Review of assistive technology and environmental aids to pupils with a sensory impairment in Scotland

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Review of Assistive Technology
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# Table of Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Summary</td>
<td>7</td>
</tr>
<tr>
<td>Introduction</td>
<td>11</td>
</tr>
<tr>
<td>Section One: Context and Background</td>
<td>12</td>
</tr>
<tr>
<td>Section Two: Methodology</td>
<td>15</td>
</tr>
<tr>
<td>Section Three: Review of existing provision</td>
<td>17</td>
</tr>
<tr>
<td>Section Four: Provision of Assistive Technology for children and young people with Visual Impairment</td>
<td>20</td>
</tr>
<tr>
<td>Section Five: Provision of Assistive Technology for children and young people with Hearing Impairment</td>
<td>40</td>
</tr>
<tr>
<td>Section Six: Conclusions and Recommendations</td>
<td>63</td>
</tr>
</tbody>
</table>

**Appendices**

- Appendix 1 An overview of the technology .................................................. 71
- Appendix 2 Questionnaire (VI) ................................................................. 77
- Appendix 3 Questionnaire (HI) ................................................................. 81
Executive Summary

This report details the findings of the SSC’s investigation into the feasibility of having a national centre that offers assistive technology and environmental aids to pupils with a sensory impairment. This work was carried out over the period January to March 2012.

Specifically the investigation focuses on

(1) a scoping exercise to establish the feasibility of, and demand for, national procurement of assistive listening devices and environmental aids for deaf pupils.

(2) a scoping exercise to establish the feasibility of, and demand for, national procurement of specialist technology and low vision aids that allow access to the curriculum for visually impaired pupils, including those with additional difficulties.

It is intended to use these findings to establish any benefits of standardisation of the availability of equipment and to assist with the identification of training needs. The concept of a national resource for technology is also explored within this report. The SSC carried out the investigation by working in collaboration with centres that already provide such facilities and by reporting upon evidence that is already available.

Background

Representatives from sensory services in each of the 32 local authorities and representatives from the appropriate grant aided schools in Scotland were invited to participate in semi-structured interviews to be carried out, by telephone at pre-arranged times. Sixteen interviews relating to visually impaired pupils and 18 interviews relating to hearing impaired pupils were conducted.

Key points from the analysis of the data gained from the semi-structured telephone interviews

The semi-structured interviews were divided into five main sections. These are listed below: key themes that are emerging lead to the following conclusions.

• Part 1: Arrangements for Provision

  Conclusions: The specialist teachers, not surprisingly, had a lead role in all aspects of deciding what equipment is purchased, how it is implemented in the classroom and the monitoring of its usage. They often had backup from classroom assistants, auxiliaries and the mainstream ICT department.

• Part 2: Purchasing, Replacing and Upgrading Equipment

  Conclusions: Finding funds for technology was largely not a problem; this was reflected throughout the questionnaire whenever funding was mentioned. The fact that
sensory impairment is such a low incidence disability suggests that necessary equipment could almost always be purchased.

- **Part 3: Making use of technology to provide adapted materials**

  **Conclusions:** Again the specialist teachers took a lead role in this provision. Although there was an awareness of projects such as ‘Books for All’ this was not universally well used and although some authorities did exchange Braille and other adapted materials there is an opportunity to facilitate an exchange system to reduce the amount of stored material especially braille and tactile diagrams that may only be used once.

  One authority used the BSL glossaries at SSC and Wolverhampton and suggested that even better access to on demand help with BSL vocabulary was needed.

- **Part 4: Comments and ideas regarding centralised provision and general comments**

  **Conclusions** Many of the respondents commented on staff issues; lack of staff, lack of access to support and knowledge or being able to respond to the rate of change posed by technology.

  There was no clear indication that the introduction of a national procurement centre would improve services. Indeed this notion seemed to raise more questions than answers. This section requires a much more detailed investigation but initial comments would suggest that it could be beneficial as a source of technical support, pooling resources, trialling equipment and offering free training.

  A National VI Technology Group (Secondary education) has recently been established and meets at Uddingston Grammar. This is already being seen as a positive and successful resource. It is the authors’ understanding that this group who are mainly practitioners is circulating a separate questionnaire. It may be interesting to compare the responses obtained to this survey which was completed mainly by heads of services and managers.
Conclusions: Both groups were asked the following question. ‘Please provide any further comments relating to the provision of technological devices and support.’

Visual Impairment

![Staff]
- Rate of change (2)
- Learning curve
- Lack of Staff (2)
- Access to knowledgeable people (2)
- Sharing and Access to Information (3)
- Lack of support - Video Conferencing

![Pupils]
- Overwhelms and highlights difference
- Technical day-to-day issues

![Logistical]
- Geography
- ICT problems on non-dedicated equipment

Hearing Impairment

![Staff]
- Knowledgeable staff (6)
- Up-to-Date (2)
- Mentors
- Networks

![Financial]
- Funding? (6)
- Decision-making?

![Skills]
- Advisory Service (2)
- Training Facility
- Disseminating research

![Practicalities]
- Access? (4)
- Provision of options (2)
- Organisation?
- Compatibility of equipment
- Involve Families
- Consultation Process Required

**Figure 1.1 Main themes of requirements to be put in place to establish a central resource.**

Many of the comments raised related to staff issues whether it was a lack of staff, lack of access to support and knowledge or being able to respond to the rate of change posed by technology. One authority proposed utilising the technology to improve access to training via video conferencing.
Recommendations

Greater detail is provided elsewhere in this report. The main focus was to determine the feasibility of, and demand for, national procurement of assistive listening devices and environmental aids for deaf pupils and of specialist technology and low vision aids that allow access to the curriculum for visually impaired pupils, including those with additional difficulties. One of our main aims was to determine if there is a model for procurement that can be replicated. The following recommendations are amongst those highlighted.

- It has not been possible to locate a national centre in any country, which procured technical equipment for children with a sensory impairment for education purposes. To date a survey of existing national or regional centres offering the provision of technical aids in the field of sensory impairment in the UK, Europe and further afield has proved fruitless.

  The Internet search did produce evidence of a few centres with a similar remit as the SSC. It is recommended that any follow up to this exercise includes surveying existing providers of their current experience and uptake; for example CALL Scotland, NDCS, TELL etc

- The continuing professional development needs of teachers and support staff is a recurring issue. Online multimedia training for teachers, using a mixture of teachers demonstrating good practice in the classroom, and filmed demonstrations similar to the ‘BUST’ demonstration available on the SSC website, where procedural training is provided were frequently mentioned. It is recommended that partnership working and networking may alleviate some of these issues. Examples of good practice highlighted include the recently established National Visual Impairment Technology Group (Secondary education) hosted by Uddingston Grammar.
Introduction

The Scottish Sensory Centre (SSC) is a national centre based within the School of Education, Moray House, University of Edinburgh. One of the SSC’s core objectives is to work with national charities, such as National Deaf Children’s Society (NDCS), Royal National Institute for the Blind (RNIB), parents and other professionals to fulfil its role as a national provider.

In this report the SSC investigates the feasibility of having a national centre that offers assistive technology and environmental aids to pupils with a sensory impairment by working in collaboration with centres that already provide such facilities and by reporting upon evidence that is already available.

The specific objectives were:

1. To carry out a scoping exercise to establish the feasibility of, and demand for, national procurement of assistive listening devices and environmental aids for deaf pupils.

2. To carry out a scoping exercise to establish the feasibility of, and demand for, national procurement of specialist technology and low vision aids that allow access to the curriculum for visually impaired pupils, including those with additional difficulties.

The SSC intends to use these findings to establish any benefits of standardisation of the availability of equipment and to assist with the identification of training needs. The concept of a national resource for technology is also explored within this report.

This report is presented in six separate sections reflecting upon the following aspects:

- **Section One**: Context and Background of the Report.
- **Section Two**: Methodology
- **Section Three**: Review of Existing Provision
- **Section Four**: Overview of Analysis of Findings: Response to Semi-Structured Interviews Relating to the Provision of Assistive Technology for Children and Young People with Visual Impairment.
- **Section Five**: Overview of Analysis of Findings: Response to Semi-Structured Interviews Relating to the Provision of Assistive Technology for Children and Young People with Hearing Impairment.
- **Section Six**: Conclusion and Recommendations
Section One: Context and Background

The Standards in Scotland’s Schools etc Act 2000 provided guidance on the presumption of mainstream education for pupils with special educational needs, including sensory impairments, to local authorities. In Scotland, there is an expectation that all children will be included in their local mainstream school unless there are exceptional circumstances. Further legislation, mainly the Education (Additional Support for Learning) (Scotland) Act 2004 amended in the Education (Additional Support for Learning) (Scotland) Act 2009 provided a framework for local authorities and other agencies to support all children.

In May 2009, the Minister for Children and Early Years gave a commitment to the Scottish Parliament to establish a working group to report on how the Education (Additional Support for Learning) (Scotland) Act 2004 is affecting children and young people including those who have sensory impairments. The 2009 Act was passed by the Scottish Parliament on May 20, 2009 and came into force on November 14, 2010.

A report by HMIE to Scottish ministers, November 2010 reviewing the added benefits for these learners suggested that the Act (2004) has helped to reinforce the message that it is the responsibility of everyone working with a child who has additional support needs to meet the needs of the child.

In particular it was reported in relation to pupils with a sensory impairment that authorities have developed their planning arrangements using the Getting it Right for Every Child (GIRFEC) approach in line with staged intervention processes.

“Overall, deaf pupils in mainstream schools, specialist resources within mainstream schools, and in schools for the deaf, had a high level of support to meet their needs.”

“Overall, the needs of children and young people with visual impairments are being addressed and met effectively in both specialist provisions and in mainstream schools. There is a sound understanding of the importance of professionals working together to share expertise … to facilitate children’s access to the curriculum and to address barriers to learning. This includes identifying suitable technologies and adapting materials …” Review of the Additional Support for Learning Act: Adding Benefits for Learners: A report by HMIE to Scottish Ministers (2010, p5)

Whilst it is acknowledged in Advancing Professionalism in Teaching (McCormac, 2011, p16) that education in Scotland is served by a teaching profession that is committed, energetic and hard working in a variety of settings it must also be noted that teachers can be tasked with educating children and young people with diverse needs. The modern teacher must have awareness of a whole series of initiatives ranging from curricular change in the form of Curriculum for Excellence through to multi-service work under the GIRFEC banner. A teacher in Scotland not only needs the necessary skills and confidence to deliver a high quality
education programme but must also have the capacity to interact with the wider set of services responsible for the welfare of children.

Sensory impairments are low incidence impairments. In a separate, concurrent project, the SSC was requested by the Scottish Government to identify the age, stage and type of provision offered to children and young people with sensory impairment in Scotland (Weedon, et al, 2012). The evidence available from this report suggests the numbers as: 1788 pupils being supported for visual impairment and 1596 pupils for deafness.

According to McCormac (2011) our current education system should have the capacity and flexibility to deliver the outcomes identified within the Curriculum for Excellence, irrespective of the background of the pupil. Technology has become a vital and essential component of modern classrooms and teachers have combined traditional methods of presenting information with an ever-widening array of technology (Presley and D’Andrea, 2008, p xi). All pupils may find themselves challenged by this but pupils with sensory impairments have additional challenges. In particular pupils with a visual impairment must acquire the same higher-level skills as their peers but in addition to this they must be able to use assistive technology ranging from special devices to specialist software packages to access this. Universally, the classroom environment, teaching methods and curricular materials in schools have all evolved to meet the needs of pupils who are fully sighted. As a consequence, a child with a visual impairment faces difficulties unless adaptations are made to all aspects of the school environment. The introduction of specialist technology has influenced the methods of teaching employed to enable the VI pupils to access a full curriculum to their optimum ability. A range of specialist equipment is now available to these pupils (Ravenscroft, Sugden and Duthie, 2006).

A priority for this objective was to investigate the use of assistive technology for both visually impaired and hearing impaired pupils, which enables students to apply technology appropriately to complete educational goals: that is “The end is not in the student’s learning to use the technology but in what he or she does with it.” (Presley and D’Andrea, 2008, p xiii)

A guide of the range and types of specialist equipment available is provided in Appendix 1: An Overview of Specialist Technology and Equipment.
References


Section Two: Methodology

The SSC co-ordinator and the director of National Deaf Children’s Society (NDCS) Scotland discussed possible strategies that could be employed to achieve successfully the specific outcomes of the SSC’s objective of investigating the feasibility of setting up a facility that offers assistive technology and environmental aids to pupils with a sensory Impairment by working in collaboration with centres that already provide such facilities and by reporting upon evidence that is already available.

NDCS offered information gained from the CRIDE Survey (formerly the British Association of Teachers of the Deaf (BATOD) survey) for consideration; Margaret Reid, a researcher from NDCS, provided advice to the SSC relating to appropriate methodology to facilitate this work. (September 2011-January 2012) Other professionals were involved in a consultative role to supplement expertise, when required.

A research project conducted by NDCS, which investigated the use of FM systems in schools, was one of the triggers that initiated this current investigation. Returns for this questionnaire issued to gain data were very low and it was this evidence that prompted the team to employ semi-structured interviews by telephone to gather data.

This report is based primarily on the information provided by the respondents in the semi-structured interviews. These semi-structured interviews were designed to allow the articulation of the Heads of Service and to reflect the various situations across authorities. The evaluation therefore is substantially qualitative in character. It will include evidence collected from secondary sources, namely documents relating to the topic. Questions were developed to investigate the feasibility of, and demand for, setting up a facility that offers assistive technology and environmental aids to sensory impaired pupils.

It was decided for ease of recording to ask similar questions for those involved with hearing impairment and visual impairment, but to ask about technology relating to each of the impairments separately; even although in some instances the service for both is combined. Sheila Mackenzie and Elizabeth Izatt, two members of the SSC team, conducted the semi-structured interviews. In preparation for this activity, a draft of questions to be asked, with cues indicating where it would be appropriate to prompt were developed for use during the telephone interviews. This list of questions was revised after consultation with Fife Sensory Service. The focus of the questions shifted to reflect the range of devices that are available rather than finding out details relating to the number and source of manufacture. The final list of questions is available in Appendices 2 & 3.

Representatives from sensory services in each of the 32 local authorities and representatives from the appropriate grant aided schools were invited to participate in a semi-structured interviews to be carried out, by telephone at pre-arranged times.
Sixteen interviews relating to visually impaired pupils and 18 interviews relating to hearing impaired pupils were conducted. Participants were provided with the questions in advance. All semi-structured interviews were recorded; and transcriptions of the data provided by the participants have been used within this report to inform its findings. The responses have been anonymised.

This report has been divided, for most of the analysis of the responses, into the two areas of visual impairment (Section 4) and hearing impairment (Section 5).

The SSC also intended to report upon evidence that is already available, including recent legislation; the following activities were also conducted:

- Website search for similar centres
- Discussions during meetings
- Scrutiny of available literature and documentation

The evaluation will consider work already carried out by the SSC relating to the inclusion of pupils with sensory impairment.

In addition two members of the SSC have been able to attend meetings relating to the recently organised National VI Technology Group (Secondary education) held in Uddingston Grammar.

The specific objectives were:

(1) To carry out a scoping exercise to establish the feasibility of, and demand for, national procurement of assistive listening devices and environmental aids for deaf pupils.

(2) To carry out a scoping exercise to establish the feasibility of, and demand for, national procurement of specialist technology and low vision aids that allow access to the curriculum for visually impaired pupils, including those with additional difficulties.

The SSC intends to use these findings to establish potential savings to local authorities, any benefits of standardisation of the availability of equipment and to assist with the identification of training needs. The concept of a national resource for technology is also explored within this report.
Section Three: Review of Existing Provision

When assessing the quality of resource provisions it is important to be clear about their purpose.

“A resourced provision should provide specialist support for school staff and deaf children and young people on the school’s roll and their parents …” (NDCS (2011), p5)

There was an assumption before this project started that the SSC would be able to make a comparison between a proposed model in Scotland and existing models in other countries. However, it has not been possible to locate a national centre in any country, which procured technical equipment solely for the use of school aged children and for education purposes. To date a survey of existing national or regional centres offering the provision of technical aids in the field of sensory impairment in the UK, Europe and further afield has proved fruitless.

The Internet search did produce evidence of a few Centres with a similar remit as the SSC including:

RIDBC Renwick Centre, in Australia, is a centre for research and professional studies in the field of education for children with sensory disabilities. In partnership with the University of Newcastle, the RIDBC Renwick Centre is committed to the provision of high quality teaching and learning opportunities for professionals in the area of Special Education for students with hearing or vision impairment, research in these same areas, and related community service. http://www.ridbc.org.au/renwick/index.php

The Texas School for the Blind and Visually Impaired (TSBVI) serves as a special public school in the continuum of statewide placements for students who have a visual impairment. Students, ages 6-21, who are blind, deafblind, or visually impaired, including those with additional disabilities, are eligible for consideration for services on the TSBVI campus. It is also a statewide resource to parents of these children and the professionals who serve them, from birth through transition from school. http://www.tsbvi.edu/

Centres, which lend specialist, technological devices including:

CALL Scotland CALL (Communication, Access, Literacy and Learning) Scotland is a centre, co-located with the SSC, within the Moray House School of Education, the University of Edinburgh. CALL Scotland offers specialist equipment for communication and learning on loan for trial to individuals with disabilities throughout Scotland. This centre specialises in equipment for children with multiple disabilities and communication problems, and so the range includes switches, communication aids, adapted keyboards and software. They do
have some equipment in their loan bank for children with MDVI (multiple disabilities with visual impairment) but not specifically for VI children and do not have any loan stock for deaf children.  http://www.callscotland.org.uk

Books for All The Books for All Database enables teachers and other education practitioners to search for and download books and other printed materials in adapted, accessible formats for print disabled pupils. The resources on the database are accessible copies of copyright books and works. These accessible copies are shared under the terms and conditions of the CLA Print Disability licence. The books can only be used by pupils who are visually impaired or otherwise disabled and by reason of such visual impairment or disabilities are unable to read or access the original printed book. The accessible copies are generally in pdf format, which means the font size can be enlarged for printing off or the text read with a screen reader on a computer. http://www.booksforall.org.uk/Home/

NDCS Technology Test Drive (previously known as The Blue Peter Loan Service) offers deaf children and their families throughout the UK the opportunity to borrow radio aids and other equipment including alerting devices, communication technology, listening aids for TV and iPods, radio aids and software to assess in the comfort of their own homes and at school. This service is available in Scotland. Families may be able to obtain the equipment from their local education authority or a social service on a long-term basis. Since the service was launched, the equipment has been regularly updated so that the very latest radio aids are available. Radio aids can be borrowed for up to three months and other items for one or two months. Technology Test Drive is provided to members free of charge. http://www.ndcs.org.uk/family_support/how_ndcs_can_help/grants_and_equipment/technology_test_drive/index.html

RNIB Technology Education Loan Library (TELL) is a short-term loan scheme for schools. It enables a student with a visual impairment to use technology over a short period (six to eight weeks) and for them and their teachers to assess its effectiveness in an educational setting. The scheme is not intended to replace any statutory responsibility on schools to provide necessary equipment but it enables the schools to assess the most appropriate piece of equipment prior to purchase. There is a range of the latest equipment available through the loan scheme and includes hand-held and desktop video magnifiers, screen reading technology, screen magnification technology and Braille technology. http://www.rnib.org.uk/aboutus/contactdetails/scotland/scotlandhelp/education_family_scot/Pages/tell_scot.aspx

National VI Technology Group (Secondary education) Teachers of the Visually Impaired meet once a term to discuss technology issues, hosted by Uddingston Grammar School. The aim is to provide exchange of information and demonstrations of equipment by teachers who have been using it successfully.
KEYCOMM serves people with communication disorders who reside in Edinburgh and the Lothians. It exists to help people with communication impairments make use of technology to contribute to and control their environments. The service is a multi-agency funded by Health, Education and Social Care. They recommend appropriate technology and support and provide training and information for professionals, carers and users about the use and application of technology. http://www.keycommaac.ik.org/home.ikml

References


This section reports on the responses to the questions relating to the provision of assistive technology for children and young people with a visual impairment. There is a guide to technology in Appendix 1, which will help if you are unfamiliar with some of the terms used in this report.

Prior to undertaking this survey the website of every local authority in Scotland was accessed to establish the availability of any documents that could be read online and/or downloaded, which related to the authority’s policy on technological equipment for deaf and visually impaired pupils. The results were that 14 authorities out of 32 had some form of written policy online which touched on this subject. Some were more detailed than others. It is acknowledged that some authorities have online documentation of which the responders were not aware, but due to the anonymous nature of these results, we have not compared the responses to Question 1 to the actual availability of documentation for that authority.

4.1 Does your local authority (school) have any written policies for the provision of assistive technology or other devices that allow them to access the curriculum?

Figure 4.1: Does your local authority (school) have any written policies for the provision of assistive technology or other devices that allow them to access the curriculum?

25% answered ‘yes’ but believed that none of their documentation was available online. One respondent said the policy was part of all ICT purchasing and another said it was part of their Inclusion Handbook. The remaining respondents either did not have a written policy (37.5%) or they didn’t know whether there was a written policy or not (37.5%).

Of those who answered ‘no’, 19% of them were in the process of writing a policy.
All of the respondents who reported they had a written policy offered to provide it to the SSC. There does not appear to be any kind of exclusivity attached to these documents. It was not clear from the responses available as to why they aren’t available online.

It would seem from the evidence obtained from the responses that the presence or absence of a written policy does not directly affect the process of providing specialist technology equipment for individual pupils; the fact there is no written policy, for such a low incidence disability does not necessarily indicate that this will have a detrimental effect on procuring equipment for pupils. It must be borne in mind that this is the opinion of the responders and it does not necessarily follow the responders have a recent and in-depth knowledge and understanding of what technological resources are available.

4.2 Can you please give an indication of the range of equipment that is available in your area?

![Bar Chart]

Figure 4.2: Demonstrates the range of equipment reported available for pupils with a visual impairment.

100% of respondents reported that their local authority has laptops for their pupils. The most commonly mentioned software was Jaws screen reader (50%) followed by Zoom text screen enlargement (19%); Dolphin screen reader (12.5%).

50% are using electronic hand-held devices: iPad 19%, Kindle 19%, iPod and other MP3 19%, iPhone 6%.

For Braille users, the Humanware Braille Note computer is the only one mentioned by (44%) of respondents. As anticipated, 44% of respondents also have electronic Braille paper production (embosser and software) within their local authority and 56% have Perkins Braillers.
Pupils are reported to use a wide range of low-tech low vision aids. (62.5% of respondents).

For electronic (computer based) magnification, 37.5% reported the use of hand-held camera and 62.5% of respondents implied that pupils are using distance cameras for viewing whiteboards, presentations, etc.

Pupils in 56% local authorities have access to video magnifiers, but only 25% are using them or merely listed them. The remainder are not used. RNIB’s DAISY system was referred to by 12.5% of respondents.

It is clear from the responses that almost all pupils with a visual impairment educated within the local authorities who participated in this survey, have access to a laptop with whatever access software they require; JAWS or Dolphin screen readers, ZoomText screen enlargement etc, as well as other applications required to allow downloading images from, for example, an interactive whiteboard.

Electronic magnifiers are commonly available for pupils with a visual impairment although some schools are now experimenting with more mainstream applications like iPads, which can be used to download material from interactive whiteboard, or for taking images of taught material and enlarging it on the iPad screen. In addition it has been shown that iPads have a “powerful draw” for children with cortical visual impairment (University of Kansas, 2011).

It would seem that although older technological devices and applications like desktop video magnifiers and DAISY applications are still retained, more interest towards modern devices and applications such as electronic magnifiers and e-texts have become widespread.
4.3 Who is responsible for the assessment to decide what equipment is most suited to the needs of the pupil?

The responses from the representatives of the local authorities who participated in this survey indicated that:

94% of the responsibility was either wholly or partly down to the Teacher of Visually Impaired pupils (TVI).

ICT (Information and Communication Technology) staff were involved in 31% of cases, a multiple-person approach was used in 50% of the local authorities who responded.

12.5% of responders sought advice from CALL Scotland relating to VI pupils with additional needs, whilst a further 18.7% reported consultation with the RNIB.

12.5% of responders specifically indicated collaboration with health services as well.

Half of the responders (50%) reported the choice of equipment was a joint decision between at least two services but in over a third of instances this also included the classroom teacher (37.5%), parents (25%) and pupils themselves (19%) dependent upon age and ability.

The Teacher of Visually Impaired (TVI) is almost always involved in the assessment of pupil. However, one responder, who did not mention a TVI, reported the decision to acquire equipment had devolved to the Psychological Services, which in that authority may well include the peripatetic teaching service. In local authorities, where an Additional Support for Learning ICT specialist is employed, this expertise is included in the decision-making and choice of equipment. One responder mentioned the difficulty the TVI has in keeping abreast of new technological developments in the field;
“…they feel they might be missing out on good things because they don’t have the time to look into it thoroughly and are not so aware of new products.”

It is interesting to note that according to Kelly (2011) “High school students who were visually impaired whose parents participated in any parent meetings, programs or training sessions for families of students with disabilities were approximately 1.4 times more likely to use assistive technology …”

4.4 Who has responsibility for recommending, monitoring and reviewing equipment? How often does this happen?

![Bar chart showing designation of person with responsibility for recommending, monitoring and reviewing equipment.]

Figure 4.4(a): Designation of person with responsibility for recommending, monitoring and reviewing equipment.

As with question 3, the responsibility for these tasks involves the TVI according to 93.7% of the responders from the participating local authorities. As would be expected practice reflects recent legislation (GIRFEC) in the majority of local authorities, (62.5%) of the respondents indicated that there was an expectation within their local authorities to implement a multi-person approach, mostly with either a specialist in ICT for additional support or a general ICT specialist. Only 6% of respondents reported the responsibility lay with the local authority school and 6% of respondents suggested this decision was left with the supplier.
Figure 4.4(b): Frequency of review processes to evaluate appropriateness of equipment.

It would appear from the responses provided by local authority representatives that monitoring is almost entirely an ongoing process. The longest interval of review is in the formal annual review.

4.5 What criteria are used for the selection of equipment? Are purchases bought specifically to meet the additional support needs of an individual pupil?

Figure 4.5: Criteria used for the selection of equipment
100% of the respondents representing local authorities said that any equipment was bought specifically for an individual pupil. The pupil’s age (25%), preference (19%) and classroom setup/geography (31%) were taken into consideration.

Cost as a criterion was important in only 8% of the responses while it was not a factor at all in 25% of the responses.

For the responders who addressed the question as to what external influences affected their purchases, 18.7% of them referred to the RNIB as a source of advice on latest technology, only 6% of respondents reported networking with other regions and 12.5% of respondents accessed demonstrations or information provided by resource suppliers.

The respondents approached this question in two different ways: one half (50%) took the ‘criteria’ to mean the assessment process, the visual acuity and the condition affecting vision; the remaining respondents understood this question to mean how they made the decision to choose a particular brand over another.

Only 50% of respondents said the decision was based on the outcome of functional vision assessment (FVA); however, it is likely ongoing FVA will be one of the main criterion in all cases. The authors have surmised that the others merely answered the question in a different way.

“For students with visual impairments to be able to receive high-quality assistive technology that will enhance their educational success, more concrete research on the effectiveness of assistive technology needs to be conducted.” (Kelly & Smith, 2011)

4.6 How is the purchase of equipment funded? Is it from a central or ring-fenced budget, funded wholly from education, health or social work, or joint funding, or tripartite funding?

![Figure 4.6: Showing the main source of how the purchase of equipment is funded](chart-image-url)
100% of respondents said their funding came from the education department of the local authority; 62.5% from a non-specific additional or pupil support budget and (25%) from a specific service budget.

In 25% of the local authorities participating in this survey, the NHS is reported as providing low vision aids for the pupils for school use.

31% of local authorities were able to tap into local charities and bequests for the purchase of some equipment. 12.5% use the services of the RNIB in Scotland.

“We also get stuff from the RNIB on loan and they’re very good. It’s supposed to be for a certain amount of months but we can go over that and they don’t quibble”.

Respondents indicated the requirement to differentiate between specialist equipment and computer based equipment and hand-held devices, which in 19% cases came from the mainstream budget, and therefore would have to make their case for purchase:

“The school I’m working for just now, they’re looking at getting iPads for any pupils with VI. But the things that I’m recommending normally come from another education budget.”

4.7 Let us think about equipment maintenance. Who is responsible for the day-to-day management of equipment?

Only 6% of the local authorities who responded had the use of a specialist technician for their equipment. Most of the other respondents (81%) accessed the mainstream ICT technicians employed within the local authority to help solve technical problems with the equipment. The ‘first line of defence’ is quite often the TVI reported by 37.5% of respondents.
A significant proportion of respondents (75%) reported that in their local authority there are some spares available in case equipment breaks down. When spare equipment was not immediately available, the pupil was given extra support from the TVI or classroom assistant in (56%) of areas. “…children have coping strategies. Some children are quite resistant to using technology.”

56% of the people interviewed said that maintenance was not a major issue, while 44% said it could be an issue. However, 19% of those reporting an issue reported that these were due to geographical problems alone and 6% said it was due to the fact that they had no spares.

“What we’ve found with laptops and stuff that our young people have, that if they know that it’s a VI person that’s using it then the manufacturers don’t want to know. So that’s a big difficulty. We just end up having to scrap them if we can’t fix them.”

68% of respondents who discussed funding indicated that it was not a problem; further research is required to establish the specific reasons as to why it is a problem in the remaining 32% - almost a third - of the local authorities who did reply.

4.8 What training or support is provided for the use of specialist equipment? Think about the support that is available to: specialist teachers, classroom teachers and support staff, pupils and family.

Figure 4.8: indicates what training or support is provided for the use of specialist equipment to: specialist teachers, classroom teachers and support staff, pupils and family.
The respondents representing the local authorities in this survey reported that the majority (87%) of specialist teachers of the visually impaired (TVI) receive all or some of their training from the suppliers of equipment:

“Some suppliers offer free training but we are a bit remote and a small authority so it’s difficult to get people to come.”

“…attend free courses run by companies such as Humanware. We go to Sight Village. Advice and demonstrations of new technology from specialist providers, eg; Concept Northern.”

A slightly smaller number of TVI’s (81%) also receive training in the form of Continuing Professional Development either supplied in-service or by external providers like RNIB, the SSC and CALL Scotland.

Some specialist teachers (37.5%) are expected to rely on some self-training relating to familiarisation of new equipment.

Most of the responders (75%) indicated an expectation that the TVI will have responsibility to cascade training to the classroom teachers and support staff and the pupils themselves. In some cases (31%) this was the responsibility of the auxiliaries and/or ICT specialists. 75% of respondents also reported that training relating to specialist technology is provided to the family as well. 25% mentioned that the pupils themselves were very knowledgeable and participated in training.

4.9 Are pupils allowed to use specialist equipment at home, eg, to complete homework? Can you provide some examples?

19% of respondents reported the pupils in their local authorities are not able to use specialist equipment at home, whilst the majority of the local authorities who did provide a response (81%) reported that pupils are allowed to make use of this equipment in the home. Responses included the following reservations: “…but limited by the expense of the item and home circumstances – we use discretion.”

The devices where there is the least similarity in responses related to hand held devices. Some authorities allowed low tech equipment home but not hand-held devices. Others considered it essential to allow this equipment home.
4.10 What arrangements (if any) are made for insuring equipment? in school? at home?

![Figure 4.9: Graph demonstrating arrangements for insuring equipment](image)

25% of those who responded don’t know if their local authority has any arrangement in place for insuring equipment. 31% of those who responded report that their local authority has no insurance in place at all (at home or at school). Furthermore, 25% have school insurance, 25% have no school insurance.

6% have an informal agreement with the parents and 31% have system in place whereby a formal request is made to parents to put the equipment on their house insurance.

4.11 If pupils are educated outwith your local authority can you please tell us what arrangements are in place for the provision of specialist equipment that they may require?

50% of the respondents said the situation did not apply within their local authority. In just over a third of responses (37.5%) it was indicated that in the case where pupils are educated outwith the local authority in either the Royal Blind School or within another local authority, then the receiving organisation was responsible for supplying and maintaining equipment. 8% of respondents reported that they supplied the equipment for their children being educated in other authorities.
4.12 Who is responsible for the adaptation of the materials?

Figure 4.10 shows who is responsible for the adaptation of the materials

A significant number of responses (87.5%), from the participating local authorities reported the TVI or specialist service has a lead or role in producing materials. Support staff, auxiliaries or classroom assistants are also heavily involved in this production with clear directions from the teaching staff; 69% of respondents indicated this. In 56% of responses it was also reported that the pupils’ school also takes some responsibility.

The degree of adaptations required to meet the additional support needs of the individual pupil often indicated which agency is to accept responsibility for adapting materials. The mainstream school staff are more likely to have the skills to easily produce large print adaptations. Specialist staff are more likely to facilitate complex adaptations requiring tactile diagrams and Braille.

One of the large local authorities considered itself well-organised regarding the production of Braille in-house.

“We have a Braille Transcription Officer who prepares the bulk of materials in advance. Teaching staff are expected to look at these materials first to see what adaptations are necessary for diagrams etc and then liaise with the transcription officer.

In addition some members of the teaching staff will prepare last minute materials.”
4.13 Give examples of the type of adaptations required.

Figure 4.11 indicates examples of the type of adaptations required by pupils with a visual impairment.

Large print is the most commonly requested adaptation with 90% of respondents indicating that this is required and offered within their local authority. Details of the types of adaptations required or provided by the pupils within the local authorities who provided a response are available in figure 1 above.

56% of respondents indicated that tactile diagrams are presently prepared within their local authority; a further 8% indicated that pupils within their local authority would require tactile diagrams in the future.

62.5% of respondents reported that Braille is required by pupils within their schools, indicating that the majority of the local authorities who responded have visually impaired pupils accessing print and non-sighted methods to access materials in their schools. One local authority was preparing for a pupil who will be a future Braille user, which was “causing some anxiety” because the specialist staff were not experienced in delivering course work in Braille.
4.14 Do you make use of any other provider to provide materials?

Figure 4.12 showing the number of actual responses about external providers.

All of the respondents from the local authorities who were interviewed indicated awareness of the Books for All project, demonstrating the success of raising awareness of this initiative across Scotland. The respondents’ evaluation of the service was slightly patchier, with one authority not actually using it yet, another local authority reported the Books for All project “wasn't working for them” and another local authority indicated, “the system is slow”. Furthermore one local authority said the concept of using a pdf wasn't ideal for trying to enlarge texts. In addition, two respondents said they were major participants in Books for All but were frustrated that other regions did not participate in it. “Books for All should be filling the gap from the big UK-wide library services of the RNIB and Calibre, which although used widely, have few classroom textbooks”, “most publishers active in pre-16 education appear to be towards the back of the pack … before committing to ebooks” (Gunn, 2011). Acquiring these seems to be one of the main problems for schools, although some get them in the form of e-texts from the publisher.

One local authority recommended one service to parents, CustomEyes by NBCS, a charity organisation for parents. “TVI recommends to parents who can get books (novels etc) from this charity totally customised for font size etc for cost price of the standard print book.” (http://www.nbcs.org.uk/customeyes).
4.15 What do you consider to be the main barriers relating to the use of assistive technology and technology products in your area?

Figure 4.13 illustrates the main barriers relating to the use of technology.

The responses to this question can be grouped broadly into three broad groups of categories: staff, the pupil, and access.

**Staff**

A number of responses highlighted lack of training for the specialist and support staff (25%); however, ICT or technical support (31%) was cited as a significant problem within the group who were involved in the interviews. The requirement for school awareness raising and training of class teachers was also given as a problem in 25% of responses.

“Need to get over the initial fear, then teachers begin to think about and be comfortable with the pupil and not just worry about their additional support needs.”

**Pupils**

Pupil self-image was seen as a barrier according to 50% of the respondents. Respondents reported that the children were “not wanting to be seen different” and that “a video magnifier can be a very physical barrier [socially]”

According to Bishop & Rhind (2011) in their study of higher education students “First and foremost, all participants in this study came across as wanting to be viewed as individuals in their own right not simply … as being ‘visually impaired’.”

**Access**

Bulkiness and portability problems were reported in 25% of responses; geographical issues in 19% and accessibility (in the school and classroom) in 25% of responses.
Funding of specific items were mentioned in 31% of responses: “Many pupils are enthusiastic about using iPads and it will take some time to have enough to make them available as often as the pupils want them, so their use is currently prioritised based on need.”

4.16 What would be your views about a national procurement centre: do you think it would enhance the provision of technical aids, and assistive technology in Scotland?

The above graph indicates a very mixed response to this question. Many of those interviewed simply did not know (50%) if a national procurement centre would enhance the provision of specialist technology for pupils with a visual impairment; of those who were able to decide 31% thought it would enhance provision, whilst 19% did not. 44% of the respondents said a “technical knowhow” resource would be a positive and beneficial thing to have. 8% suggested a central resource of adapted materials or producing adapted materials to order.

37.5% of the respondents queried how something like a national procurement centre could be funded. A follow-on question was whether the decision-making on purchases would also be central or whether people could order what they wanted, since purchases are specific to individual pupils.

The overall conclusion from this question was that it was too vague; most people said they would require more information before they could form a firm view one way or the other. Interestingly the large, central authorities thought that central procurement and/or technical support would be beneficial for smaller, more remote authorities, while those authorities said their very remoteness would work against a central system, due to the problems of
transportation, distance, and therefore turnaround time. “Getting stuff in and out would be absolutely chronic for us.”

4.17 What do you think needs to be put in place to establish a central resource? You may want to think about staff, skills, procedures, financial resources, etc.

Many of the respondents acknowledged a requirement for specialist and skilled staff (50%) and the opportunity for consultation and planning (19%). Funding seems to be an important issue with 31% of those who participated. Overall the response to this question was in the main negative by 44% of respondents, whilst only 6% of responses were generally positive.

One respondent mentioned that the model of central procurement works well in other countries, which is not what we found in our search. Again there seems to be a presumption of something, which either doesn’t exist or doesn’t have an internet presence that we could find.

One respondent was aware of the RNIB loan service but didn’t use it. Another worked in an area with a service level agreement with CALL Scotland but had never needed them for their pupils.
4.18 Are there some aspects that you think are possible to centralise and others that, in your opinion, cannot be centralised?

Figure 4.16: Main elements which could or could not be centralised according to respondents.

50% of respondents were in favour of a Loan system some expressed provisos that it was only for less used items or that it was fully accessible. 44% thought that training could be usefully centralised. 13% mentioned that procurement could be centralised with the caveat that it would need to be cheaper and easy to access, while 19% said that procurement could not as this was done on a child by child basis.

Positive responses outweighed negatives here but assessment was identified by more than half of the authorities (56%) as being a service which could not be centralised. One authority answered simply “Where things are centralised in my experience there’s nothing but problems.” It is significant that 38% of authorities who participated made no response to this question.
4.19 Please provide any further comments relating to the provision of technological devices and support.

### Staff
- Rate of change (2)
- Learning curve
- Lack of Staff (2)
- Access to knowledgeable people (2)
- Sharing and Access to Information (3)
- Lack of support - Video Conferencing

### Pupils
- Overwhelms and highlights difference
- Technical day-to-day issues

### Logistical
- Geography
- ICT problems on non-dedicated equipment

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**Figure 4.17 Major themes from “any further comments”**.

Many of the comments raised by this part of the interview related to staff issues whether it was a lack of staff, lack of access to support and knowledge or being able to respond to the rate of change posed by technology. One authority proposed utilising the technology to improve access to training via video conferencing.

Pupils were understandably a focus for comments where one authority reported that technology is “Often overwhelming for the pupils, having to carry stuff around especially at Secondary school. Battery life and charging up of smaller items of kit can be an issue.”

19% of those who responded preferred to provide no additional comments. Other comments focused on the good service that is currently available and one highlighted fears for the future in terms of cuts and not being able to maintain the status quo. One respondent told us they would embrace the technology if they could:

“I would follow South Korea’s example and throw out pencils and jotters and give every child a laptop.”
References


Gunn, Dave & Homer, Andrew (2011) Ebooks in education – a viable route to accessible information? *Insight* No 34, p9-12


Section Five: Response to Semi-Structured Interviews Relating to the Provision of Assistive Technology for Children and Young People with Hearing Impairment.

This section reports on the responses to the questions relating to the provision of assistive technology for children and young people who are deaf. There is a guide to technology in Appendix 1, which will help if you are unfamiliar with some of the terms used in this report.

5.1 Thinking about school aged children with a hearing impairment; does your local authority (school) have any written policies for the provision of assistive technology or other devices that allow them to access the curriculum?

![Pie chart showing the responses to the question]

Figure 5.1: Does your local authority (school) have any written policies for the provision of assistive technology or other devices that allow them to access the curriculum?

Most respondents did not have (39%) or were unaware (28%) of any current written policies regarding the provision of technology. A third of responses (33%) said that they did have a policy, for many of those the policy they were thinking of was a much broader document. Many of the “yes” responses were related to general documents, which covered technology as part of that. One respondent mentioned that they used the Count Us In document (HMIE, 2007) for benchmarking purposes and to guide decision-making.
5.2 Can you please give an indication of the range of equipment that is available in your area?

Figure 5.2 indicates the range of equipment that is available in local authorities. Nearly all respondents (94%) reported that they were using FM radio aids, 78% were using Soundfield systems in addition to FM systems. The only authority, of those who participated, not using FM systems is very small and rural, likely to have very small classes, they reported using hearing aids. Wood and Popplestone (2005) advocate a combination of radio aids and soundfield to provide the best solution in the classroom for children with cochlear implants. Soundfield is regarded to be only really useful in acoustically treated classrooms. As a single solution, radio aids come out as the best option for children. Looking at our findings practitioners in Scotland are clearly in agreement with this.

Nearly half of the loops reported were present in schools due to new buildings and were not available within the classrooms, only for public meeting places, reception, the library etc. One authority is using personal loops to allow pupils to access mp3 players etc. Loops are not considered a satisfactory solution for the classroom by Evans (2009) especially at secondary school as loops would have to be installed in every area where the child needs to listen and overspill of frequencies is a genuine problem.

Responses about whether the aids in use were dynamic, standard or body worn were incomplete. 33% of respondents made no mention of dynamic/standard or body worn.

61% confirmed that audio access to computers and mp3 players were provided. A variety of solutions were reported: most mentioned a lead which could be plugged in to many devices; “T loops”; and via their radio aids.

Microphones for group work: 33% used the omnidirectional settings on their radio aids, 22% utilised the teacher’s microphone by placing it in the centre of the group or passing it around. Only 2 authorities reported using conference or group microphones. One other mentioned
that these were not used anymore because it could draw attention to deafness; this authority often passed the microphone around the group attached to a soft toy.

Additional equipment included laptops/iPads (22%) with 28% using some kind of visual or sign language software. Switches were mentioned by 11% for use with pupils who have additional disabilities.

5.3 Who is responsible for the assessment to decide what equipment is most suited to the needs of the pupil?

![Bar chart showing responsibility for assessment]

**Figure 5.3 demonstrates who is responsible for the assessment to decide what equipment is most suited to the needs of the pupil.**

17% of the local authorities participating in the interviews said it was their Teacher of the Deaf (ToD) alone who was responsible for assessment to decide what equipment was required. In 50% of the responses this responsibility was shared with clinical audiologists, and/or educational audiologists. 11% of the authorities included borrowed the expertise of an Educational Audiologist through a service level agreement instead of employing an Educational Audiologist. 28% of participating local authorities did not mention having official access to an Educational Audiologist at all. 28% of authorities represented in this report described a wide consultation process when deciding about equipment for deaf pupils, which might also include the family, the classroom staff and/or the pupils themselves.
5.4 Who has responsibility for recommending, monitoring and reviewing equipment? How often does this happen?

Figure 5.4(a) indicates who has responsibility for recommending equipment.

Recommendations were made by professionals in all cases within the local authorities who responded: ToD (61%), Educational Audiologist (56%), clinical audiologist (28%) with one authority saying they also considered input from the Family. Interestingly, there was no involvement with school staff, for example, the class teacher or assistants or with the pupils themselves.

Figure 5.4(b) indicates who has responsibility for reviewing equipment.

ToDs are an obvious point of contact with the pupils and their equipment and this is borne out by this 100% response rate, from the local authorities who responded, that they are involved in reviewing equipment. Most carry out this duty on their own, however, 44% have assistance from an Educational audiologist, the Family (6%) and/or the Pupils themselves (22%). In some instances it was reported (17%) that a Clinical Audiologist also reviews pupils.
Figure 5.4(c) indicates who has responsibility for monitoring equipment.

39% of respondents said that the ToD was solely responsible for monitoring. The rest shared this responsibility with at least one other professional and sometimes family or pupils although the combination of these varies. The single authority whose ToDs do not monitor their deaf pupil’s equipment has a geographically challenging area where the ToD is not in very regular face-to-face contact with the pupils. In this instance the parents are felt to be a very important part of the service and they are trained alongside the school staff to manage the day-to-day monitoring of equipment. Pupils are encouraged to be responsible for their equipment as an essential lifeskill they will need for the future.

Figure 5.4(d) indicates how often equipment is reviewed and monitored.

These numbers include some duplication as 3 authorities gave different responses for informal and formal reviews. Participants seemed to have difficulty answering this question; indicating that they respond to need as it arose so many (72%) opted for ‘ongoing’. Of those saying annually most were saying that this was a minimum expectation.
5.5 What criteria are used for the selection of equipment

Figure 5.5 demonstrates what criteria are used for the selection of equipment.

While responses indicated that they would buy what was the best solution for the children, nearly half of the respondents (44%) were also aware of getting value for money and shopping around to achieve best value. The environmental acoustics were important in the selection of equipment for a third of respondents. 28% mentioned that they tended to use the same manufacturers or suppliers out of habit or familiarity. 28% of the authorities relied on the expertise of Educational Audiologists to inform decision-making. Criteria relating to the child featured in the responses with 17% looking at the age and stage of the child, another 17% looking at the type of hearing loss and 11% took compatibility with hearing aids and cochlear implants as a factor. One authority mentioned that the pupil’s preferences would be considered along with a range of the other criteria already mentioned.

94% of respondents said that they bought equipment specifically to meet the additional support needs of individual pupils. The one authority that did not say they purchased equipment according to pupils’ needs purchase newer specifications of equipment on a rolling programme where the younger pupils are given the newer equipment as they have longer to go in school. While some stated that they could not actually get the funding released without a named child on the request.
5.6 How is the purchase of equipment funded? Is it from a central or ring-fenced budget, funded wholly from education, health or social work or joint funding or tripartite funding?

**Figure 5.6 indicates how is the purchase of equipment funded.**

No authority we spoke to had a tripartite arrangement. 17% of the authorities had a formal financial arrangement where funding was put into a shared pot to cover the equipment needs of deaf children.

Some authorities (39%) commented that some items were bought by health while others were bought by education but no shared funding arrangements were formalised, usually hearing aids etc were supplied by Health while the FM systems were bought by Education. When asked 17% were aware of equipment being paid for by Social Work, this was usually equipment being used at home or items such as laptops which might be bought at transition periods in preparation for going to further or higher education.

84% of funding mentioned came from Education alone. 67% of respondents used a central budget while 17% of respondents had a ring-fenced budget. One authority mentioned that their budget used to be ring-fenced but is now from a central budget.
5.7 Let us think about equipment maintenance: who is responsible for the day-to-day management of equipment?

![Diagram showing responsibilities for equipment maintenance]

Figure 5.7(a) demonstrates who is responsible for the day-to-day management of equipment.

For very practical reasons it is easy to see why many authorities (44%) rely on a combination including both the Teacher of the Deaf and school staff to be responsible for the day-to-day management of equipment. A further 11% did not include the ToD presumably because the specialist teachers are not on hand every day. 22% relied solely on the ToD to be responsible for the equipment. 17% included pupils in this role; one authority was very keen on encouraging the children to be responsible for their equipment (particularly in light of the Curriculum for Excellence), increasing their independence and preparing them for life outside of school.

Do you have any specialist staff to maintain equipment, eg, a technician?

![Diagram indicating presence of specialist staff]

Figure 5.7(b) indicates if specialist staff are provided to maintain equipment.

Only 2 authorities (11%) reported that they had access to specialist technical staff one of whom was the Educational Audiologist, one authority thought that there might be one within their shared arrangement but did not know. 78% said that they did not have a technician, one
authority made the point that they used to have one but a lot of the technology is sealed now so it couldn’t be fixed in-house without invalidating guarantees.

If equipment is faulty or broken, do you provide a replacement?

![Bar chart showing responses to the question: If equipment is faulty or broken, do you provide a replacement?](chart1.png)

**Figure 5.7(c) demonstrates whether a replacement is provided if equipment is faulty or broken.**

Only 28% were confident that equipment would be replaced, however many (56%) reported that if possible comparable replacements would be found and supplied as quickly as possible. Older stock is often kept for these situations.

If the equipment cannot be repaired or replaced the same day what arrangements are in place to assist the pupil?

![Bar chart showing arrangements if equipment fails](chart2.png)

**Figure 5.7(d) shows what arrangements are in place if the equipment fails.**

When asked about the arrangements in place for pupils when equipment failed 39% of authorities made no helpful response. So the limited responses we did get do not offer much of a pattern. The main arrangement offered by 17% of the authorities was to provide communication support either from a communication support worker (CSW) or a classroom
assistant, 11% said the ToD stepped in to provide support. 11% claimed that items were always replaced and other 11% said the pupil would have to go without until the situation was resolved. One authority reinforced the deaf awareness strategies with the classroom staff and one authority said that pupils with auxiliaries would be taken out of class to work.

Is this a major issue?

![Pie Chart]

**Figure 5.7(e) depicts whether maintenance of equipment is a major issue.**

67% thought that maintenance was not a major issue, 28% thought that it was a problem, authorities mentioned that time, geographical location and bureaucracy were factors.

How does it impact on the way funding is allocated?

![Bar Chart]

**Figure 5.7(f) shows the impact maintaining equipment has on funding.**

Most respondents 78% told us that funding was not affected by maintenance of equipment. While many did not elaborate some told us that their budgets had repairs and maintenance built into their calculations, some were flexible enough and one shared service thought that there were plenty of spares. The respondent who thought that it did have an impact explained that there was no specific funding to buy new or replacements.
5.8 What training or support is provided for the use of specialist equipment? Think about the support that is available to specialist teachers, classroom teachers and support staff families and the pupils themselves.

Figure 5.8(a) shows what training is available for specialist teachers.

Most of our respondents (67%) said that Specialist teachers received training and support for the use of specialist equipment from either an Educational Audiologist or the manufacturers/suppliers of the equipment. There was no overlap in this regard. Most other responses were a wide spread of individual arrangements such as one authority which mentioned an “Audiology Day” every year provided for all involved staff, this was shared with adjacent Regions. SSC courses were cited by 17% of respondents.

Figure 5.8(b) shows what training is available for classroom teachers and support staff.

ToDs and Educational Audiologists are used, in combination or on their own, by 83% of authorities to provide support for staff based in class. 33% have a combination of the ToD and the Educational audiologist providing support to classroom staff, 39% of authorities
provide support via the ToD. In some authorities (11%), suppliers provide training sessions given to a range of staff and pupils offering “same information at the same time”.

One authority responded: “Usually RNID or NDCS provide support for the specialist teachers and CSWs”.

Figure 5.8(c) shows what training is available for families.

78% of the authorities we spoke to provided support and training on equipment to parents and family members. 64% of those responses told us that a ToD fulfilled this role. 21% shared the responsibility between the Educational Audiologist and ToD. One authority told us that the Educational Audiologist performed this role alone and in this case it was reported that the Educational Audiologist was the sole provider of training on equipment across all of the groups. 11% said that information was provided for parents but that no training was offered. One authority who uses suppliers to provide training sessions said that these sessions were open to all including families but they were the only authority who reported this. 17% of respondents said that training for families was not needed, as they never used the equipment. 6% did not mention provision to parents in their answers.

One authority stated, “The family is always involved in every decision” but did not elaborate.

Figure 5.8(d) shows what training is available for the pupils themselves.
Unsurprisingly the ToD is the most likely person to pass on training to pupils on using their equipment (61%), in 36% of those cases an Educational Audiologist was also involved. In 11% of responses a supplier provides sessions, which involve the pupils. One authority said that it depended on their age and how capable they are for taking responsibility but did not elaborate.

Readings suggest that training is highly important: “In an educational setting, much of the student’s success with the device will be based on the teacher’s ability to use the device appropriately and correctly.” Kaplan (1993) p41. A view which is shared by our teachers in Scotland:

“It's important to invest time in training everyone because of lack of staff and geographical difficulties.”

5.9 Are pupils allowed to use specialist equipment at home, eg, to complete homework? Can you provide some examples?

Figure 5.9(a) demonstrates if pupils are allowed to use specialist equipment at home.

67% of the authorities reported that they allowed equipment to be used at home although 2 authorities mentioned that the problems associated with this were significant enough that they were considering stopping this practice. 22% of the authorities did not allow pupils to remove equipment from the school. 11% said it depended on the circumstances and which piece of equipment was needed and so they were recorded as sometimes allowing equipment to go home.
Figure 5.9(b) provides examples of what and how equipment is used at home.

67% of those who said they loaned out equipment told us that it was radio aids which were borrowed. Individual examples of use that were offered included: used in the car on long drives or with the TV/MP3 players/phones, use at clubs (eg Brownies, etc), taken home for convenience for next day at school.

5.10 What arrangements (if any) are made for insuring equipment? (In school or at home)

Figure 5.10(a) What arrangements (if any) are made for insuring equipment for use in school?

50% of responses thought that there was no insurance at school. Possibly because this question was asked directly after being asked if equipment was allowed home some respondents (28%) omitted to answer this element of the question properly. Of the 2 local authorities that believed that the schools had insurance, one told us that the excess sum was so high that it was a “dead loss” for most claims.
Figure 5.10(b) What arrangements (if any) are made for insuring equipment for use at home?

Here we could not get definitive answers about whether parents actually took out insurance, where schools said they held the parents as responsible for the school equipment while in their care we recorded this as a “Yes”. Two local authorities assumed that the equipment would be automatically covered by the house insurance; three requested that parents add it to their insurance; one authority told us that they believed that their school insurance extended to the home.

We had a similar non-response rate as the previous part of the question where respondents only answered half the question.

Of the two “No” responses, one authority stated that there was no school insurance either and that if things went wrong they just had to “take the hit”; the other thought that it was wrong to expect parents to take financial responsibility for the equipment as it did not belong to the parents.

The “Not Applicable” responses relate to authorities who do not allow the equipment to go home.
5.11 If pupils are educated outwith your local authority can you please tell us what arrangements are in place for the provision of specialist equipment that they may require?

Figure 5.11(a) shows whether pupils are being educated outwith their own local authority.

44% of authorities had no children based at other schools or authorities. One authority was not sure if there were any, if so it would be an older pupil attending Donaldson’s, this authority now only offered inclusion within mainstream schools to all pupils.

Figure 5.11(b) shows what arrangements are in place for funding specialist equipment that may be required by pupils being educated outwith their own local authority.

50% of the respondents reported that there were definitely pupils from their authority attending other mainstream or specialist schools outwith their authority. Of these 67% were at specialist schools such as Donaldson’s and the equipment is purchased by the specialist school as part of their financial arrangement with the authority. There was some disparity about whether the host or the home authority would pay for equipment in more mainstream settings, which had led to one authority having problems where expectations have differed between two authorities and neither thought they were liable for the costs of equipment.
5.12 Who is responsible for the adaptation of the materials?

Figure 5.12 illustrates who is responsible for the adaptation of the materials in the local authorities who provided responses.

83% of the respondents said that ToDs were responsible for adapting materials for pupils, and 61% of authorities made use of classroom staff such as “auxiliaries” or class teachers. 28% reported that they had specialist assistants some of whom provided communication support and 11% stated that Communication Support Workers were available to pupils.

One authority reported that adaptations were not required as the Teacher of the Deaf provides direct support.

5.13 Can you please give examples of the type of adaptations required?

Figure 5.13 provides examples of the type of adaptations suggested by the respondents.

The largest adaptation category here by far was modifying language (72%) which included simplifying language, looking at the structure of language, summaries of work or abridging books so that pupils can keep up. Over a third (39%) mentioned sign language as an
adaptation. Subtitling was still done by 33% of authorities but most of those reported that they did a lot less of this than they used to. 28% spoke about using visual adaptations such as picture aids, one authority was beginning to use iPads for this purpose. 22% of authorities provided notetaking for their pupils. 11% talked about the adaptations done to the environment to improve acoustics. Very small numbers (6%) reported using symbols or communication aids.

5.14 Do you make use of any other provider to provide materials?

Figure 5.14 shows other external providers used to provide adapted materials. Half of the respondents said they didn’t make use of any external providers. 17% used professional subtitlers. Another 17% spoke about working closely with NDCS and making use of their booklets etc. One authority used the BSL glossaries at SSC and Wolverhampton and suggested that even better access to on demand help with BSL vocabulary was needed. Another authority told us that professional BSL interpreters would sometimes be engaged for pupils to have full access to a review meeting or for school events such as shows.

5.15 What do you consider to be the main barriers relating to the use of assistive technology and technology products in your area?

Figure 5.15a illustrates the main staff barriers relating to the use of assistive technology and technology products.
Staff:
Themes which emerged relating to staff included mainstream staff resistance to using the technology (39%) and/or not using it properly (17%); staff felt a lack of up-to-date knowledge and training (33) and there was criticism of the level of appropriate ICT support (6%). Lack of time was cited by one authority although this had been mentioned by others in other parts of the questionnaire.

Pupils:
A relatively low number of authorities complained of pupils being resistant to using the equipment (22%). Whereas one respondent responded:

“The equipment is pretty nice, and discreet, doesn’t look so different from other people’s MP3 player headphones and Bluetooth headsets. It’s not so unusual to see this kind of thing, so the children are not so unhappy to use it. Our deaf kids are included from age 3. There is just less aggro about it all.”

Figure 5.15b illustrates the main accessibility barriers relating to the use of technology.

Access: 22% of participants considered that the increased sophistication and rate of change of equipment was a barrier as staff and budgets struggled to keep up-to-date. One response from a widely spread, rural area, mentioned geography as a barrier. Another response thought that the physical environment was a barrier as equipment could only be used in particular locations. One authority felt that more intermittent hearing problems could be dealt with better and would like to see all classrooms with radio aids.

Funding: 39% of responses mentioned that the funding of equipment was a barrier. The initial expense of equipment is compounded by the need to update stocks while everything becomes obsolete within 5 years.

Two authorities reported that they felt there were no barriers.
5.16 What would be your views about a national procurement centre: do you think it would enhance the provision of technical aids, and assistive technology in Scotland?

*Answered with questions rather than Yes or No

Figure 5.16 illustrates the views of the respondents about the provision of a national procurement centre.

Just over a quarter of responses were happy with the current provision although 2 of those authorities also would be in favour of a national service if they didn’t have access to current arrangements and could see the benefits. In some cases people got excited about the possibilities, characterised by this statement:

“A big cupboard full of equipment would be great or if they never said no, if there was a limitless budget and accessibility!”

Positive themes which arose included: Knowledge (17%); Technical support (11%); Pooling resources (11%); Cost spread over authorities; Trialling equipment; Free training for all.

39% stated that a procurement centre would not be a good idea. Many people had questions rather than answers; there was too much uncertainty about what they might be agreeing to or dismissing.

The negative themes outweighed the positive (68% of the themes mentioned were negative): Postcode lottery (17%); Generic ASN managers, lack of specialist knowledge (17%); Retain control locally (17%); Ownership/Accessibility (11%); Cost (11%); Bureaucracy; Organised; Dependent on a single person? Geography; Parent involvement; Timescales; Repairs; Assessment

This response highlights the typical hopes and fears:

“Could be a source of up-to-date knowledge of all available technology which teachers can tap into. Logistically difficult: timescales, repairs, assessment, cost. May be more benefits for smaller authorities. If procurement agreements are put in place could be more restrictive on what you can get for your pupils.”
5.17 What do you think needs to be put in place to establish a central resource? You may want to think about staff, skills, procedures, financial resources, etc.

Figure 5.17 Main themes of requirements to be put in place to establish a central resource.

Responses to this question were very variable from “Wouldn’t it be great if someone was only doing that job? Thinking about the best outcomes for the children, knowing the different things to try.” to “Unworkable. You would need to have in-depth consultation before proceeding”

33% of authorities stated that knowledgeable staff would be needed to organise such a service and 11% mentioned that they would need to keep up-to-date. 33% of authorities realised that funding requirements would be considerable and possibly complex. 22% mentioned accessibility of the service and these responses came from authorities which are not remote. One authority noticed that such a resource would need to be very organised.
5.18 Are there some aspects that you think are possible to centralise and others that, in your opinion, cannot be centralised? Think about procurement of equipment, training, loan systems, assessment of need, repairs, maintenance, upgrades, etc.

![Figure 5.18 Main elements which could or could not be centralised.](image)

Even authorities who did not say yes to a national procurement centre found some positive things to say here but the over half of the responses were not in favour of centralisation. One authority simply said no aspects should be centralised, 17% declined to answer and one authority said it should be all or nothing.

Procurement: 11% thought that it might be good to have a procurement system which only provides a trial service “… one person who has the remit for new equipment and who organises trials across Scotland which the authority takes forward if successful and feeds back to interested people results of their trial.” 17% did not think that centralised procurement would be a good idea.

Loan system: Opinion was divided about the idea of a loan system with 22% for and 22% against. One authority was interested in the possibility of recycling/reusing equipment across the authorities. One authority mentioned that you could use a central resource to share adapted materials. Another authority talked about an online system but lacked detail.

Technical Support & Training: 11% welcomed access to a knowledgeable person who could provide help on a variety of technology issues while 11% said that centralised technical support would not be appropriate. Other authorities (17%) mentioned that training and sharing information were important to them.

Assessment: Due to perceived lack of local knowledge and trust issues 28% of our respondents felt that assessment could not be centralised. “You would want to do it yourself”.

One authority mentioned that “Repairs and maintenance would be tricky.”
5.19 Please provide any further comments relating to the provision of technological devices and support.

By this point most of what needed to be said had been said and 50% of the responses left this question unanswered. Of the comments made many were positive or pointing to what was needed. 17% were very happy with their position regarding provision of technology. Another 11% were happy that their children’s needs were being prioritised by the authority: “What we are aiming for is to get these children the very best access to learning in the widest environments possible and to empower them by the time they have got to secondary or college that they are in the driving seat deciding the technology that works best for them …”

One authority mentioned “SSC and CALL have moved sensory impairment education in Scotland on so much.”

11% were keen to restate that access to information was important and that teachers don’t have much time to sit down and find out about new developments.

References


Evans, David (2009) Induction loops in classrooms are not a good idea (Connevans) Available: http://www.connevans.com/information/Induction_loops_in_classrooms_are_not_a_good_idea.htm

Conclusions and Recommendations

In this section the key issues are summarised from the data collected and recommendations have been drawn. A draft of this report was widely circulated to interested parties including the cross-parliamentary group on visual impairment, the VI technology support group facilitated by Uddingston Grammar and to the Scottish Sensory Centre’s mailing list with an invitation to comment on our findings. We are grateful to the groups and individuals who submitted comments, which have been consumed in this final report.

Part 1: Arrangement for Provision

“What we are aiming for is to get these children the very best access to learning in the widest environments possible and to empower them by the time they have got to secondary or college that they are in the driving seat deciding the technology that works best for them …”

ToD

The specialist teachers, not surprisingly, have a lead role in all aspects of deciding what equipment is purchased, how it is implemented in the classroom and the monitoring of its usage. This is particularly relevant for visual impairment; educational audiologists have a significant input in many cases relating to hearing impairment. Classroom assistants, auxiliaries and the mainstream ICT departments often contribute significantly to decisions relating to aspects of the arrangements for providing specialist technology.

It would seem that from the evidence collated that the presence or absence of written policies does not directly affect the provision of appropriate technology for pupils with sensory impairment. This would suggest that it is the in-depth understanding of sensory impairment and the implications that this may have on the pupil’s ability to access an appropriate curriculum together with a current knowledge of suitable technology and software that are important.

All respondents indicated that there is a range of equipment available. Please see sections 4.2 and 5.2.

The assessment strategies relating to decisions about what equipment is most suited to the needs of pupils differed. In the case of visual impairment in the vast majority of instances (94%) the teacher of the visually impaired was wholly or partly responsible for assessing the pupils’ needs and identifying appropriate assistive technology or software. Whilst in most cases the teacher of the visually impaired did carry out the assessment in collaboration with other professionals, parents and the young person themselves this was much more apparent than in the responses related to deaf education where only 17% of respondents indicated that the teacher of the deaf was solely responsible for the assessment process.
Part 2: Purchasing, Replacing and Upgrading Equipment

Cost as a criterion was considered important by 8% of those responding to the visual impairment questionnaire. 44% of those responding to the hearing impairment questionnaire indicated the importance of shopping around to achieve best value. The age and stage of the child are considered important for both visually impaired and hearing impaired.

Research by VIScotland (2003, p74) confirms the authors’ opinion that the overall use of LVAs amongst school age visually impaired children is surprisingly low amongst mainstream school age children (56% of those on the VIScotland database).

In the case of visual impairment in all cases any equipment purchased is bought specifically for the individual pupil; the respondents approached the criteria used for selection in two different ways; 50% understood criteria to mean assessment process, the degree of visual acuity and the affects of the visual impairment whilst the remaining 50% understood this to mean how they would choose one particular brand or product over another. Whilst in most instances equipment is bought for the individual child with a hearing loss (94%) to meet their additional support needs in one local authority a rolling programme is in place to replace and update equipment.

Funding arrangements vary; 100% of the respondents in the visual impairment questionnaire received funding from the local authority to purchase technological equipment; 62.5% from a non-specific additional needs or pupil support budget and 25% from a specific service budget. 25% of local authorities reported that the NHS provides low vision aids for pupils for school use. Some local authorities indicated the requirement to differentiate between specialist equipment and mainstream computer based equipment and hand-held devices.

In deaf education some respondents mentioned formal financial agreements between health and education where funding is put into a shared pot to cover the equipment needs of deaf children. In other areas some equipment usually hearing aids were supplied by health while FM systems are bought by education. 84% of respondents indicated that funding is wholly the responsibility of education.

One respondent suggested the implementation of a mechanism to address the replacement of lost or broken equipment. This varies considerably; some local authorities are able to replace equipment immediately, whilst in others it is necessary for the pupil to work with support from an adult either a specialist teacher or classroom support worker until the equipment is replaced.

Training in the use of equipment is an important issue. The manufacturers and suppliers often supply training for the specialist teachers. Many attend CPD courses offered by the SSC, CALL Scotland and charitable organisations such as RNIB, Action on Hearng Loss (formerly RNID) and NDCS.
The specialist teachers are often expected to cascade training to classroom teachers, support staff, the pupils and their families.

**Part 3: Making use of technology to provide adapted materials**

This varied considerably between authorities.

Generally, in relation to visual impairment the specialist teachers have the lead role, providing both direct and indirect support. In the vast majority of cases where there is a requirement for adaptation (90%) the request will be for a large print version of the original script. In these instances, the mainstream school staff usually support staff will prepare these materials with guidance from either the TVI or the class teacher.

It had been assumed by the authors that visual impairment services would have an awareness of “Books for All” project and that this would be widely used. However, although all respondents did have awareness of the project and its remit, our understanding is that it is not used as effectively as we would have expected. (See 4.14 p 31)

The degree of visual impairment often indicates which agency will be responsible for adapting the materials. The specialist teacher is more likely to be involved where non-sighted methods such as Braille are used and where tactile diagrams are needed as this requires additional expertise.

Teachers of the deaf are mainly responsible for adapting material for pupils with a hearing impairment. Support staff such as classroom assistants and communication support workers are also involved.

The main category is for modifying language, including simplifying language, looking at the structure of language, summaries of work or abridging books so that pupils can keep up with their peers (72%). More than a third 39% mentioned sign language as a means of adaptation. Subtitling is still used by respondents but this is used less frequently now. 28% spoke about using visual adaptations such as picture aids, and technology such as ipads for this purpose.

Fifty per cent of the respondents make use of external providers including professional subtitlers, the SSC and Wolverhampton’s BSL glossaries. 17% of respondents make use of the NDCS and their booklets.

One local authority use professional BSL interpreters to facilitate pupil review meetings, school events etc.

**Part 4: Comments and ideas regarding centralised provision and general comments**

Many of the comments raised related to staff issues whether it was a lack of staff, lack of access to support and knowledge or being able to respond to the rate of change posed by technology. One authority proposed using technology to improve access to training via video
conferencing. 39% of those who responded to the hearing impairment questionnaire considered that funding of equipment was a barrier. The initial expense of equipment was a barrier as staff and budgets struggled to keep-up-to-date. For both visual impairment and deaf education, geography can be a barrier. The physical location can also be problematic, for example it can cause varying hearing reception.

There was no clear indication that the introduction of a national procurement centre would improve services. (See sections 4.16 and 5.16.) This question seemed to provoke many queries and indeed with hindsight could have been structured to elicit clearer responses. However, some of the positive comments were that it would be beneficial as a source of technical support, pooling resources, trialling equipment and offering the hope of free training.
**Recommendations:**

The recommendations provided in the draft report have been adjusted to take account of the comments provided in the consultation process.

**Networking**

1. The National VI Technology Group (secondary education) housed at Uddingston Grammar is already proving to be a very successful resource. This group was established by the depute head, Evelyn Michie, at Uddingston Grammar and her colleagues.

   This group is open to mainstream and specialist teachers and local authority ICT specialists. Both CALL Scotland and the SSC are represented. Recent topics addressed at meetings have included Copyright Issues, Equality Act, and a session on Tips, Tricks and links, which are available by drop box.

   It is recommended that the SSC investigate if there would be sufficient support to establish a similar group for hearing impairment.

   The VI technology group is intended for secondary age pupils, however, primary teachers are not excluded.

   It is recommended that the SSC investigates if there would be sufficient support to establishing a group looking at technology for younger children and for those who have additional support needs. One respondent has advised the SSC that the establishment of two groups should be considered.

**National Provision**

2. The respondents who participated in the semi structured interviews provided very mixed responses as to the benefits of establishing a procurement centre.

   Respondents to the draft report agreed with the idea of a centre to promote and provide advice and training, technical support, pooling resources and trialling. Another respondent has suggested that “a national procurement centre need not necessarily mean a centrally held and purchased resource - it could mean that a local authority could continue to purchase their own equipment, but via the National procurement Framework instead of through direct relationships with the manufacturers, which may, or may not be cheaper”.

   Janis Sugden from the SSC attended the Mary Kitzinger workshop in London, in May 2012. Ruth McMorran is a specialist advisory teacher for information and communication technology (ICT), augmentative and alternative Communication and visual impairment. She talked from her everyday practical experience on challenges and solutions in using ICT to
support pupils with visual impairment in mainstream education classrooms. The role of teacher assistants and implications for the future in adapting ICT were discussed. Ruth McMorran worked closely with teachers of the visually impaired from neighbouring authorities to pool expertise, and equipment but importantly they also shared the same strategies and expectations when introducing equipment meaning that the service the children receive is not dependent upon an individual teacher’s personal skills. The SSC Advisory Committee discussed the response to this review at a meeting in October 2012. The Advisory Committee indicated that this information is already available from various sources such as a kit which includes a USB stick with audio testimonials from young people explaining their sight loss condition etc. as well as general information about eye health produced by Haggeye, RNIB Scotland’s youth forum and a similar pack raising awareness of deaf, deafblind and deafness issues produced by Deafblind Scotland.

It is recommended that the SSC investigate a mechanism for delivering this information by creating a model that can be replicated, by considering resources that are already available; the resource produced by Edinburgh University on Dyslexia transition has been suggested as a possible example.

Training

3. Mainstream technology is now able to provide many of the functions that only specialist assistive technology could provide previously. There is concern that teachers are not able to keep abreast of these developments.

The Scottish Government requires teachers working wholly or mainly with sensory impaired children to demonstrate additional competences specifically:

Teacherrs of the Visually Impaired
‘A knowledge of the developing range of alternative forms of accessible media, specialised communications hardware and software and teaching strategies to utilise these alternative forms of media, specialised communication hardware and software.’

‘A knowledge of low vision aids and their uses;’

‘A critical understanding of and the ability to use a range of ICT and as appropriate low and high technology augmentative communication approaches to facilitate access to the curriculum and life long learning’

Teachers of the Deaf
‘A knowledge of the range of aids to audition (including hearing aids, cochlear implants, radio aids and environmental equipment) and an ability to compare and critically evaluate their impact and effective use, in collaboration with the learner whenever appropriate, within a range of settings in the school environment.’
The need for training is agreed. It is imperative that teachers working with children who are sensory impaired are able to access good quality CPD enabling them to enhance and maintain their skills, knowledge and understanding relating to technology. Many of them receive this initially from the technology providers but this needs to be ongoing and related to an appropriate curriculum. Many respondents mentioned attending courses at the SSC, CALL Scotland, RNIB etc.

The SSC had suggested a requirement for additional funding to develop online multimedia training for teachers, using a mixture of teachers demonstrating good practice in the classroom, and filmed demonstrations where procedural training is provided.

Filmed demonstrations of how new products work may be helpful. The SSC website could be a conduit for disseminating these processes. The SSC anticipate impact case studies would follow on from this.

Additional comments from those who responded to the draft report indicated that online e-learning would be a useful component. It has been suggested that the SSC could provide video demonstrations of equipment in use.

**Final Comments**

This report has examined data gathered through semi-structured telephone interviews in order to investigate issues surrounding the use of assistive technology and environmental aids for pupils with a sensory impairment. Whilst it may not be representative of all services it is believed that this review does provide a very useful snapshot of assistive technology and environmental aids to pupils with a sensory impairment in Scotland. The comments of those who have responded to the draft report issued in July 2012 have been incorporated into this final version. The response rate must be acknowledged. Data from other loan services such as those provided by voluntary agencies including NDCS and RNIB have not been included. Nor has there been any input from parents or the children and young people themselves. Although this aspect was outwith the remit of this report, it is missing and certainly worthy of noting. Our findings have identified variation between local authorities in relation to the degree of consistent access to, and effective support in the use of assistive technology and aids. It would seem from the responses, and drawing from own experience and professional expertise that appropriate and timely access to assistive technology must be provided, by well trained and qualified staff when it is required as this is essential for pupils with sensory impairment to benefit from effective learning and the opportunity to develop skills for lifelong learning.

This review has provided very useful information and recommendations to address the key issues have been drawn. It has identified the need for national coordination to provide more equitable access to assistive technology and environmental aids.
In the concluding pages of Peter Doran’s recent review The Right Help at the Right Time in the Right Place (2012) it is stated that Scotland has been fortunate in having a succession of imaginative and energetic educational pioneers who have demonstrated what can be achieved when people work collaboratively. Going forward the ideas in the report should now be used to tackle the practical issues identified and putting them in place. Interested stakeholders must work together to ensure that ideas raised in this report are given careful consideration and where appropriate turned into a reality.

References


Evelyn Michie, DHT Visual Impairment Resource Centre for Visually Impaired Pupils, c/o Uddingston Grammar, Old Glasgow Road, Uddingston G71 7BT Telephone: 01698 805050
An Overview of Specialist Technology and Equipment

Visual Impairment

Screen Readers with Speech synthesisers

This software converts text on the screen to speech output. They can handle graphical user interfaces, like web pages and make sense of complex page layouts. JAWS is the most popular but there are other packages like Dolphin and Supernova. There are free screen readers and text to speech synthesisers available to download from the internet but the difference is in the quality of the speech and the versatility and power of the program.

Enlargement software

An example of a product to enlarge the computer screen is ZoomText. The screen can be enlarged and the contrast colours changed according to the preference of the individual user. Pupils with a visual impairment also learn how to use the tools built into most popular software programmes like Word and Internet browsers to increase the font size and change the contrast colours. A study by John Ravenscroft for VIScotland showed that many pupils with visual impairments preferred to keep graphics on screen rather than setting the browser not to show them.

Electronic Video Magnifiers

Electronic video magnifiers are basically camera and screen units in various setups. There are hand-held (near) magnifiers which are used like an ordinary magnifier on print but have a digital screen; some of these magnifiers can also work at a distance for reading blackboards and whiteboards; magnifiers which operate like a mouse and feed to a desktop screen; fixed cameras with an x-y table, which also feed to a screen. Typical brands for all three types are Optelec, Visualeyes and Humanware Smartview. The older version of the fixed magnifier is the CCTV but these systems are bulky and are used less often nowadays.

Braille hand-held computers

The most popular Braille portable computer available in Scottish schools is the BrailleNote produced by Humanware. This device has Braille input, electronic Braille output and the option to use a voice synthesizer output. It connects to an ordinary printer for normal print output and also to a Braille embosser. It has customary laptop functionality including internet and email connectivity and software for all tasks.

iPad

An iPad is a tablet computer, which uses a touch screen with no need for stylus or mouse. It has a built-in camera and speech synthesiser. Users can increase the versatility of the iPad by downloading ‘Apps’, which are small programs which perform a large spectrum of specific tasks.
There are other tablet computers available but this was the only brand mentioned by the responders.

There are apps now specifically designed for VI students or have become useful to them as a side-effect.⁴

**iPod and other MP3/MP4 players**

These players started out as music players but current models also play videos and can access the internet. The iPhone and other smartphones can also be included in this group since they have the same features which are useful for VI students; a built-in camera and audio output (aside from their communication functions).

As with the iPad, some apps for these devices have either deliberately been developed for VI people or are useful as a side-effect.⁵

**Kindle and other ebook readers**

A Kindle is a tablet specifically designed for reading books electronically. Books are downloaded from the internet and stored on the device. The Kindle has a voice synthesiser so text can be read out to the user.

**Low Vision Aids and other ‘low tech’ devices.** A range of Optical Aids for close work were mentioned by respondents.

- Hand-held magnifiers. Available in strengths from 1.5 times to 10 times. Some are fitted with lights. Some have a battery operated light.

- Stand magnifiers. Used for reading and sometimes writing. Good if person has shaky hands. Available in strengths from 2 times to 20 times. Some are fitted with lights.

- Pocket magnifiers. These are ideal for taking out and about to places like shops. Available in strengths from 2 times to 15 times.

- Spectacle mounted magnifiers. These leave hands free. They either have very strong lenses, which are thicker than normal lenses or they have telescopic lenses that stick out from the spectacles’ frames. Objects have to be held much closer to the eye than normal. Can be used by one or both eyes.

- Video Magnifiers.

Looking at objects in the distance

- Monocular lenses. These are like mini-telescopes through which you look with only one eye. The majority are hand held, although some of the weaker ones can be mounted onto spectacles. Strengths range from 2.5 times to 14 times. Good for football matches, television, looking at road signs or numbers on buses.

- Binoculars. For use with two eyes.
Braillers
The Perkins Brailler is a manual Braille embosser with 6 keys for each dot of the braille cell and a space bar. The keys are pressed in combination to produce Braille. The Perkins Brailler is the most widely used Braille apparatus in the world. “It has withstood the test of time, owing to its great durability, reliability and ease of use.” http://www.perkins.org/store/braillers/ However, other lighter Braillers are also now in use in the classroom. Mountbatten Braillers, which although more expensive than the Perkins Brailler also offers additional facilities.

Electronic Braille embossers
Braille embossers are electronic printers, which produce Braille copy instead of ink print. They are usually controlled by computer software, both proprietary to the manufacturer of the embosser and generic, such as Duxbury. They vary in range of sophistication from basic, one-sided Braille, which is most likely to be found in schools, to very fast double sided Braille, where both sides of the paper are embossed.

Raised diagram equipment
Raised diagrams are most commonly prepared by drawing directly or printing the diagram and Braille annotation using an inkjet printer onto special paper which raises all shaded parts when put through a heat fuser. The most common products in the UK are Zychem swell paper and Fuser. A few schools may still have access to old Thermoform diagrams; however, it is unlikely that this system will be used now, due to the expense and time taken. (The thermoform system produces a raised diagram where a prepared diagram form is made, using objects glued onto a flat surface. The form is placed on a tray with a thin film of plastic paper over it and then placed into the Thermoform machine which heats the plastic and forms a vacuum, pulling it down on to the form.)

Enlarged print
The two most common ways of enlarging print is by increasing the font size to the optimum size for the pupils; documents are scanned to digitise them and then modified to the correct print size or the other way is to use a photocopier to expand a printed page. This method is not as effective as being able to choose the optimum font size and contrast colours.
Hearing Impairment

Personal Hearing Aids

BAHA: Bone anchored hearing aid: a hearing aid based on bone conduction. It is primarily suited to people who have conductive hearing losses, unilateral hearing loss and people with mixed hearing losses who cannot otherwise wear in the ear or behind the ear hearing aids.

- BTE: Behind the ear
- ITE: In the ear
- Body worn: the processing unit is worn on the body but the hearing aid is in or around the ear.

Cochlear Implant: A cochlear implant has two main parts:

- An internal part that consists of a small electronic device that is surgically implanted under the skin behind the ear, connected to electrodes that are inserted inside the cochlea.
- An external part, usually worn behind the ear, that consists of a speech processor, microphone, and battery compartment.

The microphone captures sound, the speech processor translates it into electrical signals. These signals travel via radio to the electronic device and are transmitted to the implanted electrodes in the cochlea. The electrodes’ signals stimulate the auditory nerve fibres to send information to the brain, where it is interpreted as meaningful sound.

In 2011 there were estimated to be approximately 340 preschool and school-aged children with cochlear implant in Scotland.

Soundfield systems

Soundfield systems consist of a transmitter and a receiver linked to an amplifier. They use either infrared or FM radio technologies with one or more directional or flat panel loudspeakers to spread the amplified sound around the room. They are designed to spread the teacher’s voice uniformly, regardless of teacher or student position, at a comfortable listening level that avoids causing reverberation. Used well they can improve listening and learning behaviours and help overcome effects of poor classroom acoustics.

FM Radio systems

In an FM system the person speaking wears or holds a transmitter microphone, or the transmitter is placed in the middle of the group (picking up speech from all around). Using radio waves, the FM system sends speech signals to the listener, who wears an FM receiver usually behind the ear. There are many different types of FM system but each consists of a transmitter worn by the teacher and a receiver worn by the pupil. The receiver may be connected to the hearing aid or cochlear implant by direct audio input (DAI) shoes or FM adaptors.
Elizabeth Wood and John Popplestone (2005) found that “An increasing number of children with a cochlear implant are being fitted with an FM system and they are successfully using the combined system to access the curriculum in an educational environment.”

**Loop systems**

An audio induction loop system is a loop of cable around a designated area, usually a room, which generates a magnetic field picked up by a hearing aid. It allows the sound source of interest, whether a speaker with a microphone, or an orchestra (with strategically placed microphones) to be transmitted to the hearing aid. Hearing aids have a switch to pick up the transmission. David Evans (2009) of Connevans stated that loops were not suitable for the classroom; however, several of the responders said their new schools were being built with loops in new buildings within public areas, installed for community use of the school. The evidence we have produced suggests “Nearly half of the loops reported were present in schools due to new buildings and were not available within the classrooms, only for public meeting places, reception, the library etc. One authority is using personal loops to allow pupils to access mp3 players etc.”
References

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5. Head, Andreas *iPad, iPhone, and iPod Apps for VI and Blind* (AndreasHead Wiki) Available: https://andreashead.wikispaces.com/iPad+iPod+Touch+and+iPhone+Apps+for+Visually+Impaired+and+Blind


Semi-structured Interview relating to the provision of Technology for Pupils with Visual Impairment

Completed by: __________________________ Date: ______________________

Section One: Background Information
Name of Local Authority or grant-aided school: __________________________
Details of person providing the information for Visual impairment: ______

Section Two: Arrangements for Provision

Question 1
We would like to find out about the arrangements in your area for providing products and technology for school-aged children.

Thinking about school aged children with a visual impairment; does your local authority (school) have any written policies for the provision of assistive technology or other devices that allow them to access the curriculum?

If “Yes”, can you please either send us a copy or direct us to an electronic version of this?

Question 2
I would like you to think about the types of assistive technology that may be used in schools to support pupils with a visual impairment for the next few questions. Can you please give an indication of the range of equipment that is available in your area? If you like I can give you a few examples but you should include all that apply.

Section Three: Purchasing, Replacing and Upgrading Equipment

Question 3
Who is responsible for the assessment to decide what equipment is most suited to the needs of the pupil?
Question 4
(a) Who has responsibility for recommending, monitoring and reviewing equipment?
(b) How often does this happen?

Question 5
What criteria are used for the selection of equipment?
Are purchases bought specifically to meet the additional support needs of an individual pupil?

Question 6
How is the purchase of equipment funded?
Is it from a central or ring-fenced budget?
• funded wholly from education, health or social work?
• or joint funding?
• or tripartite funding?

Question 7
Let us think about equipment maintenance. Who is responsible for the day-to-day management of equipment?
• Do you have any specialist staff to maintain equipment, eg, a technician?
• If equipment is faulty or broken, do you provide a replacement?
• If the equipment cannot be repaired or replaced the same day what arrangements are in place to assist the pupil?
• Is this a major issue?
• How does it impact on the way funding is allocated?

Question 8
Can we move on to Training and Support? What training or support is provided for the use of specialist equipment? Think about the support that is available to:
• Specialist teachers
• Classroom teachers and support staff
• Pupils
• Family.
**Question 9**
Are pupils allowed to use specialist equipment at home, eg, to complete homework? Can you provide some examples?

**Question 10**
What arrangements (if any) are made for insuring equipment? in school? at home?

**Question 11**
If pupils are educated outwith your local authority can you please tell us what arrangements are in place for the provision of specialist equipment that they may require?

**Section Four: Making use of technology to provide adapted materials**

**Question 12**
Who is responsible for the adaptation of the materials?

**Question 13**
Give examples of the type of adaptations required?

**Question 14**
Do you make use of any other provider to provide materials?

**Section Five: Time for Your Comments**

**Question 15**
What do you consider to be the main barriers relating to the use of assistive technology and technology products in your area?

**Question 16**
What would be your views about a national procurement centre: do you think it would enhance the provision of technical aids, and assistive technology in Scotland?

**Question 17**
What do you think needs to be put in place to establish a central resource? You may want to think about staff, skills, procedures, financial resources, etc.
Question 18
Are there some aspects that you think are possible to centralise and others that, in your opinion, cannot be centralised? Think about procurement of equipment, training, loan systems, assessment of need, repairs, maintenance, upgrades, etc.

Question 19
Please provide any further comments relating to the provision of technological devices and support.
Semi-structured Interview relating to the provision of Technology for Pupils with Hearing Impairment

Completed by: ___________________________ Date: __________________

Section One: Background Information

Name of local authority or grant-aided school: ___________________________
Details of person providing the information for Hearing impairment: ______

Section Two: Arrangements for Provision

Question 1
We would like to find out about the arrangements in your area for providing products and technology for school-aged children.

Thinking about school aged children with a hearing impairment; does your local authority (school) have any written policies for the provision of assistive technology or other devices that allow them to access the curriculum?

If “Yes”, can you please either send us a copy or direct us to an electronic version of this?

Question 2
I would like you to think about the types of assistive technology that may be used in schools for the next few questions. Can you please give an indication of the range of equipment that is available in your area? If you like I can give you a few examples but you should include all that apply.

Section Three: Purchasing, Replacing and Upgrading Equipment

Question 3
Who is responsible for the assessment to decide what equipment is most suited to the needs of the pupil?
Question 4
(a) Who has responsibility for recommending, monitoring and reviewing equipment?
(b) How often does this happen?

Question 5
What criteria are used for the selection of equipment?
Are purchases bought specifically to meet the additional support needs of an individual pupil?

Question 6
How is the purchase of equipment funded?
Is it from a central or ring-fenced budget?
• funded wholly from education, health or social work?
• Or joint funding?
• Or tripartite funding?

Question 7
Let us think about equipment maintenance. Who is responsible for the day-to-day management of equipment?
• Do you have any specialist staff to maintain equipment, eg, a technician?
• If equipment is faulty or broken, do you provide a replacement?
• If the equipment cannot be repaired or replaced the same day what arrangements are in place to assist the pupil?
• Is this a major issue?
• How does it impact on the way funding is allocated?

Question 8
Can we move on to Training and Support? What training or support is provided for the use of specialist equipment? Think about the support that is available to:
• Specialist teachers
• Classroom teachers and support staff
• Pupils
• Family.
Question 9
Are pupils allowed to use specialist equipment at home, eg, to complete homework? Can you provide some examples?

Question 10
What arrangements (if any) are made for insuring equipment? (in school or at home)

Question 11
If pupils are educated outwith your local authority can you please tell us what arrangements are in place for the provision of specialist equipment that they may require?

Section Four: Making use of technology to provide adapted materials
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Who is responsible for the adaptation of the materials?

Question 13
Give examples of the type of adaptations required?

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Do you make use of any other provider to provide materials?

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Question 19
Please provide any further comments relating to the provision of technological devices and support