience in assessments and training students and staff on device functions. They both work in the educational setting and could offer suggestions from the therapist point of view. It was essential to have their input in the formatting of the questionnaire.

Distribution of the Questionnaire:

The initial method of sourcing the devices was through TalkLink Wellington. This organisation provides “specialised assessment to people with disabilities” (Anonymous). A meeting was held to explain the reasons for the research project and to request assistance with the device identification.

While waiting for assistance in the sourcing of these devices I was aware of the time factor that was required to analyse the data from the questionnaires once they were returned to me. My original plan was to gather data from teachers who used eATs in mainstream schools, with a preference of looking at rural schools. The delay in sourcing these devices required a change in plan. I made contact with local Wellington schools where I knew of students using electronic assistive technologies to include the device in the project.

I had knowledge of six eAT devices in the school where I was based as a teacher. Other devices that were identified as suitable for the questionnaire were traced through a workshop on an eAT device to overcome barriers to written communication run by GSE for school support staff, personal knowledge of several schools where eAT devices were supplied to students and the informal network of teachers who meet at conferences.

A list was drawn up of the devices and the schools in which they were being used. I continued to aim for a range of eAT devices used for written and augmented communication. I approached each school in person to introduce myself and make an appointment time to explain the reasons for the project.

Meetings were held with teachers, a special education coordinator or the teacher involved in the 'special needs unit'. Permission from school principals was also sought at this point.

Contact with TalkLink Wellington was maintained to check their progress with sourcing and seeking permission from families for the devices to be used in the project. With time continuing to be an issue and only five teachers involved, I contacted schools from outside the Wellington region. Christchurch and the Lower half of the North Island were included in the project. Wanganui was as close as I could get to a rural area. After e-mail and phone contact was established I visited the Christchurch school to explain the project and leave several questionnaires with the head of the special needs unit. A deputy principal at the Wanganui site offered to coordinate the questionnaire delivery.

The questionnaire package was hand delivered to the schools in the Wellington region. I maintained either telephone or e-mail contact with all the teachers or special needs co-ordinators. The questionnaire package contained an explanation as to the aims of the project, consent forms for parent(s); school principal and teacher (see Appendix 2). The package also contained the questionnaire and a self addressed and stamped envelope for ease of return. The date I delivered or mailed the package was recorded as was the school name and address. One package was received within a fortnight. I had given a three week period before I decided to gently suggest I needed the questionnaires returned.

When I received the questionnaires they were numbered and the consent forms checked for signatures. The data was loaded into Excel with each comment recorded in Word and cross referenced by its question number. The original questionnaires were kept in their envelopes and stored in a locked filing cabinet.

Chapter Five

Analysis of the Questionnaire.

The following section examines the analysis of the data in relation to the research questions. On the questionnaire, teachers were asked to identify their current skill level, as well as any training they may have received in the functions of the device. There was also a focus on device applications and curriculum adaptations.

Fourteen teachers responded to this survey. In one school two teachers had more than one student with an electronic assistive technology (eAT) device in the classroom. In another school, two students used their eAT in several different classrooms depending on the subjects they were taking. In this situation more than one teacher filled in a survey on the same device. My original intention was to conduct interviews with several teachers who responded to the questionnaire. The delay in sourcing suitable devices made conducting interviews an unrealistic option. Given the opportunity I would have preferred a further investigation into how they viewed their general ICT skills, device training and ICT professional development.

The eATs were funded by three different organizations. Two devices supplied by the Ministry of Education were provided to the student to overcome access barriers to written communication. The Ministry of Health provided funding for eleven devices. These were supplied to students who were assessed as

having a need to overcome access barriers to oral and written communication in the 'whole of life category'. One other device was purchased by a school with funding from a private organization. This device was for whole school use, and had been assigned at the time to one student, as his needs were considered very high and complex and the device provided access to support his communication needs.

Research Question 1. How do teachers currently rate their overall skill levels in ICTs in general as well as the use of eATs in their teaching practice?

Teachers' responses identified constraints and enablers to their ICT uptake as well as identifying any areas for professional development that may be needed.

Constraints:

Skills - mostly identified as novices with general ICTs

- lack of training on complex electronic device
- lack of training to maximize device potential

Knowledge – one P.D. lesson/workshop is not enough

- device functions under utilized
- device purpose for communication and literacy skills not understood

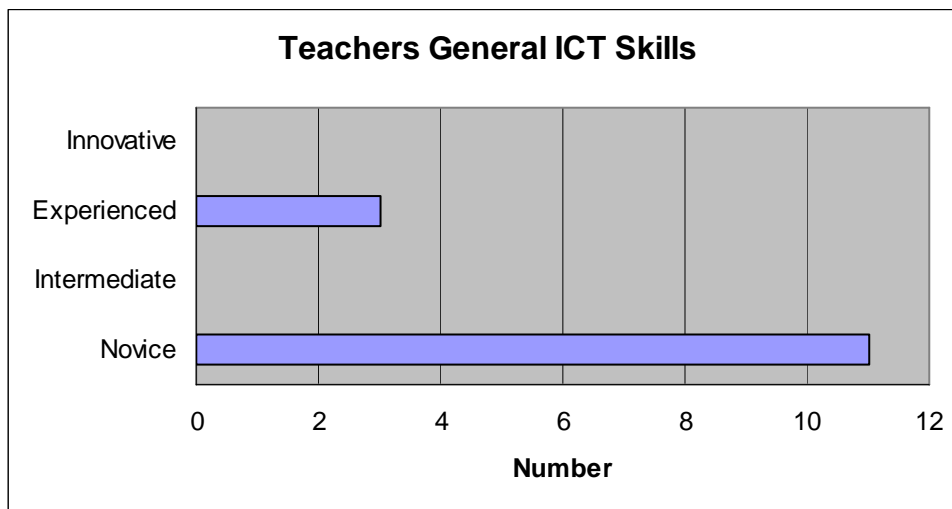
Practice – lack of support, P.D. not provided for whole of life devices

- support provided for written communication devices

Policy - skills training not provided for whole of life devices

- skills training provided for written communication devices

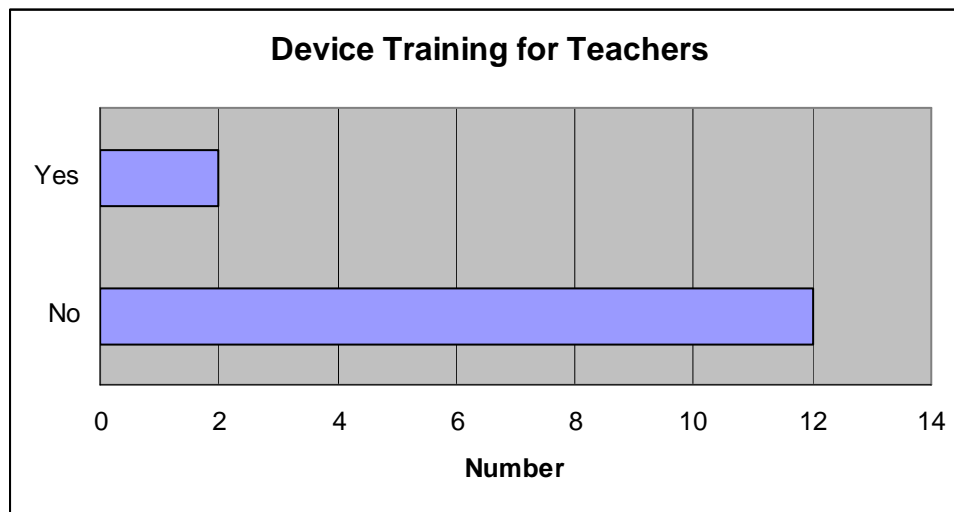
Graph 1: Teachers Skill Ratings of ICTs in General



Q1.1 How do rate your current skill level of ICTs usage?

Teachers were given a choice of skill levels when using ICTs in general. I included innovative as an option, as the ability to use ICTs in different and varied ways requires imagination and flexibility. To be innovative does not necessarily require experience. Eleven of the 14 teachers surveyed, identified their skills as novice. One of the teachers whose response was 'novice', made reference to 'I.T. based lessons'. In a follow up interview there would have been the opportunity to clarify what the 'I.T. based lessons' referred to. It is easy to make the assumption that I.T. stands for Information Technology when it could easily be International Tourism. Otherwise it seems somewhat surprising that the teacher of I.T. based lessons identified their skills as novice. A discussion held with these teachers as to their interpretations of the categories may have brought out more in depth understandings of what they interpreted 'ICTs usage' actually meant in the context of the survey.

Graph 2: Training Opportunities in the Device Functions

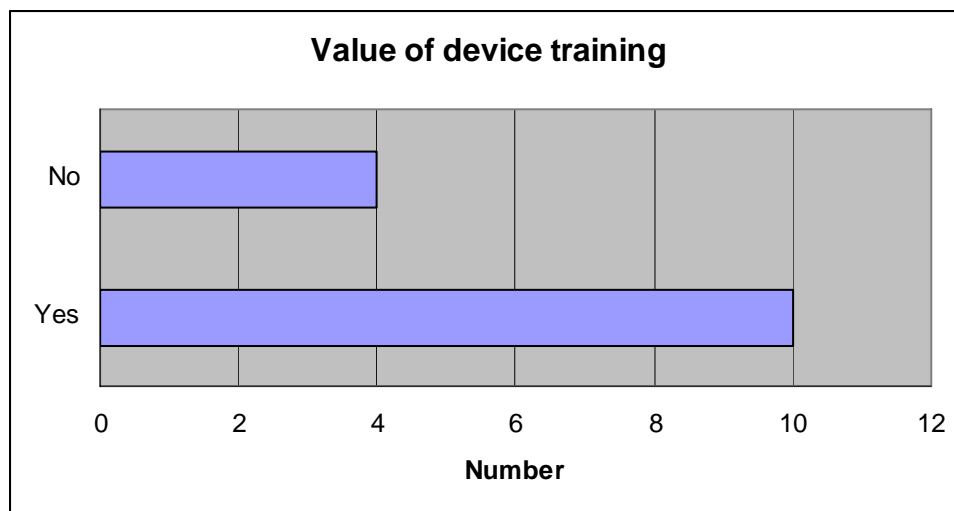


Q5.2. *Have you been offered training in the device functions?*

The questionnaire responses in Graphs 2 and 3 were taken from section 5: Support package and training, because the teachers who identified themselves in the novice category for general ICT skills are also indicating that they have not been offered training in the functions of the eAT. 12 teachers responded that they had not been offered specific training on the device functions.

In an interview situation several teachers may have identified a mixture of specific device training with the professional development required to learn how to integrate the device into the student's learning programme as well as understanding the purpose of the student having the device.

Graph 3: Teachers Responses to the Value of Device Training



Q5.3a *Do you think it is necessary/ important for you to receive training on the device functions?*

This question relates to possible constraints or barriers. Beukelman & Mirenda's (1998 p148) Participation Model not only identifies barriers to access but also identifies in their framework factors including policy, attitudes, knowledge, practice and skills as opportunity barriers. Asking teachers to comment on whether they thought it necessary or important to receive training on device functions was aimed at these opportunity barriers or enablers being disclosed. An understanding of device functions and capabilities ultimately has impact on how the student uses the device effectively to meet their communication needs in the classroom.

Comments on the value of training:

"Training is important prior to using – to learn about it, but I think more so when it's used and we are all more familiar with it, we can then learn how it can be extended. I don't have time to discover that for myself."

"I would like to know more about how it operates."

“Need to know best way to maximize capabilities.”

“I think it would be beneficial if I knew how the ‘device’ worked so I could assist the student use it more appropriately.”

“Yes. Only very basic” and “without training I will not know its full potential.”

“I’d quite to like to know more about its functions e.g. saving info / requests etc”

“There is a lot to learn and remember.”

Other comments re training not considered necessary:

One teacher who had received no training and responded that training was not necessary also made the comment that training was:

“not necessary, however I’d like to better understand it’s functions”

another responded in a similar way with:

“No. I don’t think it’s necessary as I have been able to learn about it through the students, although it would be good to know more.”

If I encounter a problem I can phone for support. In terms of setting grids etc up, I do it all myself.”

“Teacher assistant is trained to use it.”

There were different amounts of training received by teachers working with the same device in the same school. There were also differing amounts of training given to teachers working with the same brand of device in different schools. A basic training protocol on device functions could assist in a more uniform training approach.

Role of Speech Language Therapists:

Ten teachers made reference to Speech Language Therapists as the person they refer to for assistance in device functions, programming text-to-speech functions, for technical assistance and support in general.

The 10 teachers replied with 'yes' to the value of device training were part of the original 12 who indicated they had not been offered device training and the 11 who responded that they considered themselves as novices in general ICTs skills.

The devices that these ten teachers referred to were all funded by the Ministry of Health. Their policy on training (Specialised Assessor Equipment Manual 2000) reads:

“Training will only be purchased in the use of complex communication and information processing equipment. Initial training only will be approved. Where this training forms part the standard work or learning environment this will need to be funded by the person, their employer or the educational facility.”

If there had been the opportunity to interview these teachers it would have been interesting to have asked if they knew who received 'Initial training'.

Comments and answers on the questionnaire indicate that Speech Language Therapists (SLT) appear to have most involvement with the devices.

Comments if repairs are needed:

Three teachers indicated “speech language therapist deals with 'equipment provider' whenever there are problems.”

“I contact the school S.L.T. she contacts the 'equipment provider”

Teacher provides follow up to SLT who in turn has follow up contact with equipment supplier / agent “in regular contact with SLT I think”

“SLT would know”

Comments In answer to **training** offered:

“SLT”

One comment about provision of training indicated training provided by SLT to all staff.

“No. I read the manual and watched the S.L.T.”

Comments in answer to **support / team planning**:

Feedback provided to:

Three teachers indicated they provided feedback to SLT

“parents and S.L.T.” and “consult with parents, SLT”

I haven't had any specific support however, I'm sure if I had any questions I could ask our SLT.”

“speech therapist understands device more fully”

Programming device if not done by self:

Three teachers indicated ‘SLT’ programmed the device. While one teacher wrote, “SLT – I assume.”

“when something needs to be changed, we wait for SLT In the meantime it sits on shelf”

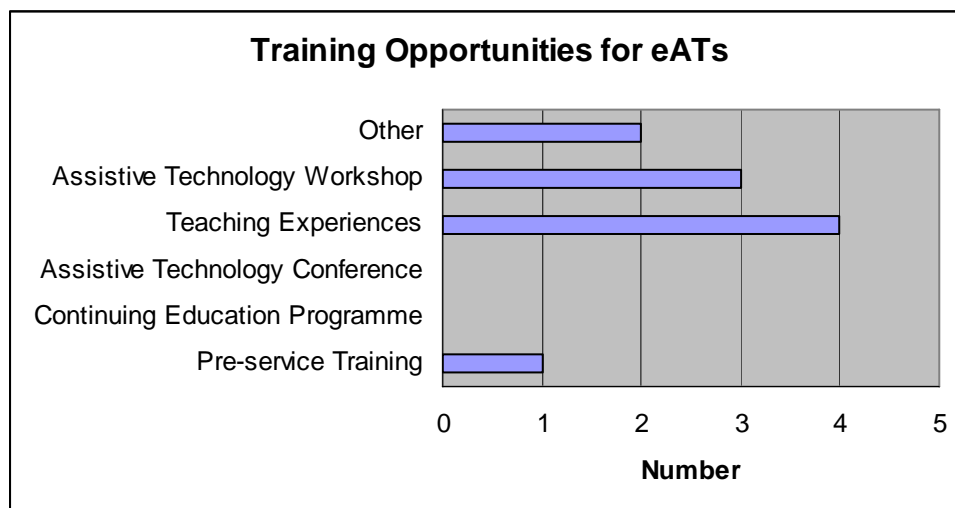
Even though this is not a direct issue for teachers there is an issue with the shortage of Speech Language Therapists working in the education sector. In

Let's Talk Special Education – National Report²¹ (2005b p6, p43 & p78) references are made to a high turnover and shortage of speech language therapists.

As a result of the teachers consistent references to the role of speech language therapy, a potential interview question could have been constructed to find out if some of the lack of device training in functions and applications was in fact due to this shortage of speech language therapists.

Section one of the questionnaire continues with professional development opportunities offered for integrating the device into the students learning programme.

Graph 4: Training Opportunities in Device Applications



Q1.2a *Using and adapting an e-AT may require strategies to apply and integrate it into the classroom. Has any of the following been of assistance?*

²¹ Ministry of Education (2005b)

Teaching experiences were identified as the most common way to gain experience in using strategies effectively. Two schools ran a workshop for all staff and a pre-service training for all staff.

Other comments related to training in device applications related to who provided this support: "O.T. / SLT" and "Special needs teacher in classroom, one-to-one."

Even though the question was asked "if training was provided" three teachers who did not fill in any of the options commented:

"I haven't been shown how to use the 'device' effectively (e.g. I don't know how, what many of the categories are on it)."

"Haven't had specific training in use of 'device'."

"No training provided."

Continuing with the theme of investigating the impact of the eATs on teachers' practice I asked about adaptations to teachers' planning.

Q1.3a *Do you adapt your lesson planning to accommodate the student's device?*

The respondents who answered "Yes" wrote of giving extra time to the student, as well as working out pre-programming "questions / requests into it to assist student with asking a question or requesting something within the school and community (e.g. supermarket, post office, café etc)."

Other comments:

"Yes, he can say exactly what he wants. No, the time he takes to use it means he misses out on discussions and he hates that"

“Aware of extra time student needs to answer a question using device and record thoughts at written language time.

Those responding “No” to adapting lesson planning commented:

“Student completes same tasks as rest of class on ‘device’.”

“The I.T. based lessons do not require adaptation.”

“At times during class it seems appropriate to use the technology (impromptu) – switched on / used.”

“device not used in classroom.”

“It is just a given that he will use it whenever writing is required.”

The major way teachers adapted their lesson planning was to ensure the student had extra time to ‘speak’ in class using the device. This ‘wait time’ issue is important for students using eATs in class and one that could have been investigated further in interviews.

Q1.4 Does the e-AT device impact upon your teaching practice?

Teachers were given the choices of Positively, Negatively and No impact.

This question was introduced because the device was supplied to the student to support their communication challenges.

Teachers comments ranged from:

“I know what the student really knows – not what is easy for him to say yes/no to.”

“Increases the type and level of communication.”

“It allows student to express words he cannot pronounce – we have used it to programme dialogue from scripts and for sound effects in dramatic scenes.”

“Time consuming, frustrating, difficult for student to access.”

“I feel comfortable using it in the class so that it has become second nature.”

“If used it would take time to use.”

“Student is very independent. Only needs me to enter password for printing.”

The responses to this question relate to Q1.3 in regards to the time it takes for the student to use the device²². When extra time is allowed for, the student, by using their device can then demonstrate their literacy skills. The teacher is able to assess these skills and support ways to develop them further. The device is being used in a meaningful way in a setting that is familiar and routine for the student.

Q1.7a Are the student’s peers called upon to provide support to the student with the e-AT use? In what ways is this support provided?

In the IEP Guidelines²³ (1998) – Provision of support personnel section is the statement “to facilitate independence and inclusion, support that can be provided by the class teacher and peers should be employed to the greatest extent possible.” In the Assistive Equipment Guidelines – Who should be trained? (p22) “training should be provided to all those who support the student, including parent(s), peers ...”

Comments:

“Another student in adjoining room also has a ‘device’. He provides assistance when needed. Other students able to work with e-AT student.”

²² IEP Guidelines-Adaptions to the class programme. MoE (1998)

²³ Ministry of Education (1998)

“they help him programme in words and sounds.”

“be interested in how device is used and watch student demonstrate his ability.”

‘The students support him by allowing more wait time for responses etc when using device.’

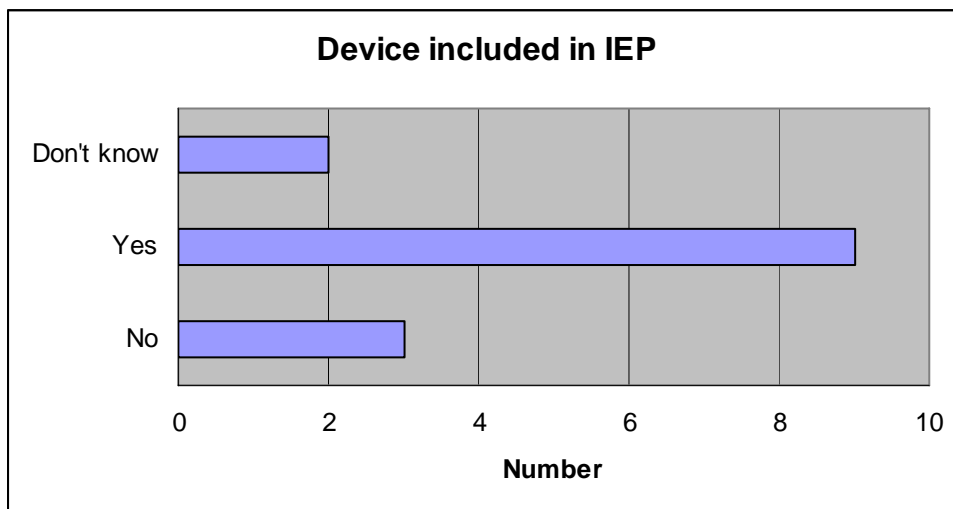
“praise efforts (not ‘called upon’ – just occurs)”

“it improves his self esteem because of the speed. This student benefits from being seen as different cooler. Students like to work with him at times”

Research Question 2. To what extent is the teacher involved in the process of planning for electronic assistive technology device use in the student’s IEP?

There is an expectation of a ‘close link’ between equipment use and the IEP process²⁴. Are teachers sufficiently aware of this required ‘close link’? It is a resource to be used to aid the student reach goals / objectives.

Graph 5: Student’s IEP and Electronic Assistive Technology Device:



²⁴ MoE IEP Guidelines-Use of equipment.

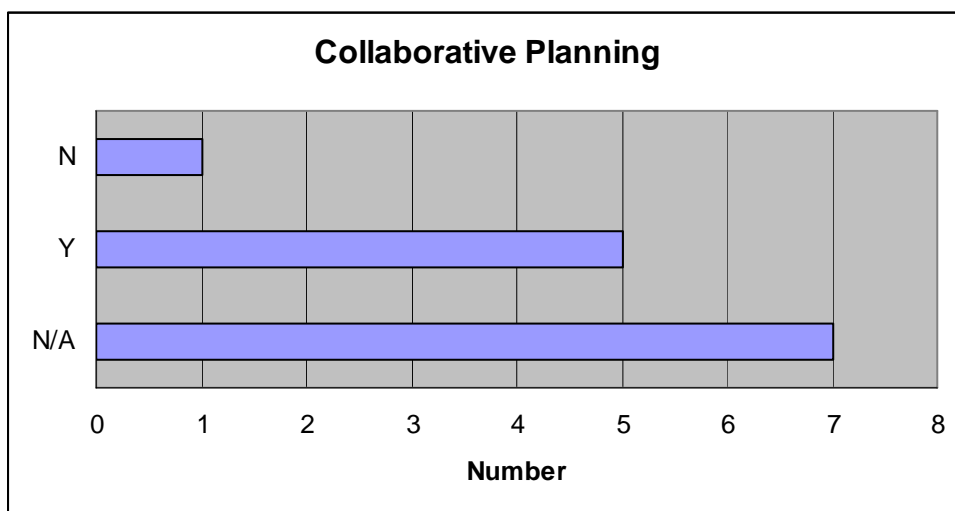
Q2.1a Does the eAT feature in the student's IEP?

Nine of the teachers indicated that the device was included in the student's IEP and three responded that the device did not feature in the IEP. One teacher responded that there was 'no IEP'.

Device and IEP planning:

There is also an expectation that there is a close link between the support personnel meeting to plan strategies to incorporate the use of the equipment in the overall education programme.²⁵ Step 4 of the Fundamental Assessment Profile,²⁶ team dynamics is discussed, along with working closely with many different people as a team.

Graph 6: Collaborative Planning to Incorporate eAT into Student's Programme



²⁵ MoE IEP Guidelines-Provision of Support Personnel.

²⁶ CSUN ATACP course work

Q2.2a As a member of the IEP team do you plan collaboratively for incorporating the eAT into the student's programme?

Five teachers replied that they met and planned collaboratively. Seven replied with N/A to the question and one teacher replied there was no collaborative planning.

Comments:

"Occasionally we discuss the activities that will work well with the device. Not a big deal! The A/S is just a tool."

"not part of the team."

Two comments referring to discussions regarding the device but did not indicate when, e.g. "this has been discussed widely and decided that it isn't an appropriate device for this student."

As part of the IEP process²⁷ the expectations for the classroom teacher are: "the teacher orchestrates the overall planning and classroom programme,..."

The chance to interview teachers, would have provided further material for comment.

Q 2.2b. *When is planning carried out?*

Comments: Responses ranged from pre-IEP meetings, "ongoing" and one teacher wrote "consult with parents, SLT, T.A's and mainstream teachers to find most motivational ways for student to use throughout the day." Others said, "Informal discussions" and "teacher/ teacher aide planning release."

²⁷ MoE IEP Guidelines

Q 3.3 *Do you feel there is consistency between staff / team members when incorporating the e-AT in the student's programme?*

Comments:

"Yes. Mainly because we work (we have) such a strong team and the way in which we are honest in our discussions around the use of eAT."

"Yes. We all try to be consistent."

"No. Not used in specialist classes eg Tech"

"No. Some staff members know more about the 'device' than others and Speech therapist understands device more fully"

"Depending on the grid on top ... staff have different approaches. Nobody really knows what / how! Staff can only ask questions with an answer that is already on grid! We don't know how to provide more options."

"Some staff don't really know how it works or what its purpose is. Although the staff in our class generally encourage its use."

"Do not know"

Questions 2.2a, 2.2b and 3.3 looked at planning strategies and collaboration. With seven N/A responses to the question on collaborative planning (Graph 6) there is an unsureness as to the close link between personnel meeting to plan the most effective methods for incorporating the use of the device into the student's programme. Two devices were used in a partially mainstreamed environment at a high school. Would information come to light in an interview that each of the student's subject teachers was not involved in planning

strategies? Why not? Would it be realistic to expect each subject teacher to attend planning meetings?

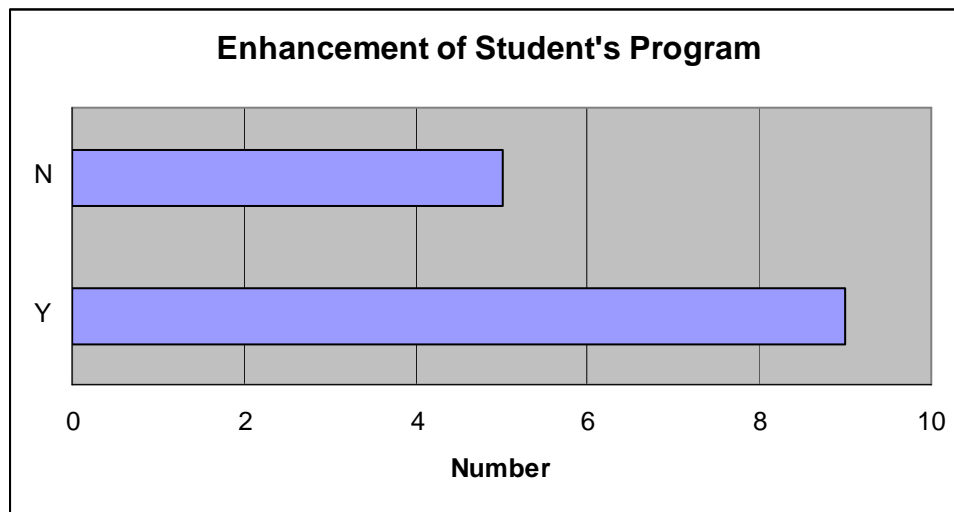
Teachers who met and planned collaboratively identified pre-IEP meetings and ongoing consultations as a means of discussing progress and goal setting.

Q3.3 raised the subject of consistency between staff involved in planning for device integration into the student's programme. Several teachers commented that some knew more than others and different approaches were used. Remembering that 11 of the teachers identified themselves as novices in general ICTs skills there may be a lack of confidence or uncertainty as to what is required of them when planning for the student and their device. There was a common theme in the literature review that identified confident ICT use by teachers. Developing and nurturing team members²⁸ as well as support for teachers by senior management, networking and for teachers to feel included in a supportive community of practice were some of the suggestions in the literature to remove barriers that teachers may be experiencing.

Research Question 3. Do teachers believe the device creates any constraints in meeting learning outcomes for students with special educational needs in their classrooms? Are there any enablers to learning?

²⁸ Step 10. Fundamental Assessment Process – CSUN ATACP course work

Graph 7: Use of the Device to Enhance the Student's Programme



3.1 *Do you feel the eAT enhances the student's chances of taking part in classroom activities?*

Nine of the teachers felt the device enhanced the student's opportunities.

Comments:

"The student has more to contribute to the topic"

"It improves his self esteem because of the speed. The student benefits from being seen as different/cooler. Students like to work with him at times"

"student able to maximize output in line with other students"

"It increases his vocabulary. Other students are interested in the device"

"Yes, he can say exactly what he wants. No, the time he takes to use it means he misses out on discussions and he hates that"

Teachers who chose a No response but included comments:

"takes part in classroom activities without device"

"student has little need for it"

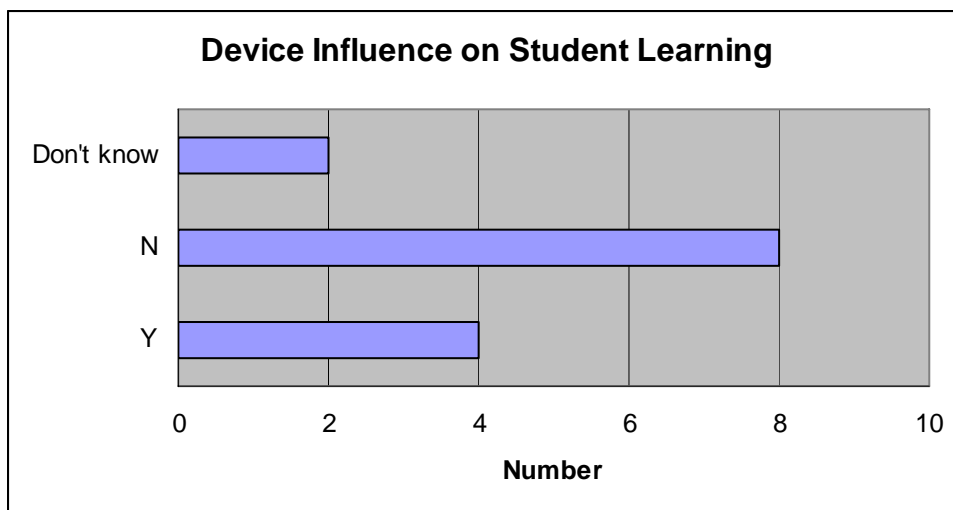
"Too cumbersome. Requires motor skill well beyond this student's ability"

“I find within the classroom this student can use his voice effectively enough without the device. However it is of great use within the community as strangers do find it difficult to understand his speech”

It could if the equipment was more advanced. The choices are not sufficient on the equipment”

Overall, teachers were positive about the role the device played in allowing the student access to communication that would otherwise not have been able to achieve.

Graph 8: Does the Device Make a Difference to the Student’s Learning?



Q3.2 Is this device making a difference to the way the student learns?

This question was asked in relation to the MoE’s definition of assistive equipment “it is simply a tool.” What were teachers’ thoughts on the impact of the device on student learning? Could this be matched with the expectation of the device in the student’s IEP? Eight of the responses from the teachers indicated they felt the device was not making a difference to the way the student learned. Was the device not as effective as it first appeared to be, or

was it not being used to overcome the constraints that it was assessed to do?

Would this additional information be forthcoming in an interview situation?

Comments:

“Good learning strategies in place – the eAT just lets us know what he’s learning without misinterpretation”

“I can communicate with this student easily without it”

“I don’t think so, as I don’t think the student uses the device as effectively as she could (could be because I don’t know how it works)”

“I don’t think so; it just gives her a ‘voice’ when she can’t be understood”

“I don’t feel the device impacts on this student’s learning as he can effectively participate in all class work e.g. use computer, listen, respond with voice e.g. brainstorming, discussions etc”

“with better equipment the student would rely on the device as a means of getting their message, answer, idea across”

“there are better ways to engage the student and provide learning opportunities without the device”

“takes part in classroom activities without device”

“unsure at this stage, however I think there is a lot of potential’

“we are encouraging ‘student’ to use his voice and not always use the machine”

“he is more prepared to write and edit work”

“it improves his self esteem because of the speed. This student benefits from being seen as different cooler. Students like to work with him at times”

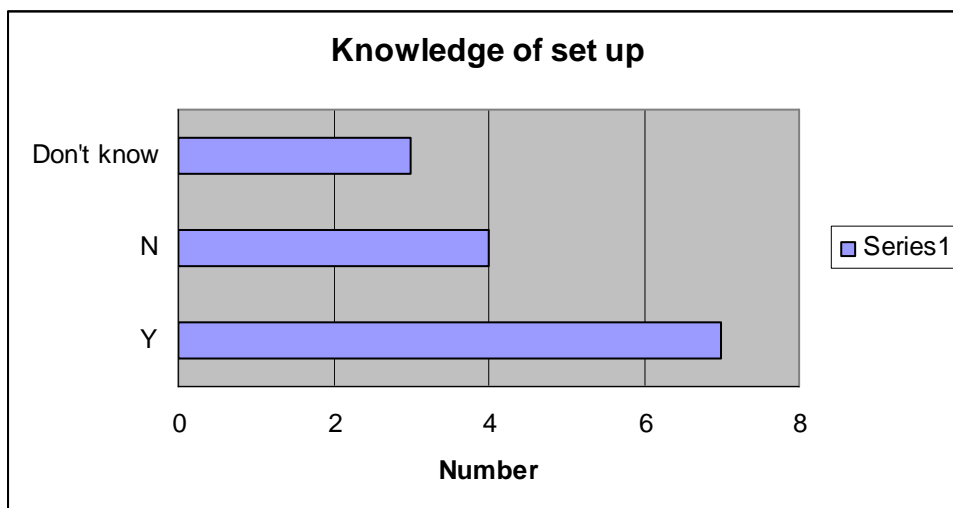
“he is able to offer some input”

Technical issues that can be interpreted as constraints:

Some of the devices used in this project are more technologically complex than others. Would the teachers who answered the questionnaire identify that they had issues getting the devices 'up and running'?

Several of the devices are battery powered, while others were reliant on mains power. Many of the students using the devices were identified as using wheelchairs and device placement on a wheelchair tray or other seating is frequently not straight forward. Devices may need to be calibrated while other devices need cables to serial ports or USB connections. USB and serial ports are usually found at the back of a computer which can create a number of issues in itself.

Graph 9: Additional Time for Setting Up



Q 3.4a. *Does the e-AT device require additional set up time beyond on/off?*

Time, pre-programming and planning ahead of time were issues raised.

Comments: If yes, can you describe in what ways?

“This process can be quite time consuming. Quite a few different ports need to be plugged into the laptop. Sensors attached to student’s forehead (requires cleaning first) sensors can stay on for a while though.”

“Pre-programming sentences takes time so has to be planned ahead of time.”

“If we need to pre-programme something eg. a request into it prior to an outing eg. to the supermarket, movie theatre etc.”

“Appropriate information needs to be pre recorded prior to the student activating the response.”

“Grids created and printed out – SLT. Layers need changing – we don’t know how!”

To change the options would take time – I am unfamiliar with how this happens.

“Downloading work. Printing it off – due to security need PIN numbers”.

“Sometimes – depends what we are doing and if we think it’s really beneficial to add a quick message or additional stuff. “

3.5a Is the eAT device set up in a fixed place?

My experience with students using eAT devices often raised practical issues of where to place the device for the student to access. A larger device like a computer remains in a fixed place with enough room around it for a wheelchair to fit under the table. Wheelchair trays may be tilted, so the device needs to be secured. Devices need to be kept close at hand for use. The teachers’ responses did not divulge any additional information beyond the comments below. From this I assumed they had no issues.

Six replies were 'yes' and fixed onto a wheelchair. One other 'yes' had the device set up on a moveable table in the classroom. Six replied that the device was not fixed and one teacher replied "don't know."

3.6 If it is portable are there any issues? E.g. battery power and charging. Can it be knocked over, where is it stored when not in use?

Five of the devices had **batteries that required daily charging**. Three teachers commented that the device was charged overnight by the student's family/carers.

"The device does require charging. This student is very responsible and always ensures it is fully charged for school."

Two other teachers identified "battery runs out" and commented on the time and inconvenience it takes to charge the device.

Positioning was another issue:

"It was unable to be used for some time because of its position / arm meant that the student was unable to access it. This has been changed."

Secure attachment: device being knocked off wheel chair trays was mentioned twice.

"doesn't have a secure attachment on rifton chair"

Other students 'playing' with the device:

"mainstream students press the buttons and have fun but our student struggles and is unsuccessful"

and "other students like to tutu with it"

Also, “the screen not easily read in sunlight” was another challenge.

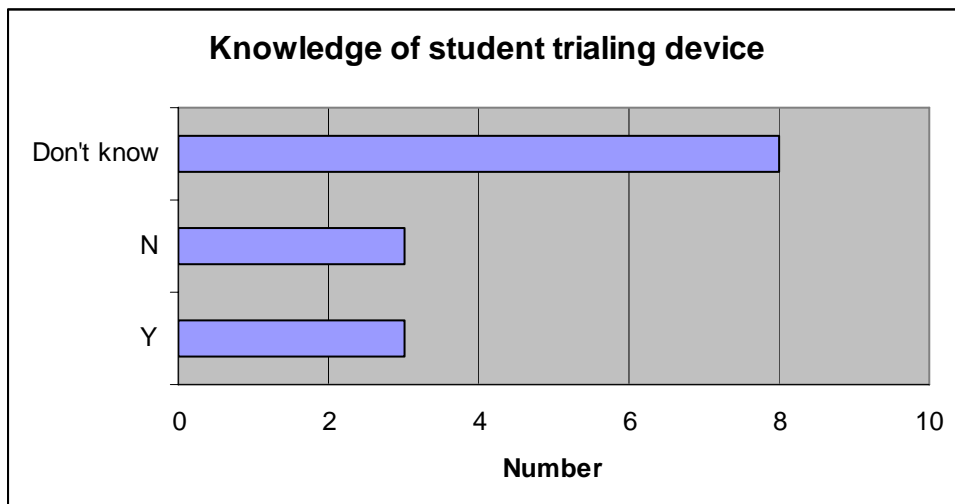
Research Question 4. Is there an understanding of the expressive communication value of the electronic assistive technology (eAT) device to meet students’ needs?

The aim was to gather information on:

- the way the student uses the device,
- issues around compatibility with student’s needs
- student involvement in the device selection

Section 4. Student use of e-AT: Without directly indicating this in the questionnaire, I was interested to see if teachers would ask the student and expect a reply via the device as to whether the student had input and opportunities over the device selection.

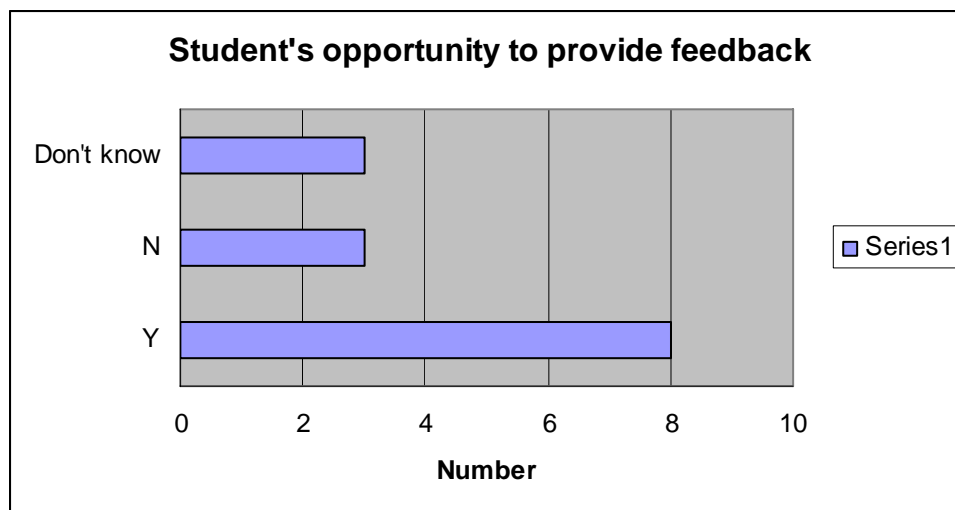
Graph 9: Opportunities for the Student to Trial the Device prior to selection.



Q4.2 *Do you know if the student had any opportunities to try out any other electronic assistive technology devices prior to possession?*

With eight of the responses being in the “don’t know’ category I assume these teachers did not ask the student if they had an opportunity to trial devices, or answered the question because they ‘didn’t know’. The question was a straight yes/no question. This would be another opportunity to have investigated further in an interview situation.

Graph 10: Student Opportunity for Feedback – Student satisfaction With the Device.



4.3 *Does the student have opportunities to provide feedback on the device?*

Eight of the teachers were aware that the student had opportunities for feedback on satisfaction or dissatisfaction on the device.

As discussed in the literature review, customer satisfaction is an integral part of the device selection. Meeting needs is an important factor in device assessment, but the user and in this case the students, also need to see the point of the device and accept it. The device may be exactly what the

assessment team would choose for the student, but for there to be a successful match the student needs to also agree that their needs will be enhanced by the device.

Comment:

Q4.3 Feedback. "Yes, when given a choice she chooses to ignore it!"

The opportunity to interview the teachers around the student's input with device selection and feedback would have been another chance to investigate if teachers needed further professional development.

Research Question 5. Is there device follow-up and follow along support for both the teacher and the student?

When making device selection and assessments there was references in the literature to the importance of checking back to make sure the device that was recommended is meeting the person's needs or if a re-assessment is required. Device abandonment is an expensive issue. One suggestion is measuring the planned outcomes for the device.

10 of the 14 devices could be named by the teachers.

Q5.4 Have you received any follow-up support by the equipment provider or their agent?

Ten replied "no" and two replied "yes."

Comments:

Yes, "Follow-up support through the speech language therapist"

No, "in regular contact with school SLT (speech language therapist) I think"

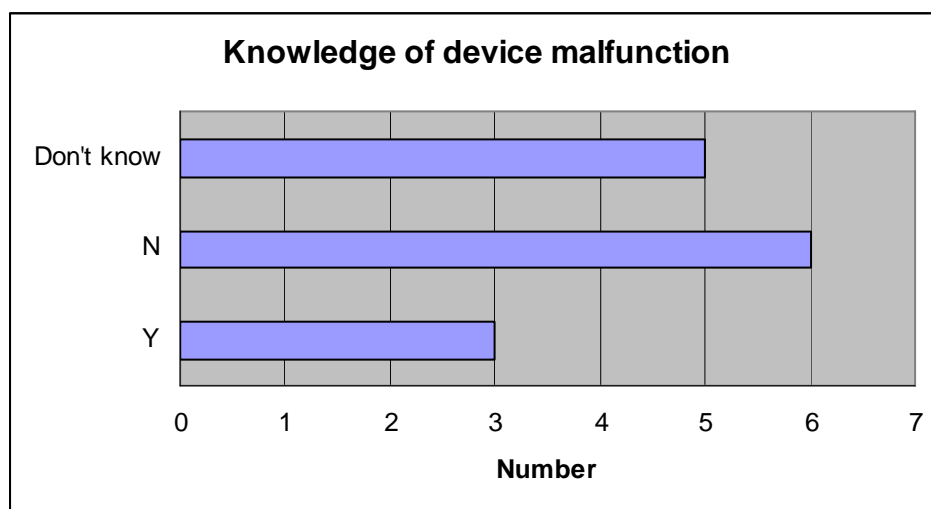
No, "SLT deals with 'agent' whenever there are problems"

No, "SLT probably does"

Q5.6 Have you had opportunity to provide feedback on the selected tool?

7 teachers replied Yes, and 5 teachers replied No. Feedback was in most cases to a Speech Language Therapist. Two teachers provide feedback to a Special Needs Teacher and one contacted the AT resource teacher.

Graph 11: Reliability of the Device



Q5.7 Is the eAT subject to breakdown?

These figures are quite interesting. 6 teachers replied that the devices did not breakdown. However 5 teachers didn't know if the device was subject to breaking down. Some teachers offered reasons for the inability to answer the question either positively or negatively.

Comments:

“Not that I’m aware of. Doesn’t get used enough to find out!

Yes. “Very frequently”

Yes. “Often, unfortunately!

Yes, “Student has had device 3 terms and it has been sent away three times of periods of 3-7 weeks! Each time.

The responses to the questionnaire provided an interesting insight into the challenges, constraints and benefits that teachers experienced when dealing with an electronic assistive technology device being used by a student in their classroom.

The small number of teachers who had the opportunity to respond to the questionnaire provided in some instances very similar experiences. In other instances their responses reflected the device that the student used. The two devices for written communication are portable notetakers. There were four different devices used for augmented communication. However, it should be noted that due to the small number of responses, the findings of this research cannot be generalized to all the experiences of all teachers who have students with these various devices.

Data showed that one brand in particular required frequent repairs. Other devices that malfunctioned frequently were being sent away for repairs, sometimes for several weeks at a time. Although not a direct issue for teachers the communication chain between the repair companies, supplier,

speech language therapist, teacher, student and families could have been another issue to have discussed in a follow up interview.

Chapter Six

Conclusion:

There were two goals to the project. The first goal was to identify factors related to the issues that teachers have with the electronic assistive technology device that a student uses at school to support their special educational needs. The function of these devices is to augment or provide alternative communication needs to reduce constraints in their learning. Data was collected from teachers responses to a questionnaire based on issues identified in current literature. These issues are highlighted below.

Training:

Teachers working in classrooms with students who had Ministry of Education - GSE funded devices, identified themselves as experienced in the general use of ICTs as well as indicating that they had been offered training on the device functions. These devices were used exclusively in the mainstream environment with teachers indicating that they were part of the process of ensuring that the device continued to be correctly matched to the student's needs. They felt supported through training in integrating its use in the classroom. The devices were portable notetakers with the purpose of overcoming barriers to written communication.

The teachers working in classrooms with students who had devices supplied to improve access to 'whole of life' activities were used in schools to augment or provide alternative communication were constrained by several factors. All but one of the teachers identified their general ICT skills as being at the

novice stage. They indicated that they were not offered training in device functions, nor were they trained in the application of the device to meet the requirements in the student's learning programme.

Several teachers answered N/A or unsure / don't know to questions concerning student use of the device, planning and team strategies to support the student with the device. This may indicate that these teachers are unaware of the importance of the device in literacy development, and in particular expressive communication.

The link between the device and the student's IEP was understood by most of the teachers. The few that that didn't know if the device featured in the student's IEP or replied that it didn't feature suggests that these teachers may be unaware of the Special Education 2000 policy requirements for supporting a student with special educational needs. (Special Education Policy Guidelines²⁹ 2003b).

Collaboration:

The collaborative link between the device and the support team was investigated. Current literature and the Ministry of Education's policy on IEPs recommend the value of working in a team. The teachers in this project working with Group Special Education (GSE) felt that there was consistency between staff when planning device applications for overcoming barriers to written communication.

²⁹ Ministry of Education (2003b)

Other stakeholder's expectations of service delivery differed for the device they funded is used at school. Collaboration between the support team to plan strategies to incorporate the device into the overall education programme was not so well understood. While some teachers agreed that there was a close link between the student, support personnel and the device, more responded with an N/A. This suggests that teachers need support in this area of collaborative teamwork as the ultimate aim is to provide for the needs of the student.

Funding:

Funding is not just for supplying the technology. Funding is required to support the student by providing training in its applications to the student and people who work alongside the student in various environments. Initial training is not sufficient.

Dissemination of findings:

The second goal of the project was to find ways to disseminating 'findings' to assist teachers develop or improve the delivery of assistive technology services for students. Providing support to teachers whose students use devices for 'whole of life' or rehabilitation by creating an ICTPD³⁰ cluster is recommended. Current literature suggests that combining training in device functions and applications with workshops and mentoring using adult learning strategies are required to overcome the barriers that cannot be eliminated by simply providing the device.

³⁰ Information Communication Technologies Professional Development

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Electronic Assistive Technology Devices in Education.

What are the Issues for Teachers?

Your involvement in this research project will consist answering a questionnaire to identify issues relating to technology use in the student's classroom programme. You will also be asked to comment on the technology support package.

I am also seeking several teachers for a more in-depth interview in relation to views of electronic assistive technology use in the classroom. If you are interested in taking part in a follow up interview, please fill in your contact details at the end of the questionnaire.

Thank you for taking the time to complete this questionnaire.

If you are interested in taking part in a follow up interview, please fill out your contact details below.

Name: _____ (please print)

Phone: _____

Email: _____

1. Teacher ICT / electronic assistive technology (e-AT) use:

1.1 How do you rate your current skill level of ICT's usage? Circle the words below that best describe your skill level.

Novice Intermediate Experienced Innovative

1.2a Using and adapting an e-AT may require strategies to apply and integrate it into the classroom. Has any of the following been of assistance?

- Pre-service teacher training
- Continuing education programme
- Assistive Technology Conference
- Teaching experiences
- Assistive technology workshop
- Other?

1.2b If training was provided who provided it and where was it held?

1.3a Do you to adapt your lesson planning to accommodate the student's device?

- Yes
- No

1.3b Please give a brief response to your answer in 1.3a

1.4a Does the e-AT device impact upon your teaching practice?

- Positively
- Negatively
- No impact

1.4b In what ways?

1.5a Is it possible to programme the student's device to contain current class topics / lessons?

- Yes
- No

1.5b If yes, is this done by you or someone else?

- Self
- Other, who?.....

1.6a Do you have support with the e-AT device use in the student's learning programme?

- Yes
- No

1.6b Comment?

1.7a Are the student's peers called upon to provide support to the student with the e-AT use?

Yes No

1.7b In what ways is this support provided?

2. The student's IEP and electronic assistive technology device:

2.1a Does the e-AT feature in the student's IEP? Yes No

2.1b If the answer in 2.1a is yes, in what section is it written?

2.2a As a member of the IEP team do you plan collaboratively about incorporating the e-AT into the student's programme?

Yes No

2.2b If the answer in 2.2a is yes when is this done?

3. Classroom Programme:

3.1a Do you feel the e-AT enhances the student's chances of taking part in classroom activities Yes No

3.1b Comment?

3.2a Is this tool making a difference to the way the student learns?

Yes No

3.2b Comment?

3.3a Do you feel there is consistency between staff/ team members when incorporating the e-AT in the student's programme?

Yes No

3.3b Comment?

3.4a Does the e-AT device require additional set up time beyond on/off.

Yes

No

3.4b If yes, can you describe in what ways?

3.5a Is the e-AT device set up in a fixed place?

Yes

No

3.5b If yes, where is it set up?

3.6 If it is portable are there issues? E.g. battery power and charging. Can it be knocked over, where is it stored when not in use?

3.7 Do you have any other comments to make regarding the e-AT device.

4. Student use of e-AT:

4.1 Did the student have input into the choice of the device?

Yes

No

4.2 Did the student have opportunities to try out any other electronic assistive technology devices prior to possession?

Yes

No

4.3 Does the student have opportunities to provide feedback on the device?

Yes

No

5. Support Package and training:

5.1 The student's e-AT device is a

It was supplied by

5.2 Have you been offered training in the device functions?
 Yes No

5.3a Do you think it is necessary / important for you to receive training on the device functions?
 Yes No

5.3b Comment?

5.4 Have you received any follow-up support by the equipment provider or their agent?
 Yes No

5.5a If the e-AT is new to the student were you consulted in the assessment process?
 Yes No

5.5b If no, would you have liked to have been involved? Why?

5.6a Have you had an opportunity to provide feedback on the selected tool?
 Yes No

5.6b Who was the feedback provided to?

5.7a Is the e-AT subject to breakdown?
 Yes No

5.7b If so, how frequently?

5.8 If the device requires offsite repairs, who do you contact?

5.9 If the student receives funding, please describe it (ORRS, moderate needs, ACC etc)

Appendix 2: Consent forms for participants



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Information Sheet for Teacher

My name is Judy Waterhouse. I am a teacher who has a Ministry of Education e-learning Fellowship to undertake a research project. My field of interest is electronic augmentative and assistive technology and the issues that classroom teachers may have with its effective use in a student's classroom programme.

You are invited to take part in my RESEARCH PROJECT.

The project will involve you answering a questionnaire to identify issues relating to the technology use in the student's classroom programme, also any issues with the technology support package. I would like to carry out an interview with you in the third term in response to any issues you have identified. You have the right to withdraw from the project at anytime.

Any findings during the project will become part of my report. You will not be identified in the report and there will be no connection made between the school and the technology device. The name of the school will not be used and will be identified as 'the school'. Information about you and your work that I collect will be kept in a locked cabinet at my home. Only my supervisor, you and I will be able to look at the information.

I am carrying out this project under the supervision of Sandra Williamson-Leadley, who can be contacted at CORE Education Ltd on (03)3796627. She will be pleased to discuss any concerns you may have about your participation in the project. CORE Education Ltd has reviewed and approved this project. If you wish to ask any questions about the project, please contact me by e-mail, judy_waterhouse@yahoo.com or telephone (04) 4790625.

Consent Form for Teacher

I have read and understood the information provided. I consent to taking part in the research project on electronic augmentative and assistive technology use in the classroom and any issues I have with its use. I have voluntarily agreed to participate and have signed the consent form. Further, I consent to the sharing of results with the understanding that no one, other than the people involved in the project, will know who I am. I know that I may withdraw from the project at any time with no reason given. All information collected about me will also be withdrawn. On this basis I consent to participating in this Research Project.

I also wish to participate in the follow up interview.

Name _____ (please print)

Signed _____ Date _____

IF YOU DON'T WANT TO DO THIS, DON'T WRITE YOUR NAME.



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Information Sheet for Parent(s)

My name is Judy Waterhouse. I am a teacher with a Ministry of Education e-learning Fellowship to undertake a research project. My field of interest is electronic augmentative and assistive technology and issues that teachers may have with its effective use in your child's learning programme.

Your child's assistive technology device has been identified as part of my RESEARCH PROJECT.

The project will involve the teacher answering a questionnaire to identify any issues relating to how your child's device is used in the classroom as well as the technology support package for the teacher.

Your child will not be identified nor required to take participate in any part of the questionnaire. I am requesting your permission to review your child's IEP for goals or objectives relating to the assistive technology device use.

The results of the project will become part of my report and will be seen by the supervisor marking my project. Your child will not be able to be identified, as the information I collect for the report will focus on the device and the class teacher. The name of the school and the teacher's name will not be used. Any information about the device use and teaching strategies that I collect will be kept in a locked cabinet at my home. No unauthorized person, including other staff members at the school, will have access to the information.

The project has been reviewed and approved by my supervisor for the project, Ms Sandra Williams-Leadley, who can be contacted at CORE Education Ltd on (03)3796627. She will be pleased to discuss any concerns you may have about this project. CORE Education Ltd has reviewed and approved this project. If you wish to discuss any concerns you may have about the project, please e-mail me at judy_waterhouse@yahoo.com, or on (04)4790625.

Consent Form for Parent(s)

I have read and understood the information provided. I consent to Judy Waterhouse being able to view my child's IEP documentation as part of her research project. Further, I consent to the presentation of results to fulfil requirements with the Ministry of Education, with the understanding that confidentiality is guaranteed. On this basis I consent to my child participating in this research project.

Name _____ (please print)

Signed _____ Date _____



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Principal

Dear

My name is Judy Waterhouse and I have a Ministry of Education e-learning Fellowship to undertake a research project. My field of interest is electronic and assistive technology and issues that teachers may have with its effective use in your student’s learning programme.

A teacher, student and an assistive technology device at your school have been identified as part of the sample for my RESEARCH PROJECT.

The name of the school will not be used and will be identified as ‘the school’. No risks are foreseen for participating in this project.

The project involves the teacher answering a questionnaire to identify any issues relating to how the student’s device is used in the classroom as well as the technology support package for the teacher. There is also an opportunity for a follow-up interview.

The project is being carried out, by me, under the supervision of Ms Sandra Williamson-Leadley, who can be contacted at CORE Education Ltd on (03)3796627. She will be pleased to discuss any concerns you may have about the project. CORE Education Ltd has reviewed and approved this project. If you wish to ask me any questions about the project, please contact me either by e-mail, judy_waterhouse@yahoo.com or telephone (04) 4790625.

Thank you for taking the time to read and consider this information. Please complete the attached consent form if you agree to my research project being carried out at your School.

Yours faithfully,

Judy Waterhouse

Consent Form for the Principal

I have read and understood the information provided. I consent to Judy Waterhouse conducting her research project on the issues teachers face with electronic assistive technology device used in the classroom within our school. Teachers have voluntarily agreed to participate and parents have signed consent forms.

Name _____

Signed _____

Date _____

Acknowledgements

The creation of e-Learning Fellowships by the Ministry of Education is greatly appreciated. I am grateful for the opportunity to take time out from the classroom, to read, think and question my practice as well as gain increased pedagogical knowledge.

The continued support and patience from the staff at CORE Education, Christchurch, and in particular special thanks to Sandra Williamson-Leadley who kept me organized, encouraged, continued to ask the tough questions and guided me throughout the year.

Thanks also to the nine other e-Fellows who listened, provided thought provoking discussions, readings, light relief and who were consistently supportive in demonstrating the process of completing a research project. The staff at Kimi Ora School provided resources, suggestions and interest in the project throughout the year.

Finally, I am indebted to the teachers who volunteered to take part in the research. Their frankness and insights into their classroom practice kept this project grounded.

Judy Waterhouse
Ministry of Education 2005 e-learning Fellow