



Accessible Resources Pilot Project

Final Report

Produced by the Dolphin Inclusive Consortium

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This report has been written by Jim Russell and EA Draffan with support from the team.

1.1 The Project Team

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Carol Allen, SEN/ICT Advisor, North Tyneside

EA Draffan, University of Southampton (Evaluation)

Noel Duffy, Paul Lynch, Simon Kitchen and many more, Dolphin Computer Access (Provision of access technologies, central project services, school support and Maths expertise)

Ian Bean and Jamie Munro, Inclusive Technology (Training & technology delivery)

Jody Walsh, Emma Parry, Lesley Mohamad and Ben Warren (Book quality control)

Vishal IT (Book production)

All of our Specialist Producers

Jim Russell, Project Manager, RPM Associates

1.2 The Dolphin Consortium

Contractual commitments for the project were made between DCSF (now DfE) and the Dolphin Consortium, which was established for the sole purpose of this project.

Members of the Consortium were:

- Dolphin Computer Access (Lead)
- Inclusive Technology
- University of Southampton
- RPM Associates

2 Introduction

This is the final report for the Accessible Resources Pilot Project. The project was funded by the Department for Education (previously Department for Children, Schools and Families). The Dolphin Inclusive Consortium was specially formed to bid for this work and was awarded the contract in March 2009. The project concluded at the end of December 2010. It was overseen by a Steering Group which was chaired by the Department for Education that included representation from Royal National Institute for Blind People, the British Dyslexia Association, Dyslexia Action, and the Publishers Licensing Society supported by other publishing industry representatives.

The report comprises an extended Executive Summary that can be used to communicate high level results to a wide audience as well as detailed explanation, results and analysis in body of the report. This report and supporting materials will be available from the project web site, www.mytextbook.org until the end of 2011.

"When I am typing stuff when I get a word wrong I'll spell check it - when I get a word I type it in then I use the speaking software to speak it out to see if I got it right and then I make some changes or something like that – it's weird ... I love it. When I am at home I type something out and push enter and my Mum says who is that speaking and I say that's 'my computer'..... I would give it a six - the top - (how easy it is to make use of the computer) I can use it if I want to at any time. I use it for English, PSP RS and History with PowerPoint."

(Dyslexic pupil)

"His reading age has gone up 2 years in the course of the project; the technology has allowed him to access text he would not normally access. All he really needed was the ability to change the background colours and text and he is now an independent worker."

(Teacher)

"I have to say what I loved this afternoon was watching the students, the faces, the sheer excitement that they have about having something they can use. J & L are two of our most severe Dyslexic students. Both are statemented and find it really hard to access material and have done so throughout their whole time here. J just said "I can read this" and it was wonderful. To find a child who really does experience difficulty across the curriculum to find something that allows success is great."

(Teacher)

"I think if the student can get a piece of work and convert it into their preferred format themselves then that is making them independent which is what we are all about and why we are all here."

(Teacher)

"Children become disabled in their learning through their vision impairment and no child should become disabled because of their disability....They go into their secondary school behind their peers for the sole reason they have not had the correct input as parents and schools do not know about the options available. They need alternative formats that are as near to what their friends use as they do not like to feel different - they need to fit in and you can help by producing work that doesn't make them feel there is something terribly wrong with them. If it is on the laptop it has their friends saying - wow that is cool.. "

(Parent of Visually Impaired Pupil)

"I do my class work on it -- I do my French on it ... my handwriting is horrible but on the computer it is nicer. The laptop helps because when it reads out it picks up my spelling mistakes and read them all ... it's very helpful ... it's really useful. [marked 6=excellent]." RT said, ' Yeah it helps, it helps loads and English I have loads and I just get it to read out. If I do loads and loads of writing it helps. I use it in English and RE ... it tells the spelling a little bit. ... It makes me feel more confident about doing my work. I'm more confident I'm actually going to get something done. Instead of just sitting there only about reading my own writing and saying listen I just cannot write it, I can just type it up -- it's a lot easier -- I feel I believe in myself more now than what I did -- I just couldn't do it -- it's just much better."

(Dyslexic pupil)

"The messages from this project are very clear. Do visually and print impaired pupils benefit from accessing materials electronically? Definitely yes! Should more materials be made available? Definitely yes! Should the access technologies be provided? Definitely yes! So come on everyone, you now need to make it 'business as usual' in our schools."

(Jim Russell, Project Manager)

3 Executive Summary

3.1 Key messages

At present, pupils, teachers and parents all struggle with the lack of textbooks and supporting materials in accessible formats that can be used by pupils with visual or print impairment.

This project was conceived to assess whether the provision of textbooks and teaching materials as electronic files, along with technologies to convert and 'read' them, to visually and print impaired pupils and staff in schools and local authorities that support them ('Specialist Producers') could provide a new and sustainable model.

The project confirms that making teaching materials available to print and visually impaired pupils in an appropriate electronic form along with access technologies to read them can make a significant difference to their reading, writing, confidence, development and inclusion. The same electronic materials can also provide substantial productivity savings for staff in schools and local authorities who support, in particular, visually impaired pupils.

The project recommends that the majority of English School curriculum materials are made available for print impaired pupils in a cost effective and sustainable way, and that schools receive the guidance and support from technology and service providers to enable their print impaired pupils to fully utilise these resources. This will require a coordinated cross industry effort from a range of stakeholder organisations – schools, local authorities, charitable organisations, publishers, technology and service providers, professionals and government.

In particular, it recommends:

- **Dissemination of information** about the benefits and practicalities of using electronic media and access technologies for school pupils with visual and print impairment. Schools, teachers and parents need to be aware of the benefits to stimulate demand and of the practicalities to be able to take advantage of them. Publishers and technology and service providers need to be aware of how they can develop their products and services to support this emerging market.
- **A new national textbook and advisory service** that will produce electronic files for textbooks, distribute them on request, provide training and support in technologies that enable access to these textbooks and other electronic media, and allow sharing of best practices. This should focus on making many more books available as a priority to achieve an instant impact thereby ensuring the materials are available as schools take up the technology. Books should only be prepared once, thereby generating significant savings in schools and local authorities, and be made available on a chargeable basis.
- **The systematic provision of electronic files by publishers**, preferably in MS Word, to the above service whilst progressing further towards building accessibility into their mainstream educational products. This will significantly reduce the costs of production in the short term and lead to accessibility at source in the long term.
- **Ongoing standards and technology development.** In particular, the challenges of mathematical and scientific formulae need to be solved, and technology providers need to

respond to the educational market with increasingly cost-effective, end-user focused and school environment appropriate solutions.

3.2 The project

Laptops with access and conversion technologies and MP3 players were given to 40 pupils aged 11-14 in the north of England. Conversion technologies were also made available to 10 'specialist producers'. Staff and pupils were trained in the use of software.

Operating within the terms of a Copyright Licensing Agency VI Licence, 132 textbooks were converted into structured electronic files in MS Word format using a standard specification to help facilitate easy reading and conversion, and these were made available to both schools and specialist producers. This involved setting styles for headings and other content, using a standard 18 point font for standard text, modifying the layout into primarily a linear flow and including image descriptions.

Schools and specialist producers used the technology and materials provided as well as electronic materials already available within the schools from the end of 2009 and throughout 2010, and the impact of this has been evaluated. The textbook files were also made available to RNIB for onward distribution to a wider group of schools and specialist producers, and evidence from RNIB's report is included below.

3.3 Key Findings

The evaluation was led by EA Draffan from the University of Southampton. Questionnaires, face to face interviews with both staff and pupils, and online data captured from information gathered throughout the project were used.

3.3.1 Pupil Trials

"I was astounded at how the 11 to 14 year old pupils behaved in the interviews, especially bearing in mind I was an outsider who they had not met before. The body language as well as the words showed what a positive impact using the technology had had on them. They were happy, willing and able to talk about what they had achieved. All pupils interviewed said that they would have been devastated if they had had to give up their laptops at the end of the project (they didn't!). The impact was so much broader than we had expected, contributing to increased achievement, self-esteem, writing as well as reading and attendance according to those teachers we were able to contact."

EA Draffan, University of Southampton

Pupils, with support from staff and trainers, quickly chose the technology and settings that worked best for them and had no problems in accessing a variety of documents including textbooks and school worksheets.

Dyslexic pupils benefited most from using text to speech software, both for reading and writing. The software was able to read MS Word documents and accessible web pages directly. 74% changed the settings on their computers, most changing the font size, the colour background or using highlighting of text as it is read out loud.

Visually impaired pupils used conversion, magnification and screen reading, and digital talking book software. They were much more used to using access technologies than those pupils with specific learning difficulties including dyslexia.

On a scale of 1 to 6 (low to high), 90% of all pupils interviewed rated the value of using a computer for their schoolwork as a 4-6, 48% rated it as 6. 40% of pupils commented that they felt they had improved in their schoolwork.

As a direct result of the project, teachers have reported that:

- 56% of pupils improved with their reading
- 70% of pupils improved with their writing
- 71% improved with their level of achievement
- 68% improved with their confidence
- 5% improved their attendance
- 45% improved their homework completion

There was no deterioration in any of the above categories. There were some differences between dyslexic and visually impaired pupils. 71% of dyslexic pupils showed an improvement in reading. 84% of visually impaired pupils showed improvement in confidence and 58% showed improvement in homework completion.

3.3.2 Specialist Producer Trials

Most modification of materials into accessible formats is done from scanned hard copies of textbooks and by creating hard copy outputs in large print or Braille for pupils. There is evidence of increasing use of publishers' electronic files as well as files produced by other specialist producers, usually sourced from the Becta VI-Forum Listserv or more local groups. The number of books converted by Specialist Producers varies widely from a handful to 40-50 each year. The RNIB report states that some convert hundreds.

It usually takes between 0.5 and 10 days effort to reproduce a book depending on its complexity and whether scanning is required, but this can increase to around 30 days for the most complex books. This can take anywhere between 3 days and 5 months in elapsed time. One Specialist Producer has been adapting Science GCSE Revision Guides since Easter, aiming for one module a week, and this was still ongoing in November. Even where PDF files are provided by publishers, significant editing of layout is usually required to produce an accessible version.

The provision of the project's electronic files to specialist producers reduced the time taken to prepare alternative format textbooks by in excess of 90%. In most cases, preparation time was reduced to less than 1 hour.

"Without the MyTextbook Word file, this (a Geography book in 24 point) probably would have taken more than 10 times longer to reproduce."

(Specialist Producer)

“Immense time and effort is saved by having books in a usable electronic format as the time taken to modify a book can be months.”

(Specialist Producer)

“8 days work turned into an hour’s work.”

(Specialist Producer)

The RNIB survey reports that “100% of respondents reported that the electronic textbook files had saved them time. Respondents highlighted the benefits of cost savings, and benefits to students directly in having quicker access to the books.”

As well as massively reducing times, no problems were experienced in using the files and they were considered much better than publisher files which are usually PDF. The RNIB survey confirmed that “93% of respondents were satisfied or very satisfied with the provision of electronic files in Word format.”

The RNIB report also states that “100% of respondents agreed or strongly agreed that it would be valuable to have more accessible textbook files like the ones produced from this project.”

There is a trend towards more use of worksheets, but still a strong reliance on textbooks. Materials required are increasingly Powerpoint presentations, Smartboard files and Active Teach interactive books.

There was a preference for breaking books into chapters or modules which makes them easier to convert and faster to provide to pupils who are usually working on one chapter at a time, and also makes them easier to handle as file sizes can be very large.

Two instances were quoted of two visually impaired pupils receiving 40 and 32 hours support respectively from teaching assistants in school, and it was estimated that 80% and 90% respectively of the teaching assistants’ time was being used to modify materials into alternative formats. It is also common for teaching assistants to be asked to read text to pupils in class when the materials are not available and to provide some materials by using photocopies on cumbersome A3 size sheets which are far from ideal.

Specialist producers can spend up to 1 day a week chasing teachers in different schools to find out the books and materials that their visually impaired pupils need in advance. Teachers struggle to provide this information in a systematic way.

There is a trend towards schools employing teaching assistants directly rather than using their services via a Local Authority sensory service. This makes the schools more directly in control of staffing and costs. Concern was expressed about whether teaching assistants would have the authority to influence teachers with regard to identifying texts and producing materials that support print impaired pupils at the time they needed.

Specialist producers had problems with network connections and access permissions when trying to access the project FTP server to get the books. Some books had to be provided on disk.

3.3.3 Project Challenges

The project faced a number of challenges, but we do not believe these affect the validity of the results. In fact, had they not been encountered, the results would have been even stronger. These challenges included delays in provision of technology and textbooks, technology issues within schools, logistical and planning issues with extremely busy schools and the weather! A specific textbook issue was the variety of different versions and ISBNs that exist for the same book title and the need for precision in identifying the correct books required. These issues should be borne in mind for any future initiatives. The variety of schools involved in the project gave extremely useful comparisons. In particular, those with a local champion, a coordinated approach and local IT support were best able to adapt and benefit most from the technology and files.

3.4 Primary Conclusions

Print and visually impaired pupils both benefit greatly from the use of personalised portable access technologies and appropriate electronic teaching and learning materials. These contribute significantly to:

- Reading and writing
- Learning and achievement
- Confidence and self esteem
- Independence
- Development of life skills
- Social inclusion

Pupils need solutions that match their individual needs and preferences. Each pupil needs what is right for them which may include, for example, one or more of digital audio books, text to speech, adaptation of font size and background colour, magnification, screen reading or using and adjusting accessibility features built into operating systems. Hardware devices may include laptops, netbooks, MP3 players or other portable devices that incorporate accessibility features.

Electronic files for textbooks and school worksheets that have been prepared in a standard way in Microsoft Word enable both VI and Dyslexic pupils to read them directly using access technologies or convert them so they can then be read. Some VI and Dyslexic pupils can use accessible PDFs.

A structured, integrated 'whole' school approach, with a local champion and the support of pupils and parents, is required to achieve meaningful and lasting benefit.

The capacity of pupils to grasp new technologies should not be underestimated. Our 'pupil centric' approach has been a success and provides a solution that should place less rather than more demands on to school resources and funds.

The concept of using electronic files and access technologies is more established for the support of visually impaired pupils although many still use hard copy alternative formats, but it is very new for supporting dyslexic and other print impaired pupils. The combined population

of print impaired and visually impaired pupils provides a much larger target group that will provide much higher benefits from any investment.

‘Specialist producers’ in local authorities and schools can save significant time and cost by using electronic textbooks and school worksheets in the same standard format to produce accessible files and hard copy outputs for pupils they support.

The current methods of support which are primarily for visually impaired pupils are time consuming, costly and involve significant duplication of effort. The same book can be scanned, edited and transformed into different accessible formats a number of times across the country. The efforts and commitment of staff in schools and sensory support units cannot be doubted, but significant time and cost is being wasted.

There is a critical difference between the electronic files traditionally produced by Publishers for printing (i.e. PDF files) and those required in a structured file that can readily be transformed into different alternative formats. Educational products have complex and eye-catching layouts whilst access and conversion technologies require a more linear presentation of content.

3.5 Recommendations

The strong results from this project show that print impaired pupils can benefit greatly from the wider application of the use of electronic files and portable access technologies. The following recommendations will facilitate a transition to making the majority of the English School curriculum available in formats that print impaired pupils can easily use.

3.5.1 Dissemination

The project recommends the dissemination of information about the benefits and practicalities of using electronic media and access technologies for school pupils with visual and print impairment. Schools, teachers and parents need to be aware of the benefits to stimulate demand and of the practicalities to be able to take advantage of them. Publishers, technology and service providers and professionals in special needs need to be aware of how they can develop their products and services to support this emerging market.

A core set of simple guides, documents and training materials available is required that provide the key information needed to support decision making across the range of stakeholders.

In particular:

- Publishers need to be informed of how they can best enable their mainstream products to be accessible, how MS Word files prepared following simple guidelines provide the most easily used output format, and how best they can help should such files not be readily available.
- Technology providers need to be informed of the importance of ensuring their solutions are oriented towards ‘pupil end-users’ and the school environment as well as consider pricing models and levels that reflect the nature of this emerging market.
- Schools, teachers and support services need to be informed of the benefits for their pupils, the potential cost savings, the solutions available and the best route to successful

implementation. They also need to know how to ensure that non-published materials produced in schools, i.e. worksheets, internal exam papers etc., are also made accessible and available. They need to understand how this approach could help all pupils, including those without visual or print impairment.

- Teacher training should include guidance on the use of technology to support visually and print impaired pupils.
- Parents need to know how these technologies can help their children and enable them to work closely with schools.
- A central web site is recommended that consolidates best practise guidelines for all stakeholder groups. Supporting this, a wide approach to dissemination is recommended, utilising existing channels of communication through stakeholder organisations like the Royal National Institute for Blind People (RNIB), Dyslexia Action (DA) and the British Dyslexia Association (BDA).

3.5.2 New national textbook & advisory service

An extended programme of production of textbooks in a standard MS Word format is recommended to ensure that there is a sufficient critical mass of electronic materials available for schools and specialist producers. Schools will only invest in new technology and practices if the materials are readily available to use. The target should be the majority of all commonly used curriculum textbooks in England, but priority should be given to GCSE 'O' and 'A' level resources which are most in demand by schools and pupils. Many of these can readily be identified from exam board lists. A provisional target of 2,000 books over the next 3 years is recommended.

A national service should be established for the efficient and timely distribution of these electronic files to schools and specialist producers. Only by having these books readily prepared in advance can pupils get the accessible versions at the time they need them. As well as ensuring books are available for print impaired pupils, this approach will also reduce extensive duplication and achieve significant cost efficiencies. One book need only be produced once in a structured MS Word format that can then be easily and quickly downloaded and adapted by different specialist producers or used directly by pupils. This should be on a paid for basis to assist sustainability, either by subscription or pay-per-book.

It is recommended that there is allowance for a 'reactive' service that responds for new requests for specific books as well as an ongoing programme of planned production. The service should be web based with books primarily obtained via downloading, although the size of some files or local access limitations may require some disk distribution.

Educational publishers should be asked to provide their products in electronic form on a systemised basis, subject to appropriate controls. New books should be added as they become available. This should mean only having to provide files once per book rather than having to respond to many different requests. Guidance should be provided on core principles and formatting approaches that make these files accessible. The preference is for MS Word files to be provided as these are easiest to use or adapt, but PDF and XML files have value too, so a combination is desirable. The degree to which Publishers can provide fully prepared MS Word files will vary significantly by publisher and book, and some adaptation of files is still likely to

obtain the required level of structure and layout. Please note that there was no evidence of usage or familiarity with XML files amongst specialist producers or schools.

It should be possible for specialist producers to upload existing files that they have already produced to save further time and cost. It should also be possible to incorporate materials from other organisations that produce alternative format books. Some quality control mechanism would be required to reflect the differing approaches and levels of quality of these files.

The service web site should incorporate advisory information and include the dissemination materials above. Easy to find and use online training materials are essential along with guidance about technologies available.

To start with, this service would need to primarily operate using a CLA Licence along with appropriate controls, but it could easily be extended in due course to enable direct or linked sales of published accessible products. Over time, this service could also be extended to parents and individuals.

3.5.3 Standards and technology development

Further work is required to establish standards and guidelines for the production of electronic files. In particular, Maths and Science provide significant challenges for the coding of formulae and software tools need further development so that these can be read accurately.

Further discussion is needed with Publishers to determine how best they can deliver files in electronic formats.

Software tools need further development to meet the specific demands of school and home environments, and new pricing models will be required to make them affordable within the school and home environments.

3.5.4 Sustainability

It is expected that schools will be the main source of funding to pay for technology, training and support and books. They should be able to offset some of the costs currently expended in the preparation of alternative format materials and in support of pupils in class who can become less dependent on others, particularly for reading.

The costs of an initial programme of production of books and the set up of infrastructure for a distribution and advisory service is likely to require one-off funding that would not be recoverable. However, once established, it is anticipated that the service could become sustainable at least in part, paid for on a per book charge or subscription payment from schools and specialist producers. Costs of production per book should reduce significantly as Publishers make files available and as these files progressively require less modification. The level of demand should diminish in the long term as accessibility is built into mainstream products automatically.

At present, significant time and cost is spent in the transcription of textbooks and other materials into accessible formats, both in local authorities and schools. As budgets and responsibility for funding and decision making is transferred to schools, schools will be increasingly able to make decisions about the most cost effective way to support their visually

and print impaired pupils. Increasingly, laptops and other technologies are being made available now. Affordability of solutions is likely to be a key factor in take up by schools, and this significant and growing market for technology providers should enable them to lower the costs of provision.

3.6 Next Steps

There has been ongoing dialogue within the Steering Group and beyond including an 'Advancement of Accessible Publishing' forum chaired by BIS (Department for Business, Innovation and Skills) with regard to how such recommendations should be advanced following this project. As this project comes to a close, further dialogue and coordinated action is required across the many stakeholder groups to ensure pupils benefit from the opportunities this project has identified. Responsibilities need to be allocated, detailed plans prepared and where necessary funding and resources sought. A cross industry approach is envisaged, building on the theme of the Big Society. This will require representatives from government, the voluntary sector, technology and service providers (including local authority resources), schools and professionals to work together. This will not happen without some leadership and central coordination.

3.7 Additional Comments

Please note the following.

- Support services for visually and print impaired pupils, whether provided by local authorities or within schools, extend well beyond the preparation of texts and any time saved by the provision of electronic materials will enable support to be targeted more efficiently in other areas of need. It is also wrong to assume that the proposed solutions will meet all needs. There will still be a need for support to deal with more complex textbooks, provide hard copy texts and other types of materials, for example tactile resources, and to support the use of other solutions to meet the needs of visually and print impaired pupils.
- Recommendations within this report are considered to complement existing strategies that help print impaired pupils develop their core skills such as reading and writing.
- 'Accessible publishing' is also relevant beyond schools and many of the same benefits can arise from the use of access technologies and electronic versions of other published works. For example, much of this report could certainly apply to textbooks and other content used in further and higher education. However, these recommendations are not appropriate for mass published works in the trade publishing sector. The emergence of e-books and commercial portable devices with built in accessibility features is transforming the opportunities for print impaired people. The use of XML is much wider and more readily applied by trade publishers whose products are generally simpler in design, and the convergence of EPUB and Daisy standards is likely to lead to many more books becoming available in accessible media.

- The accessibility of recent and emerging published products that are increasingly provided for schools for use on electronic whiteboards or using multimedia components has not been assessed in this project. It is important that accessibility is progressively built into this new breed of products.

4 Case Study: A Community College in North Tyneside

This case study shows what can be achieved with a 'whole school' approach and a strong champion. Seven Dyslexic pupils received laptops with access technologies and this has generated the following strong results.

The initiative was led within the school by the SENCO and supported externally by Carol Allen and Inclusive Technology as training provider. Training was held with teachers, including heads of departments, support staff as well as pupils and importantly included school IT support which was vital to ensuring successful implementation and application of the technology. This approach helped obtain 'buy-in' throughout the school.

Teacher assessments

These assessments were in response to the question "For each category, what level of change have you observed over the last year that can be directly attributed to the provision of technology to pupils in this project?"

- 6 out of 7 pupils improved with their reading, 2 of them significantly
- All pupils improved with their writing, 1 of them significantly
- 6 out of 7 pupils improved their level of achievement, 2 of them significantly
- 6 out of 7 improved their concentration, 2 of them significantly
- 2 significantly improved their attendance
- 3 improved their homework completion, 1 significantly

There were no deteriorations in any category, with all remaining answers being No Change.

Special Needs Teacher Comments

"The seven students selected for the trial from (our) Community College were students with a range of abilities and socio-economic backgrounds; the one thing that they all shared was their specific learning difficulty.

The trial was one which engaged the students and motivated and enthused them; the students ranged from Years 7 – 9, yet they worked cohesively as a team during all training sessions. What I particularly enjoyed observing was their shared learning, and the fact that they helped and coached each other. Whenever a student was absent from one of the training sessions delivered by Ian, another student volunteered to teach them when they came back to school.

The impact for the students was noticeable, with their reading and writing skills making marked progress. For two students, their attendance improved significantly; these students both have a Statement of Special

Educational Needs and had had previous EWO (Education Welfare Officer) involvement for poor attendance.

The impact for the college was a raised awareness among all staff of alternative means for students accessing and recording; a high number of staff attended an initial training session delivered by the trial providers, and were keen to understand how they could help these students within their classrooms.

Personally, for myself, I relished the opportunity to witness a number of students who have encountered significant barriers to their learning become enthused and enamoured at the chance of achieving success on a par with their peers.

As a participant in the Accessibility Project Pilot, I took pleasure in observing the enthusiasm and progress that it afforded the 7 boys who were our identified cohort. I have now transferred as SENCO/Assistant Headteacher to another school and have been able to identify other students who would undoubtedly benefit from access to the various tools afforded through the Dolphin software - e.g. Easy Tutor, Easy Reader.

Students with dyslexia can often become disaffected and disengaged from their learning potential, however this software enables students to experience success and to become autonomous learners who do not have to rely upon the support of adults in order to read or produce their own written work. It is this factor, alongside my own personal experience of having watched the 7 boys at XXXXX flourish last year, that has motivated me to pilot the software into my new school setting. I strongly believe that this software should be available for all students who have a specific learning difficulty."

Pupil with Dyslexia Comments

About feeling empowered to make choices of when to use laptop:

"Well some weeks I don't because I want to stay writing in my books and then the next week I use the computer. I do it week by week because I want to keep up with my writing."

About ease of getting the laptop to use at all times.

"I would give it a six - the top - (how easy it is to make use of the computer) I can use it if I want to at any time. I use it for English, PSP RS and History with PowerPoint."

About writing and spell checking and speaking software

"When I am typing stuff when I get a word wrong I'll spell check it - when I get a word I type it in then I use the speaking software to speak it out to see if I got it right and then I make some changes or something like that -

it's weird ... I love it. When I am at home I type something out and push enter and my Mum says who is that speaking and I say that's 'my computer'." (laughing)

About use with internet

"I just highlight it and press enter (to read a word on the internet) or just copy it."

About using MP3 player

"I use the Mp3 for seeing if my homework is down on it and when I have done it all I delete them...Like I think what was it, and then I play it back. I don't do it when the teacher is saying it I go outside and record into it in case I forget it."

About using Easy Tutor and changing the background

"I like Easy Tutor, it reads it back. I have changed the background and I put the icons on the side and a panic button. If a word is too small I just enlarge it."

About confidence about ICT

"I know more about computers - I know more about bits of software and emails addresses and things like that... the laptop has been a really big help and I do not think I would be able to do that without the laptop."

Personal view about own work

"I think so I am a bit higher - I think it is really good - I was in set three for English last time and now I think I am in set two. I've done better in Maths and now I am in set 2... I can do this work if I just concentrate."

Assistant Head Comments

"One of the things we've found with the project, or with dyslexia group that we work with, is that we're quite good at identifying their particular needs, but we're less good actually providing the resources to actually meet those needs. So that's one of the things I think the project has really helped with, both in terms of giving them better access to learning at school, but also the incidental learning where they're taking their laptops home and they are using it through the internet to contact their friends....That's one of the ways in which students make tremendous progress is their sort of social contact with using programs like Facebook to contact their friends and will write at length using the skills that hopefully they've been learning in school."

"It has helped raise awareness for teachers and awareness of the difficulties that some of the youngsters have with writing and the acceptance that an alternative medium of recording is perfectly acceptable and may actually be better."

"I think one of the things that has been useful is having the text books and the software to go with that so they can actually access the materials at home."

"Part of the problem is that our intranet system is largely a resource bank of resources. What a lot of them do is just print out resources. We haven't yet made that leap where you are working purely electronically - you are doing your work electronically and your teacher is marking it emailing the work back."

5 The Project

5.1 Background

This project was established following recommendations arising from the Books Expansion for the Visually Impaired (BEVI) Feasibility Project that reported in May 2007. A group of stakeholder organisations was established by the Department for Children, Schools and Families (DCSF) and in December 2008 this group invited tenders for this project. The Dolphin Inclusive Consortium was established bringing together Dolphin Computer Access, Inclusive Technology, Southampton University, RPM Associates with key professionals to tender for this work, and their bid was finally accepted in April 2010.

The reasoning behind the project is explained in the following extracts from the Invitation to Tender document.

“Research conducted during 2006, summarised in the RNIB campaign report ‘Where’s My Book?’ demonstrated that the current system for providing accessible versions of textbooks to blind and partially sighted school pupils is not working. Delays often occur in the provision of accessible material and children’s education and social progress suffers as a result.

Anecdotal evidence also suggests that the provision of written materials in alternative formats can be an inefficient and expensive use of a school’s staff time and financial resources. Where written materials are not provided in a timely and efficient way, it can have a negative impact on the educational progress of print disabled students.

DCFS believes that the solution to this problem lies in ensuring the availability of curriculum materials in electronic form to enable the efficient production of formats which are accessible to all learners with print disabilities.”

5.2 Existing Practice

At present, the preparation of materials into alternative formats is done primarily for pupils with visual impairment. Each child has different needs and preferences that may require transformation of materials into, for example, large print, audio or Braille. Traditionally, sensory support staff or teaching assistants will get a request from a school for a specific pupil, scan a hard copy version and then use specialist software to create the alternative format. Teaching assistants will often make accessible versions of pages by photocopying and enlarging onto cumbersome A3 size sheets which are far from ideal.

Increasingly, electronic files are being provided by publishers on request, usually in PDF format. Whilst this helps by removing the need for scanning, the file still has to be transformed into an alternative format which can involve a significant amount of time, extracting text and images and editing them as required. There are also many different varieties of PDF, some easier to process than others.

For dyslexic pupils, special needs teachers that support them and the organisations that provide broader advice, support and training, the concept of using alternative formats as electronic files is very new in the UK. Whilst there is increasing evidence of laptops being

provided for statemented pupils, the use of access technologies and electronic materials is not widely used at present. However, the number of dyslexic pupils who could benefit is much larger than those with visual impairment, and therefore there is the potential to have a much broader impact and return on investment if the combined population can benefit from new solutions.

5.3 Objectives

The aim of the project is to test a model that could provide a practical solution to the existing problems in providing accessible resources in schools. Specific objectives were:

- To produce files in appropriate formats for trials by selected schools and local authority producers.
- To trial the use of alternative formats in schools and local authorities.
- To produce best practice recommendations about using alternative file formats and appropriate end user tools.
- To evaluate the effectiveness of tools and approaches used in the pilot, and set out plans for long term sustainability.”

5.4 Approach

Two sets of trials were undertaken – pupil trials and specialist producer trials. Specialist producers are people in local authorities or schools who spend much of their time striving to meet the demands of print impaired pupils for learning materials in alternative formats. Whilst some activities commenced in the Autumn Term of 2009, the bulk of the trials in schools were undertaken during the Spring and Summer Terms of 2010 and have continued into the Autumn Term of 2010.

In advance of the above, a mini-trial with four pupils was undertaken during August 2009 to aid preparation and planning. This identified software changes that were made prior to the start of the full trials.

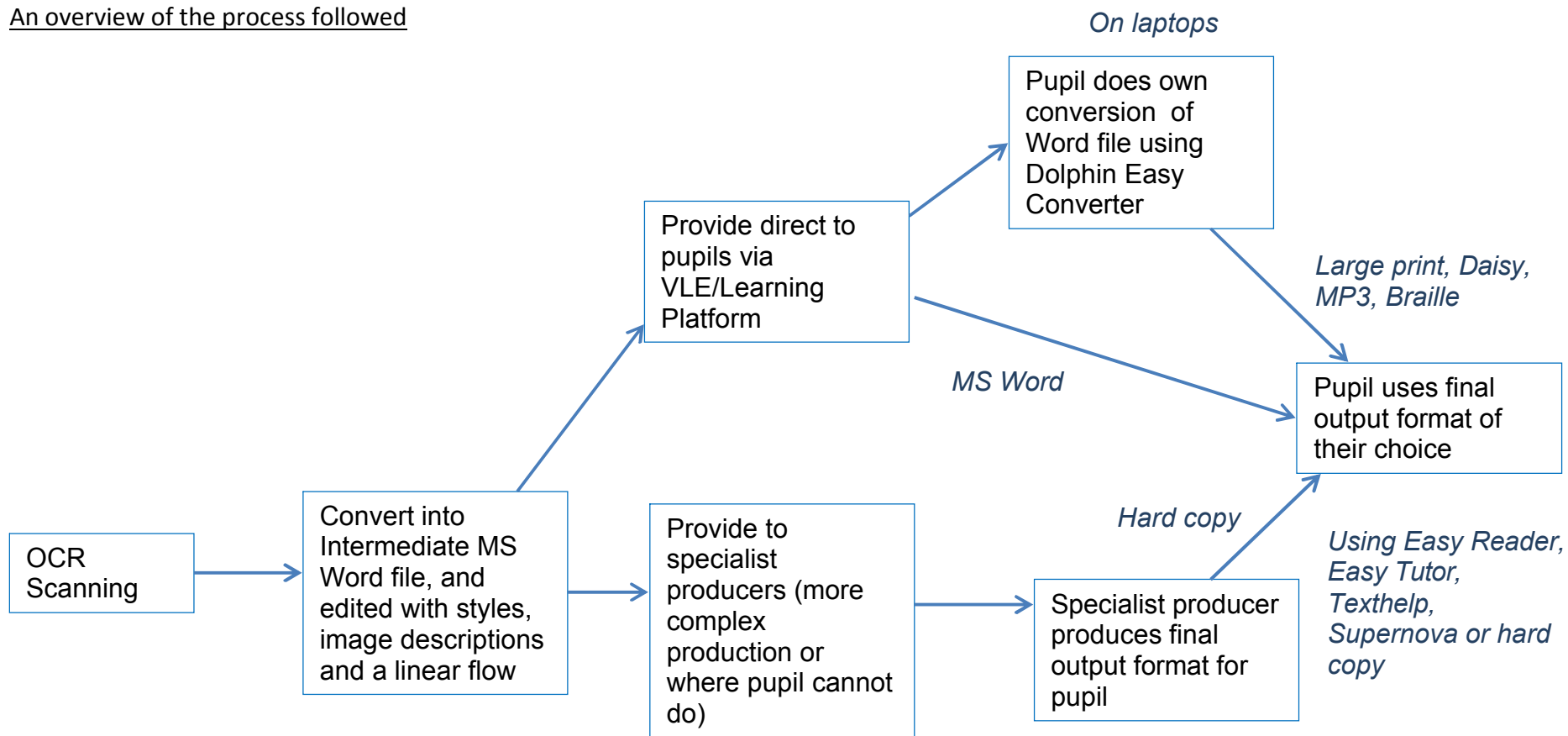
5.4.1 Production of books

To support these trials, 132 textbooks were produced in Microsoft Word format (2003 compatibility mode) following a specification (see Appendix A) established by the project with input from specialist producers and RNIB. The main features of the specification were to use ‘styles’ to structure the text, and image descriptions were added for most of the books. Text was edited into a linear flow that is necessary for access technologies.

The consortium obtained an appropriate licence from the Copyright Licensing Agency, and as per the terms of this licence, books were only produced where a school had already purchased a copy and they were needed for a print disabled pupil.

Most of the books were produced off shore in India, scanning from hard copies. On return they went through a quality control process, and approved files were then made available for download via an FTP server.

An overview of the process followed



5.4.2 Pupil trials

40 visually and print impaired pupils, mostly in the 11-14 age range, were selected across 9 schools in the Oldham, North Tyneside and Durham regions of northern England. We adopted a 'pupil centric' approach to these trials. Our belief was that the most efficient and sustainable model would be if pupils could adapt and use files directly themselves rather than add further dependence on already stretched school resources.

School and parent permissions were obtained.

Each pupil was given a laptop with the tools to be able to convert, produce and access curriculum materials from supplied electronic files. This included:

Easy Converter	For conversion of MS Word files into accessible versions e.g. Large Print, Daisy Digital Talking Books and Braille. It also enables scanning and editing of hard copy input sources and can produce PDF files.
Easy Tutor	For text to speech with background colour highlighting, for use with MS Word files.
Easy Reader	For reading of Daisy Digital Talking books with text highlighting, and with the ability to add bookmarks and annotation.
MS Office including MS Word	To enable the above as well as allow users to change the file layouts including background changes and font size.
Supernova	For on screen magnification, screen reading and hot keys. (Visually impaired pupils only)
Texthelp Read and Write Gold	Similar to Easy Tutor, and used by some schools that already had a licence for this product.

Every pupil was given training in the tools provided during the trial period. MP3 player/recorders were also provided to allow playback of books and other recordings.

Schools were asked to identify textbooks that their selected pupils would be needed during the trials period so that they could be prepared.

Training sessions were also held with teachers and other staff involving, where possible, IT support, so that pupils could be directly supported within the school and to determine the best approach for the project in each school. Training was undertaken progressively rather than all at once so that pupils and staff were not overloaded.

Although some training was undertaken in late 2009, the bulk of the trials ran throughout 2010.

5.4.3 Specialist producer trials

Our belief was that substantial time and cost savings would result from making prepared electronic files available to specialist producers who regularly scan hard copy books and use an array of tools to create alternative format outputs for print impaired pupils who they are responsible for supporting. There is already a vast amount of duplication of effort throughout the UK where one book can be produced in different alternative formats by different specialist producers.

Using the VI Forum, specialist producers were invited to take part in the trials. 10 specialist producers attended an initial workshop in July 2009 to assist with production of the book specification, and then a further workshop in December 2009 as part of the trials. Our books were made available to them, subject to agreement that they were adhering to copyright law, and they were invited to request further books. They were also provided with conversion software.

5.4.4 Availability of files throughout England via RNIB

Having produced over 130 books, it was recognised that there must be a significant demand for these books for pupils in other schools and that additional, tangible and immediate benefits would arise from making the books more widely available. Acting within their Copyright Licence and using an approach agreed with the Copyright Licensing Agency, RNIB provided a service to make the files available to schools and specialist producers beyond the schools within the trials.

They have made files available on request on CD for a fee of £2.99 to cover the cost of provision. RNIB have requested feedback from those who have taken them. RNIB have produced a report and a summary of the results have been included in our evaluation.

6 Evaluation – Pupil Trials

6.1 Approach

Three main methods were used to gather formative and summative data.

- Questionnaires
- Face to Face
- Documentary information from online discussions, meetings and phone conversations.

Questionnaires

One of the initial ideas for the evaluation included the use of electronic survey software with a minimal amount of face-to-face meetings with both staff and students. The aim was to reduce the time involved with questions around the progress and outcomes from the project so that teaching time would not be adversely affected. Several online survey systems were evaluated such as Survey Monkey, Survey Gizmo, simple Web forms and Question Mark Perception. The latter was chosen as this was already available on the University of Southampton's servers,

could ensure data protection and has full access for screen reader users. A pilot questionnaire was set up on the survey software with full accessibility options. This was demonstrated to the team and those liaising with the schools. However, after the initial approval of this methodology, due to issues with Internet access in some schools it was decided that paper-based questionnaires would be more suitable and team members liaised with teaching and support staff to interview all the participants.

The initial 15 minute questionnaire included questions around computer use in the home, school, with textbooks, and to capture the feelings that students had towards this type of support for their studies. 40 questionnaires were completed with varying amounts of commentary and a scale of 1-6 for feelings about the use of laptops and electronic textbooks. The ratings were from 'one' meaning 'very poor' to 'six' for 'excellent'. Three students dropped out from the initial phase of the project but were replaced by others. This meant that when recapturing the information there were three questionnaires that were only completed on the second phase. The results of the initial questionnaire were provided in the interim report provided to DCSF (April, 2010).

Towards the end of the project, a short questionnaire was provided to schools to provide a way of estimating the improvement in reading, writing, general achievement, confidence, class attendance and homework completion. They were asked to assess the direct impact of the project on pupils for these criteria.

Face to Face meetings

During the project, school staff were interviewed by members of the team for the interim report and two meetings were held to summarise these findings. A second questionnaire was planned for the beginning of the autumn term, 2010. However, due to various staffing issues this was never completed and therefore the evaluator visited six of the nine schools in October, 2010 to collect data. Interviews were held with 30 students and members of staff involved in the project at each school. It was not possible to interview all 40 students as on the allotted days some students were away and others could not attend due to lessons. This has been an issue throughout the project as it is extremely difficult to find suitable times for face-to-face meetings with project participants.

Two workshops were held with specialist producers in Birmingham to assist with preparation of the project, to provide software training and to get feedback.

Documentary information

Other approaches to evaluation were to have been the logging of data on the laptops in order to check the amount of use of the software supplied. However, as most laptops could not be connected to the Internet and therefore data could not be downloaded to another server it was impossible to gather this data accurately. The logging would only have captured the use of the conversion tool, EasyConverter, and without an internet connection a text file with the

information would have had to be downloaded from each laptop and there was no guarantee that this could have provided useful information without much time being spent on its transcription.

In general, there were difficulties collecting data as staff at all the schools were incredibly busy with a heavy load and the project was not necessarily considered a priority which was understandable when in many classes the participants numbered one or two in a class of 30+. The teaching assistants (TAs) all had complex schedules that involved not only supporting the students on the project but also, in some cases, providing alternative formats to a wide range of students in both age and complexity of disability.

Despite the aforementioned difficulties a rich collection of data has been amassed from helpful staff, willing students, and the team who also contributed to the discussion in an online forum along with the specialist producers. In total for the final interviews over 10 hours of audio recordings were collected in the last months of the project. Teaching assistants and support staff were with the students at all times and provided additional information. Members of the team who were involved with setting up the project in the schools also provided further information.

Reflection on the approach taken

As it was only possible to interview 30 students out of the 40, the data collected shows comparisons between this cohort at the outset of the project and during the final months, rather than the complete group of students. This means that the following results should be considered on that basis and results should not be extrapolated with a great deal of confidence. However, on analysis, it appears that many of the comments made by these students are well founded, and members of staff often described how the other students were working on the project in a similar fashion. It is interesting to note that, where a student felt more confident or made more use of the technology, this was corroborated by a member of staff. An example of this was found at one college in the north-west where the teaching assistant said that *“SF has particularly benefited from this project. He has more confidence with IT and has enjoyed helping others with their laptops.”* SF himself said, *“it's good to go on the Internet, I like to use it in Geography, English and IT.”*

At a college in the north-east, a member of staff commented that JHL had made significant improvements in reading, writing, achievement, confidence, attendance and homework completion. JHL himself mentioned that now he *“could read pages for English”* and increased his scoring for the ease of accessing textbooks to '4' which represents 'good'. He also said that he went on *“YouTube and Google to search for home work and 'I could do it any time... I just go on, I just know how to use it... It's good it just makes it more easy to get your own work ... it is easier to read with EasyTutor and I change the colour of writing to red and yellow.”*

Taking the initial questionnaire as an outline for the final interviews with students, it soon became clear they were happy to relate (in some depth) their use of the laptop at home, in school, Internet usage, use of the specialist software, textbooks along with use of other technologies. They also appeared to be making distinct choices around the use of the laptops. There were very few negative comments, although, it has to be appreciated that the students may have wished to please the interviewer in front of a member of staff. Nevertheless, an advisory teacher for ICT and special needs who attended several interviews said,

“what I saw this morning was a completely different deal, pupils being far more open about what they could do, what they could not do, what worked and what didn't work for them, even saying when they had difficulties and admitting when they did not need it. One student mentioned his 'safety net'. He said he's coping with 90% of what he's doing but he's got it when the pressure is on.”

6.2 Impact on pupils – summary statistics

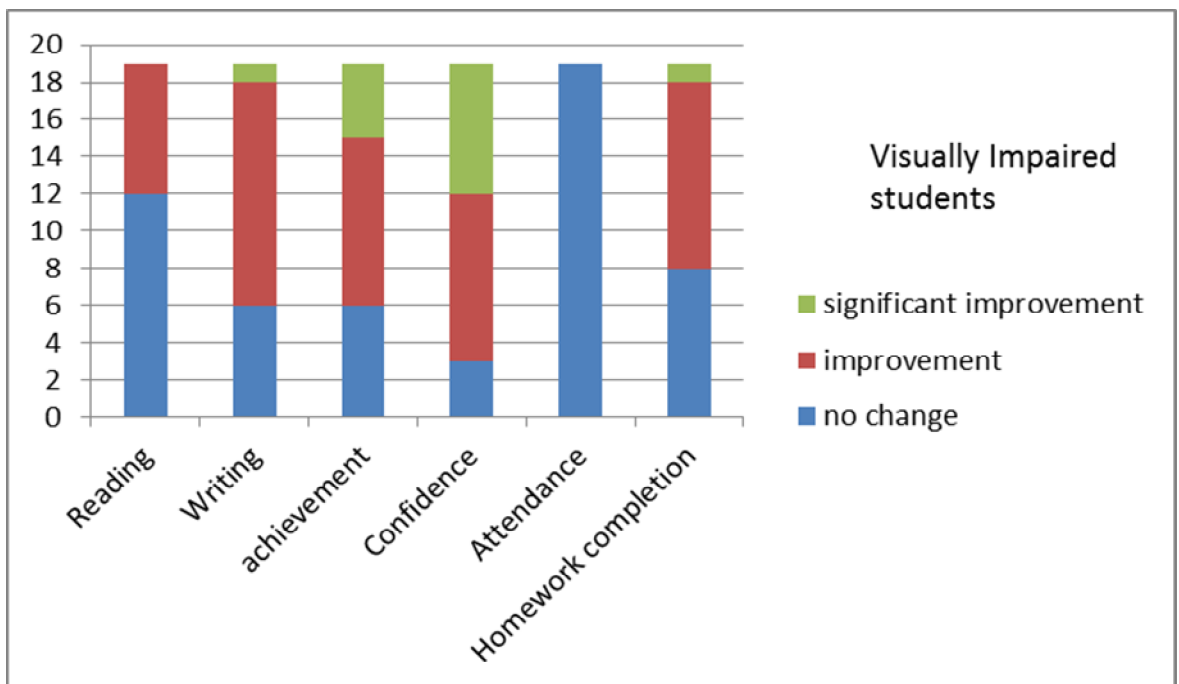
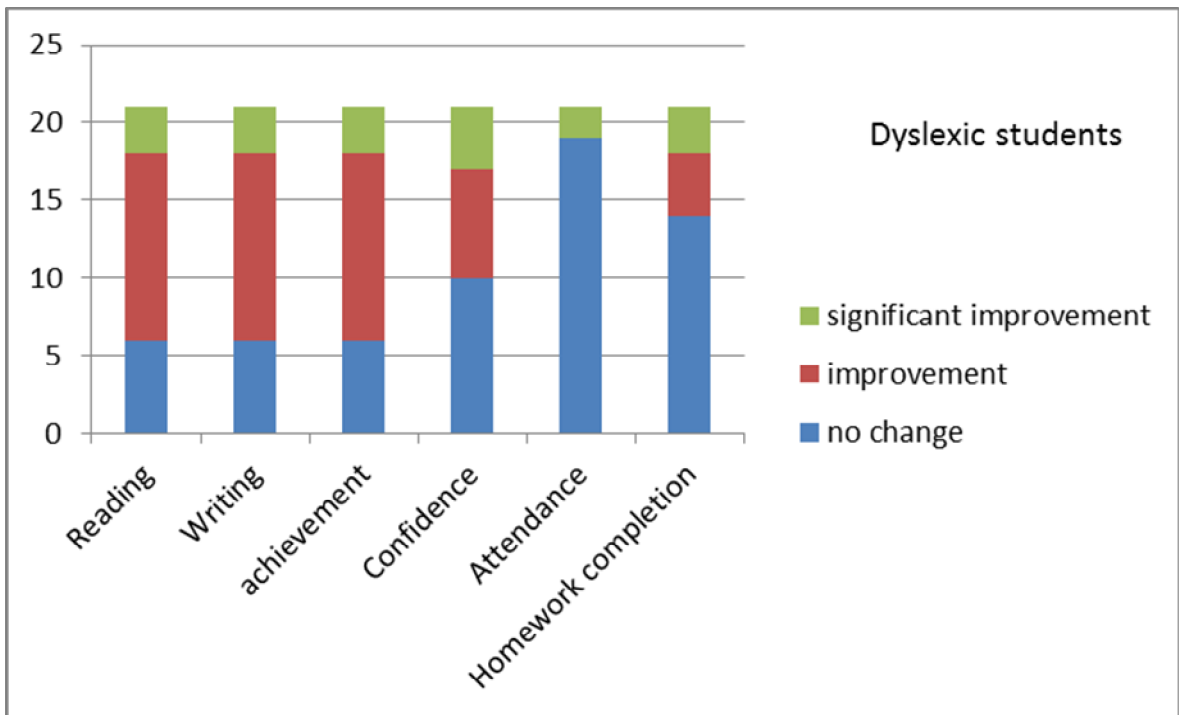
The following is a summary of the questionnaires received from schools that assessed the direct impact of the project on their pupils. The impact on dyslexic pupils for reading, writing and achievement was higher than for visually impaired pupils. We believe this will be because visually impaired pupils are more used to using technology to assist their everyday school activities. The impact on visually impaired pupils was higher for confidence, probably because it was building on existing skills whereas dyslexic pupils had not had sufficient time to fully get to grips with the software.

Despite many of the issues faced on the project and the relatively short time that pupils have had to use the new technologies, we consider these results to be compelling. Selections were based on any deterioration, no change, improvement or significant improvement. **Not one teacher expressed any sense of deterioration in the students' study skills** and where they always attended there was no change but two students improved their attendance.

Dyslexic Pupils %	Reading	Writing	Achievement	Confidence	Attendance	Homework Completion
No Change	29	29	29	48	90	67
Improvement	57	57	57	33	0	19
Significant Improvement	14	14	14	19	10	14
Improved or significantly improved	71	71	71	52	10	33

Visually Impaired Pupils %	Reading	Writing	Achievement	Confidence	Attendance	Homework Completion
No Change	63	32	32	16	100	42
Improvement	37	63	47	47	0	53
Significant Improvement	0	5	21	37	0	5
Improved or significantly improved	37	68	68	84	0	58

All pupils %	Reading	Writing	Achievement	Confidence	Attendance	Homework Completion
No Change	45	30	30	33	95	55
Improvement	48	60	53	40	0	35
Significant Improvement	8	10	18	28	5	10
Improved or significantly improved	56	70	71	68	5	45



6.3 Using the laptop at school

Generally in the community colleges and mainstream schools very few students have their own laptops for use in class or require alternative formats for their textbooks and worksheets. There were concerns about students being wary of using the laptops in class or feeling 'marked out'. This proved to be true for two of the younger dyslexic participants but most soon overcame their concerns and appreciated the benefits. Those with visual impairment tended to depend on their specialist software and are therefore quite used to explaining to their peers why they needed their laptops.

For a group of visually impaired students there was an even clearer sense of ownership over their laptops. *"My own laptop I would say five (mark = good) nobody else's laptop would be the same because the keys are different. If I use the school ones its three (mark=moderate) things are not in the same place ... SuperNova does not work on them."* (KB) RB said in the same conversation, *"the laptop is all right!"* KB interjected, *"mine is the best laptop in the world" ...* RB then said, *"if I had to use someone else's laptop I couldn't handle it -- I know where the keys are,"* and another student in the group said, *"I think mine is the best laptop out of them all -- if you took it away -- I would cry. If I did my work it would not be as neat and it would not be as easy for me."*

A mother of a visually impaired student when discussing this issue about feeling different using a laptop stated, *"she doesn't see it as being different from her friends or anything else and her friends are jealous and they think it's cool and it's a lot better than having large pages of A3 flapping around you."*

The issue of being concerned about using a laptop in class was only mentioned by two of the youngest students (11). LF said, *"I think everyone would say why have you got a computer and tell everyone and I would be like -- I don't want to tell you."* This was confirmed by the teaching assistant who said that LF and AF seemed to use it in a different way from SF who uses it for several lessons. On further questioning it became clear that one of the teaching assistants for SF used to bring the laptop into the lesson whereas the others did not receive similar help. This proactive approach made a difference to many of the students. Where there were support staff helping students to access their laptops there was increased usage. For instance in one college with a specialist visually impaired sensory support team, according to a report produced by the head of the sensory support team "students were using the laptops for 40% - 50% of the week and 80% of the pupils could use the software independently". She stated that "the 20% who needed more encouragement and practice and still preferred to write rather than using the laptop were not yet experiencing the demands of the curriculum."

The older students with specific learning difficulties, who were interviewed, did not appear to consider the issue of using a laptop in class as a concern. However, this may have been a problem for perhaps three students who did not engage with the project and there were definitely two who dropped out, but were replaced early on. So for those students who had

engaged such as DL, there were positive comments such as, *"I do my class work on it -- I do my French on it ... my handwriting is horrible but on the computer it is nicer. The laptop helps because when it reads out it picks up my spelling mistakes and read them all ... it's very helpful ... it's really useful. [marked 6=excellent]."* RT said, *'Yeah it helps, it helps loads and English I have loads and I just get it to read out. If I do loads and loads of writing it helps. I use it in English and RE ... it tells the spelling a little bit. ... It makes me feel more confident about doing my work. I'm more confident I'm actually going to get something done. Instead of just sitting there only about reading my own writing and saying listen I just cannot write it, I can just type it up -- it's a lot easier -- I feel I believe in myself more now than what I did -- I just couldn't do it -- it's just much better.'*

The teaching assistant confirmed this by saying about her group of students, that there had been an increased confidence in their own abilities and an increased willingness to do written work, whereas before there was a total reluctance and even refusal. She said, *"when they turn on the machine everything is right for them, they do not get the glare, they have the right fonts and they get on with it themselves and they can go and get them and they know where they are.'* One particular student (JST) she said, *"he gains confidence from his laptop -- it is like his safety blanket and he needs the assurance that it is there even if he's not using it".*

The assistant principal of the community college, who was also the acting special educational needs coordinator commented that, *"I think the students recognise that this is really making quite a considerable difference to them so we have not had any of them come along and say they do not want to use a laptop because I don't want to be seen to be different. Sometimes in examinations they feel a bit different because they have to sit at the back of the hall because that is where the plugs are."*

For the student whose mother came in to tell the teacher about the laptop the son said, *"it helps because ... you do not have to write, you are typing rather than writing ... my mum came in to tell the English teacher that I had a laptop... at first I was a bit nervous about using it in class but now I am okay and people don't bother. I use the one that reads it out to you ... if I'm on the Internet and I did not know what the word was I would just use it to tell me what it was."*

Finally, when pressed on the subject one student said, *"the English teacher is all right with it -- it helps when I write."* Another capped this with, *"My history teacher said last year she could not read my handwriting and now she said it is easier to read, and my English teacher said that as well. It is easier to write so I'm not worried about the others. There are about five or six pupils using laptops."* As the assistant principal from one college said, *"I think it has helped raise awareness for teachers and awareness of the difficulties in some of the youngsters have with writing in the acceptance and alternative medium of recording is perfectly acceptable and may actually be better."*

Personalisation and changing desktop settings along with the use of some assistive technologies may not be as easy on the school computers as there are times when desktop settings are locked down and some access software requires specialist support to be successfully networked across a campus. However, 67% of the 40 students initially participating on the project changed their desktop settings and 76% of the students interviewed changed their desktop settings. This personalisation can be vitally important for those with disabilities and the degree to which these students were able to have laptops that were adjusted to suit their needs should not be underestimated.

As a teaching assistant said, *“with the personalised use of their laptops the students know what they need, had time to work out what was required and were able to articulate it and they were also willing to support other students”*. In the same college RT said that he was now able to surf on the Internet, YouTube, games ... websites ... *“I try and help my Dad's company with their website -- I'm doing OCR nationals and I use Google images and HMV for my project. It is all about music and design your own website. I've got my background to bright yellow and a little bit bigger font size.”* RT's teaching assistant felt that he had increased his general performance from 2 to 5 in other words from poor to very good out of a possible 6 for excellent and that he could work independently with greater ease. She felt his confidence had improved and he was happier to do written work commenting that *“RT went up directly because he is quite bright, but he could not get it down on the page -- he could tell you a really big answer then he would write three words. He is now able to express himself more and has probably gone from 2 to 5 because he can write it down now.”* (marking on the scale of 1-6=excellent)

“We have seen increased confidence and for me from the very first session they were talking about how they were going to personalise their laptops and changing the background. I think all of them have grown up and they know what they need and what that personalisation means for them and they were able to articulate it.” (Specialist Trainer)

Those with visual impairment tended to change the size of fonts and use built-in magnification if they did not need specialist software and high contrast mode. Those with dyslexia tended to enlarge the font and use a variety of colour options from red on yellow to orange and white and one student changed his colours choice during the project's time span. At one college teachers were supplied with a chart that showed the type of software required, level of support and desktop personalisation in-situ. In all cases the visually impaired students had assistance with adapting their laptops to suit their needs. In the case of many of the dyslexic students this appeared to happen on some laptops but not all. Although all the machines were set up at the beginning of the project with the specialist software, as teaching assistants changed and special educational needs coordinators left in three colleges, some students in the initial questionnaire did not discuss this aspect of accessibility or did not require it.

One dyslexic student (RT) said, *"I don't get headaches every five minutes like I do with white paper, I can change the background to yellow and I'm away. I can actually read my own writing and I don't have to sit there and ask 'what's that?'"* Another student (DBH) said, *"I think Read and Write is easier to use -- I like to change the background colours."* JST said, *"I use coloured backgrounds, bright yellow. I make the fonts a little bigger and I change the writing to make it stand out against the yellow ... I use the one that reads out to you."* A group of three students collectively stated that it was *"difficult to use the school computers because they had small letters and others were always on them. Now it's easy to get the laptop at any time."* When discussing some worksheets JL said, *"If it was really small I would make it bigger, if it was in a ridiculous font I would put in something nicer to read like Arial – there are too many – who picks the one at the bottom? It depends on what I am writing or reading – I tend to write it and then mess around with it to make it look better. If I was reading it back I might make it a bit bigger."*

Making informed choices of when to use the laptop was another common thread throughout the interviews with 11 students giving various reasons as to why they might or might not use the laptop. The categories were to do with the type of lesson, the weight of the laptop, the fact that it might have been left at home, the inability to use the computer rooms or having to access school computers because the laptop needed charging. Only two students mentioned that at one time the laptops had 'broken'. Both laptops were subsequently repaired. So RB said, *"it depends on what lesson I mean, if I'm in English and I need to do my second draft then I will let it read it to me to see where I have gone wrong, and if I need to put things in then I will just put bookmarks in [in reference to using EasyReader]"*. TL said, *"I can use it if I want to at any time. I use it for English, PSP, RS and History with PowerPoints... Well some weeks I don't because I want to stay writing in my books and then the next week I use the computer. I do it week by week because I want to keep up with my writing"* (due to take GCSE examination soon). TH said, *"I use it for all lessons apart from PE ... I use my laptop nearly every day. Sometimes I have to get it charged but I always use it."* JT said, *"I would use it for every single English lesson but with the teacher we've got weird jumping rooms and I just don't carry it around -- I just come and get it if I need it."* JT, *"well now we have split lunch you can't use the computer rooms now and in the library there are only 10 computers so they get booked up really quickly. Now I have the laptop I can do it before the day is finished"* [homework].

The weight of the laptop was a particular issue for some students although those with visual impairment preferred the larger screens with the larger keyboards some dyslexic students may have benefited from a net book or lighter laptop and one particular student felt he was developing some problems with his shoulder and so the latter was suggested for his use. LL, *"I have problem is that my shoulder and when we're walking along the next thing I know it is killing my shoulders, kind of awkward with the weight and that ... just the charger in the laptop and MP3 and everything with it hanging it is hard."* DL, *"it's dead heavy to carry around -- that stops me using it all the time."* Although another student (LWL) felt that it was worth it and

said, "Best thing [the laptop] -- no one in my classes got one that you have to carry it around everywhere and it is heavy -- sometimes it goes wrong I have had help with the Internet with C (technician)". JL, in the same college came up with a suggestion, "I would like to design something that would carry the laptop -- like a little hovering tray it might follow you around!"

An assistant principal mentioned that weight was one of the issues with the laptops, "sometimes the youngsters don't like carrying around so the initial wave of enthusiasm is kind of laps to a degree -- they think twice about it. We're a big site for carrying something around all day along with the PE kit and the schoolbag."

A teaching assistant suggested, "it will be better if it was a smaller laptop ... because they have to carry it, it is a big screen, they have the mouse, and the wires get tangled up... It takes a big space up on the desk." However, not all the dyslexic students wanted the smaller laptop JST, said "it's got bigger buttons, I like the bigger screen and it has a mouse with it."

Summary

There were surprisingly few comments regarding stigmatisation and the use of the laptop from the group interviewed, which may be a sign of the times. This attitude had been noted at university level in the LexDis report in 2008¹ and by Shevlin et al. (2004)² who compared these feelings to those of students at college or school said that in their study "Participants reported better attitudes in college and better provision. Outcomes included feelings of being understood, that the 'stigma' is less." This disparity between school, college and university in terms of accepting technology use in the class appears to be diminishing.

The ability to adapt a device to suit one's needs is taken for granted with ownership, but is much harder when moving between computers or when items are on loan. **Those students who felt particular ownership appeared to be the ones who had easy access to the device at any time during the school day (88% of the students)**. Not all students needed to personalise their desktop settings but **a high proportion changed fonts, colours, print size on the screen, levels of magnification and highlighting (76%)** and this follows the trend of students in the aforementioned LexDis project (96%).

Neil Selwyn mentions 'digital decisions' in the context of users making empowered decisions not to use technology, where use or non-use of technology involves genuine choice.

Recognising that users are able to exercise such choices therefore involves:

¹ LEXDIS Final Report to JISC Available from:
http://www.lexdis.ecs.soton.ac.uk/project/media/LEXDIS_ProjectReport_Dec08final.doc

² Shevlin, M., Kenny, M. & Mcneela, E. (2004) Participation in higher education for students with disabilities: an Irish perspective, *Disability & Society*, 19,1,15-30.

[..] recognising the agency of individuals in not making use of technologies which may have a limited relevance, utility or even pleasure in the context of their everyday lives. (Selwyn, 2006:273)³

It was interesting to note in this project that **the young students participating were clearly stating notions of informed decisions** and it included use of the digital recorders as well as choices made over software use.

If it had been possible to assess each student's needs prior to the delivery of the laptops it may have been possible to have provided a better fit regarding size and weight. However, when it came to final software usage and desktop settings these were individualised and checked throughout the project in most cases. This type of **individualised support is essential to gain maximum benefit from the technology.**

6.4 Using the laptop at home

There were two schools out of the nine that allowed the laptops provided to the students to be used at home with access to the Internet and some students had access to the laptops already through their application to the Home Access scheme and were able to have licenses for specialist software added to these machines. This appeared to have some impact on reading where 10 of the 14 students were said to have improved or significantly improved in reading as opposed to only 8 of the 26 who did not take them home. These results could have occurred for any number of reasons, but two students clearly stated how it had changed their reading habits. SP said, *"yes, the laptop at home has made a difference because I do not have to share it with anyone... I usually just use it for homework and if I want audio books I can get them. I listen to audio books, I've got loads. I read quite a lot, but Twilight series, Harry Potter."* SB is registered blind and has been using SuperNova on a pen drive. Before the project began she was using a basic word processing program for the blind called 'Guide' and she commented that 'SuperNova is quite easy and I don't use Guide any more'. The leader of the sensory support team commented that she was *"confident at using all software and making informed choices."*

At another school where the laptop was allowed home one particularly enthusiastic student said, *"There is a laptop at home that practically everybody uses it -- but now I can take my laptop home every day I use it on the Internet and now my sister is nagging me about going on the computer but they can't because it is linked up to the school, I use it for You Tube, Facebook and mail -- videos and stuff like that games. I do loads of homework on it -- I do plenty I find it easier to spell and right I would give it a six using it."* (Six = excellent -This scale came from the initial questionnaire when rating the use of the laptop). He went on to say, *"I use Word for the title reading it's better than me reading from the book ...I use Read and Write Gold but it can*

³ Selwyn, N. (2006) Digital division or digital decision? A study of non-users and low-users of computers, *Poetics: Journal of Empirical Research in Culture, Media and the Arts*, 34, 4-5, 273-292.

make me confused ... because it sounds a bit like Stephen Hawking. The highlighting is good to see so you can follow it and see where you are." AS would have been unable to use text-to-speech on his home computer unless another licence had been made available. His special needs coordinator said that, *"AS knew what he was doing and he could see the purpose of it, he's quite positive about himself."*

Five students interviewed at one of the community colleges all provided statements as to why the computer had helped at home. DL said, *"It helps when it reads out when I type... for home work, I go on Facebook -- are we allowed? Play games like car town and I used the learning platform - I get my homework on it.' The laptop helps because when it reads out it picks up my spelling mistakes and read them all -- it's very helpful - it is really useful"* (marked as six = excellent).

LWL said in amongst other comments, *"I use the one that reads it out to you ... if I'm on the Internet and I did not know what the word was I would just use it to tell me what it was. If it is [homework] on sheets it's hard to read -- if it's on the learning platform it's easier, it would be good if more was on the platform"*.

Another student (TL) was concerned that he wasn't able to build a computer and in one of his comments said, *"I know more about computers -- I know more about bits of software and e-mail addresses and things like that now ... the laptop has been a really big help and I do not think I would be able to do that without the laptop."* [Said in relation to school work] *"I think I'm a bit higher now -- I think it is really good, I was in set three for English last time and now I think I'm in set two. I've done better in maths and now I am in set two ... I can do this work if I just concentrate"*. His teacher had marked his reading as significantly improved over the time of the use of the laptop and that he showed improvement in both reading, general achievement and concentration.

The teacher involved in supporting JT said there had been an improvement in his writing and *"his reading age has gone up 2 years in the course of the project, the technology has allowed him to access text he would not normally access. All he really needed was the ability to change the background colours and text and he is now an independent worker"*. It was interesting to note that during the interview the student independently discussed a project he was doing. *"It was like -- how sawmills work and the process of a lumberyard -- [showing how he had collected all the images and text on the Internet] I look into more detail and then I use publisher to put it together. The computer at home did not have as good software -- now I can sit in my room and do it because no one else has to use it. It is made easy as you can just do anything ... my friends all like the voice thing, I like the voice thing -- it means you can re-read it -- you know that word thing that corrects it, but it corrects it to really random words, that the speech thing reads it out to you and you can hear it. Sometimes it does not make sense but now it does not happen so much."*

Finally, a student (LL) who had made improvements in reading, writing, homework and concentration plus significant improvement in general achievement and attendance, (according to teachers) said, *“Because my writing is still not perfect but I can type a lot faster than writing. I prefer typing definitely, because when you're writing you have to think about the letters, it feels a lot easier. Everyone wants one – it's made a difference to my grades and I feel better about coming to school. Before you came, I started geography and I used to hate it and be all behind, I was too slow and not catching up but now I have kept up a lot, typing words and now I'm in front of everyone and the teachers are more relaxed about it all -- because I can finish it at home and get it printed out. I don't have to panic as much and I can basically relax.”*

The technician supporting those last five students commented that, *“the kids were given the machines to take home and I've seen the kids being really proud of owning the machines and the fact that they belong to them and they felt proud and looked after them... I've noticed that the children have got more confidence in doing their schoolwork and they were more involved in the school activities. If I showed them how to do one thing they would go and help others to do it. The teachers have said that the kids have improved in English and the teachers have mentioned improvements written in their notebooks... I've noticed that the students when given the right resources they become more confident and they have a much better relationship and they are open and more comfortable and no barrier now as a result of the project -- they will show you what they can do now.”*

Where students were unable to make use of the laptop at home a teaching assistant said, *“it would have been good if they could take the laptop home because if they are doing a piece of work at school they need to be able to finish it off. If they do not have a computer at home it is just not going to get done.”* One team leader of the specialist VI support staff commented, *“if they've got it on their machine they can go away after the lesson with a whole lot of homework and finish it off, they've got it back up and they can catch up”.*

Finally from the assistant principal of the community college where all students could take the laptop's home, *“I think one of the things that has been useful is having the textbooks and the software on the laptops, they can actually access the materials at home. I think that's been a positive thing and I think again with the age that we are moving to there will be more and more of that. Certainly with the software they need to be able to access the schools intranet from home. We're still working on that, we're not there yet, but again that will make a massive difference because this means we'll have some highly skilled users in house.”*

Summary

At the outset of the project 85% of the students had to share a home computer without specialist software. A year later, only 43% did not have specialist software on the computer they used at home, as their laptops were not allowed to be taken out of school premises or they did not have a pen drive version of their screen reader applications that could be used at home. **Of those students with either a home access computer or those who were allowed to**

take their laptops home and had access to appropriate specialist software plus the internet, 52% made some improvements in homework completion with 17% categorised as making "significant improvement". Whereas, only 18% of the students who did not have access to specialist software made any improvements under this criteria with none categorised as 'significant improvement'.

The community colleges and schools that were not happy for the students to take their laptops home cited issues around:

- Insurance / breakages
- Internet access / viruses
- Mugging and stealing
- Children carrying heavy items

Those children who were able to take the laptop home or had access to their own computer at home with specialist software commented on the benefits such as being able to complete work and read online using their specialist software. The only problems mentioned by students were remembering to bring the laptop back into school and its weight.

6.5 Specialist software and other technologies

All the students received specialist software to suit their needs this varied from screen reading and magnification (Supernova) for visually impaired students along with conversion software (EasyConverter) that worked with Daisy book reading software (EasyReader) to text-to-speech software with highlighting for written text on the screen (TextHelp Read and Write Gold or EasyTutor/ClaroRead). Those students who were blind or had a considerable visual impairment had already received some training on specialist software but many of the other students received their training once the laptops arrived and one particular visually impaired student had only just arrived at his college. Nevertheless, he soon learned to cope with the equipment, the head of the sensory support unit commented, *"AB came to us from another authority in year eight -- he had poor IT skills, very insecure, quiet and low self-esteem will stop when my line manager observed him working with the project using some of the electronic resources we had. I gave him the options and asked him to show me SuperNova to show me how he could enlarge the picture and how you would use 'doc-read', line view and make the document and convert it and put it into EasyReader, then we did some annotations. He did it live and I asked him which he preferred to use because in his lessons he has to make his own choices and more and more this young man comes to homework club and shows us his IT skills."*

Supernova and EasyConverter would, when compared to most other software in daily use, be considered complex applications and yet this project was testing the ability of 11 to 14-year-olds to cope independently with these programs in a very short space of time. As has been said at one college (Belmont) 80% of the pupils could use the software independently. Some of their comments were inspiring in particular from SB.

“Supernova is good and it is quite easy to use, it is really easy to use, I've improved, going on to the Internet, going on to different programs, using the shortcut keys and I don't need Guide any more. I use EasyReader and EasyConverter -- they are really clever. EasyReader is really good because you can get talking books on it and with the converter you can convert it into different things. I usually converted into digital talking books. I don't usually convert into Braille by myself.”

In the same college RB said, *“I use EasyConverter, I'm all right, I'm just not like confident with it ... it's just trying to do all the boxes and everything but it's still all right. I use it for digital talking books and large print. EasyReader is good because it reads back to you. It's all right and some other stuff I don't know like putting in a bookmark. Sometimes when I change the background colours -- looking at the colours is difficult because I get confused at times.”* It would have been helpful if there had been more time to see how each student was using the technology and to analyse where particular issues were arising with the design of both EasyConverter and EasyReader as the former was developed mainly for institutions and organisations rather than individuals although it changed during the project lifetime.

Their TA said, *“I am just so impressed with the way they have taken on board everything and how they can do things now. Without extra help they have just tried to learn things themselves and practised and practised -- it's just wonderful ... they can tell me things!”* One of the teachers at a college also said that, *“I think if the student can get a piece of work and convert it into their preferred format themselves then that is making them independent which is what we are all about and why we are all here.”* She went on to say, *“to encourage the students to use the technology that they have got that was the idea -- so instead of providing paper copies of everything we have, we get them onto the laptops, so we have persuaded staff to put everything on the shared area.”*

There were some difficulties that occurred when computer operating systems and networks were changed within the school without the appreciation of the impact it would have on students using assistive technologies. It appeared that over the summer holidays the IT technicians had changed the drive that held the books and the students found it hard to get onto the 'H' drive the following term. KB commented that *“EasyConverter is okay but it has only just started to work again.”* As a result of these issues students rated this particular program with a three equalling moderate, despite the fact that they were actually able to use it.

A teaching assistant at another college said, *“TWS has just been cracking - he would say - can we get that other book on and he was using it with Dolphin and he was quite positive. He is focused on a career with catering and he does a lot of work on it...”* Sadly not all the students have staff to help them reach the books and as a group at another college lamented, *“the books have been difficult to get -- we do not have a teacher to help us with it all this term.”* This has meant that they have been unable to make full use of some of the specialist software.

Encouraging quotes have come from the dyslexic students who have mainly been using the text-to-speech software but were also provided with EasyConverter and EasyReader. LL commented that, *"I'd like to go through EasyConverter again, but I'm okay with EasyTutor and the teachers know about it all which is good as they can help me now -- it made a huge difference and it's easier for me. I can practice in my own time -- I can do stuff myself and I do not rely on school -- like I used to say I need more help -- it's funny as well -- I can miss some work but like now I can catch up."*

More positive comment about the text to speech and colour changes came from TL who said, *"I like EasyTutor, it reads it back. I change the background and I put the icons on the side and a panic button! (this is on his desktop as a joke) If a word is too small I just enlarge it."* AF *"I am using Easy Tutor and I have changed the voice to a woman."* DBH said *"Easy Tutor harder than Texthelp"* before explaining how he used it with the speech and changed the background colours. Several students did not know the name of the software they were using and would talk about 'the thing that reads it back', 'I like it read out to me' or JST, *"I would use a laptop because it reads it out to me."*

Not many of the dyslexic students used EasyConverter (5 students mentioned its use) but, as they received their books and worksheets in MS Word format that could be read using text to speech applications, this was hardly surprising and it was encouraging that they were able to access the text so quickly in fast paced lessons. There were three students who converted books to Daisy Talking Books and used the bookmarking and annotations in EasyReader following the conversion and one who put the books on a digital recorder. It was felt insufficient time was given to target training periods on specific features of the software or other technologies. Only later were features such as bookmarking, annotations or note taking and other uses for the digital recorders considered.

The project was about access to digital books and e-texts but there was a spin off in writing improvement. Many students commented on the way they enjoyed typing work rather than writing, although the older students were aware they had to practise their writing before they took GCSEs, if they were not using a laptop or scribe during their examinations. One student described how he used the text to speech software for spell checking.

*"When I'm typing stuff I'll spell check it - when I get a word I type it in then I use the speaking software to speak it out to see if I got it right and then I make some changes or something like that -- It's weird ... I love it. When I am at home I type something out and push enter and my Mum says whose that speaking and I say that's **'my computer'**!"*

At another college a student (RT) described how he read books now, *"I would rather have books on the laptop because it is much easier -- I would rather have my laptop read out to me and I can just listen."* AB said when asked about the software on his laptop having just started to use the books online, *"I used it with the textbooks a couple of times ... it makes you understand stuff -- it was not too bad."*

Mp3 players or digital recorders were offered to all the students but not taken up by those who were blind or had a severe visual impairment as the file names were not read out by the Olympus DS 40s – the blind students have since been offered specialist daisy book players. Too late on in the project Olympus introduced the DM-5 that reads out all menu items. As has been mentioned more training on how to integrate the use of recorders into study skills would have been helpful. As one member of the teaching staff said, *“It would have been nice to have made more of the MP3 players - we are falling behind the kids because there is loads of stuff we can do I just don't know how to do it.”* However, in another school the sensory support lead teacher said, *“We have used the MP3 players for different things - We have used them for recording Maths text and staff have recoded homework for the students because the players were not sophisticated enough for blind children, they would not speak the folders.”* But for those students who mentioned the recorders they were used in several ways illustrating a degree of independence.

“I use the Mp3 for seeing if my homework is down on it and when I have done it all I delete them...Like I think what was it? and then I play it back. I don't do it when the teacher is saying it, I go outside and record into it in case I forget it.” (TL)

“I use the recorder a lot, but I put bits on it - say like we doing in the lesson I would put the work on the recorder - I can connect it to my computer -then I take it off and then when I go to the teacher I can go in and drag it to his folder.” (used it as a memory stick) (LL)

“I could show them how to use Easy Tutor and how to download text onto the Dictaphone.” (LWL)

Summary

There have been very few formal studies with large numbers of disabled students that have looked into the effectiveness of assistive technology, although in study by Draffan et al (2007)⁴ 90% of the 455 post-secondary dyslexic students participating were ‘satisfied or very satisfied’ with the hardware and the software that they received. There was no doubt in this project that 93% of the students participating were satisfied with their laptops and specialist software, but this is not the same as seeing improvements in academic achievement or confidence and self-esteem, where there only appears to be considerable amounts of anecdotal evidence. There have been studies on the impact that text to speech may have on proofreading and how when synchronised with text highlighting students may identify a higher number of written errors (Rashkind & Higgins, 1995).⁵ Elkind et al (1996)⁶ found that that text to speech could offer enhanced reading rates and comprehension levels in post-secondary dyslexic students with an increased ability to attend to the reading matter.

It would appear from the evaluations provided by the support teachers, teaching assistants and sensory support specialists that **the majority of this group of secondary students have**

⁴ Draffan, E. A., Evans, D. G. and Blenkhorn, P. (2007) [A survey of the Use of Assistive Technology by Students with Dyslexia in Post-Secondary Education](#). *Disability and Rehabilitation: Assistive Technology*, 2 (2). pp. 105-116. ISSN 1748-3115 (electronic) 1748-3107 (paper)

⁵ Raskind, M., & Higgins, E. L. (1995). *The effects of speech synthesis on the proofreading efficiency of postsecondary students with learning disabilities*. *Learning Disability Quarterly*, 18, 141–158.

⁶ Elkind, J., Black, M. S., & Murray, C. (1996). *Computer-based compensation of adult reading disabilities*. *Annals of Dyslexia*, 46, 159–186.

also gained in their ability to read and write – this cannot just be linked to the use of laptops with specialist software and the use of e-texts. However, **the positive attitude of many of the students and proactive support by staff must have had some impact on their abilities.**

Selections were based on any deterioration, no change, improvement or significant improvement. **Not one teacher expressed any sense of deterioration in the students' study skills and where they always attended there was no change but two students improved their attendance.**

- 56% of pupils improved with their reading
- 70% of pupils improved with their writing
- 71% improved with their level of achievement
- 68% improved with their confidence
- 5% improved their attendance
- 45% improved their homework completion

When visiting schools and colleges it became evident that the teaching assistants could be key to the use of the laptops in several cases, but not necessarily to the acquisition of accessible teaching and learning materials. Some laptops were actually held within the offices of the teaching assistants, others were held with special needs coordinators or even the sensory support service if it was based within the College.

The important thing to note is that students needed to feel they could access the equipment at any time if they were not carrying it around with them. This increased their sense of ownership and confidence in use.

6.6 Use of electronic texts with the technology

Teaching staff are often prompted to provide accessible electronic texts by those specialists who work with visually impaired students. However, this is not the case for those students with dyslexia or specific learning difficulties and in a recent study carried out by Dyslexia Action (Hover, F. 2009)⁷, found that two thirds of the students interviewed thought it would be a good idea to have textbooks in digital format. These students, aged 14 to 20, had never had this as a suggestion before and yet from the results of this project it is clear that electronic texts can be enormously helpful when used with specialist software such as text-to-speech and highlighting of words in various colours.

Over the years there have been a number of transcription services working around the country supporting students with visual impairment but as one of the specialist producers commented when it comes to dyslexia – *“the availability of textbooks -- yes they could have all their worksheets available for all their students for whatever reason ... I think the whole concept of being able to tap into electronic textbooks is so new that schools just have not thought about it in that way.”*

⁷ Hover, F. (2009) Dyslexia Review Spring 2009, volume 20 number two

But this move into electronic texts is beginning to happen at source for example as a result of this project, at one college, one of teaching assistants said, *"We used to have to go to the teacher and work out which passages in the book was needed and I would take them and enlarge it. But now I can just e-mail the project and ask if the book is available, then I go to IT to have it uploaded to the Internet for the kids to have access to the book. There is still an area for improvement ... in an ideal world I feel we should have access so we do not have to ask IT that would be quicker."*

The impact it can have on a student is illustrated by this comment (JT), *"if it is a book I prefer the laptop because I can change the colour, but if it is a worksheet I prefer reading them normally than books because it's not on bright white paper."* RT agreed, *"I have always got EasyTutor up so I can change the colour of the background ... I like having the books on the laptop -- it saves me having to read them out I can just play it -- it's a lot easier for me on T..... books -- I know how to get there."* LL said when reading books, *"EasyTutor is dead good -- some of it when it was talking didn't quite make sense -- when it was reading out because the speech was a bit too fast. The speed was right up so I had to slow it right down."*

Other schools did not have an intranet that allowed for the uploading of books but the staff made sure the students received the texts on a pen drive (memory stick). One teaching assistant remarked on the differences that it made – *"there is DB's file so far and that is only one section -- we have to have it for evidence but there is no way she could work through all that -- (a large A4 file of Braille) whereas now it is all on the memory stick on her laptop."* A student at the same college SB commented, *"it's good the teacher just puts the worksheet on a memory stick and you put it in and you can just fill it in on the computer... I think I would give them all [the books] sixes because they all really work well."*

The Lead on sensory support in one area mentioned the fact that *"several support tutors, teaching assistants and teachers say that schools don't use books the way they used to use books and they are using interactive whiteboards and lessons are taught differently. One of the things we are up against all the time with this sort of stuff is the pace everything goes that. By the time you open the laptop things have moved on ..."*

Several students talked about using worksheets and sections of books. This became clear when a lead teacher in a sensory support service produced a series of lesson plans which illustrated the way sections of chapters would be read in a class. A specialist producer confirmed, *"all the teachers use different books and the timetabling is not completed until a couple weeks before the start of each year , and so we don't know what she's [visually impaired student] going to have... It is really varied some of the teachers seem to have it sorted out and the TAs have it all ready."* She went on to say *"I think all the Key stage three -- four books need to be available in simple electronic format so that all schools can get hold of them, because in the long run it would save money, because you would have less one-to-one TA time. How many TA's are photocopying and binding sections of these books?"*

One TA at another college even pointed out how much extra time he could now spend to support his students when the texts were provided in electronic format rather than having to use the photocopier and went on to add, *“when the teacher is delivering a lesson the PowerPoint will usually go on a pen drive and they will drag it onto the laptops and get on with it.”* Another said, *“I see my role changing, I can spend more time with the students instead of spending time converting documents.”* Finally the head of sensory support at a community college commented, *“I think being able to respond quickly and trying to get away from paper copies and with the liaison with curriculum team leaders and the staff who know the kind of resources they need -- it will get easier. We do not have a networked environment and students cannot access the work from home but that would help.”*

As one mother exclaimed with clear frustration regarding her visually impaired daughter's needs, *“it would save money and I think it would be possible to cut down her time on her statement if she had access to electronic formats -- she just needs the books to see what is there.”*

Summary

There have been studies about users preferences around synthetic speech or text to speech when reading ebooks and a recent survey carried out by the RNIB confirmed that most users would prefer to have human narrators for fiction but are willing to trial synthetic speech and use it for standard information especially if they need immediate access (Home, S. & Cryer, H. (2009)⁸. **There appeared a general acceptance about the use of text to speech by the students and only two dyslexic students commented on the quality of the speech or changed the voice and speed.**

The blind and visually impaired students were happy to use SuperNova with its screen reading and hot keys for navigating most e-texts especially worksheets and those short sections of chapters provided in MS Word format. Daisy Talking Books were read using EasyReader and some were downloaded onto recorders or specialist players. **Most visually impaired students coped well with the mix of technologies and were willing to make choices depending on the type of material they were accessing.**

Dyslexic students were happy to read the e-books with text to speech software such as EasyTutor or TextHelp Read and Write Gold. Very few converted books into Daisy Talking Books as they could not really see the advantages of using EasyReader until they were introduced to the bookmarking and annotation features. Many did not appear to have reached the stage where they needed to navigate long passages and were tuned into mouse use rather than short cut key strokes for working through sections.

As one member of the team said, *“We attempted to show everybody everything for people with print impairment of whatever type and this was ridiculous. What we should have done is a*

⁸ Synthetic speech: what RNIB Talking Book users really think - Sarah Home and Heather Cryer (RNIB Centre for Accessible Information (CAI))

series of short assessments, showing people what was a good starting point. The students said why are we doing this? (This was in connection to dyslexic students using EasyTutor and then EasyReader) We needed to be able to answer their questions with some sort of integrity and we needed to know which technologies would have helped, which one to show first and what worked best."

6.7 Technical Support and Training

Technical support is crucial for a project that relies on the use of specialist software, networks and laptops. There is a need for three types of technical support - key technical support from the software supplier linked to the IT technicians who serve colleges and schools plus a named individual from a company or the suppliers of the software, who can offer specialist training to all members of staff and students where necessary.

Where technical support worked well on this project there was a college IT technician who had been assigned to network the laptops and support the students. Issues were cleared up quickly; teachers did not have to deal with technical problems and students gained from the extra support. As one IT technician said, *"I was attached to the project permanently so if there were any problems with the system, the students came direct to me and they did not have to go to the teachers."*

The success of this type of support was noted in a project team meeting where it was said by the advisory teacher for ICT and special needs, *"teachers and pupils are flying. Laptops are being used at home and the learning platform is being used. The whole school is behind it, with a lot of staff attending sessions which included technical support. Pupils have been given access to printers across the School and are e-mailing work to teachers."*

A further example of the importance of a local on-site technical support occurred when a group that included a specialist from Dolphin and the technical support person from Inclusive Technology visited a community college early February 2010 due to outstanding technical issues. They checked the installation of the software and functionality but found that all was working well. However, there remained an issue with outputting to a Braille embosser - was this to do with the way the software had been installed or an issue with training? It turned out that the missing link in this group was the local county technician who had undertaken the original installation of the embosser and worked on the network. He was eventually able to solve the problem.

It was also often left to a college IT technician to solve what appeared to be software licensing issues. The technician said, *"at the moment when I install software it comes with -- I've got 20 discs. Each disc you have to register individually. If I don't map them you forget, because they all look the same. When you come to see it again, it tells you that the license has already been taken. So it would be very helpful if you have one disc with the volume license or one license code which would be universal. That would enable us to create a package - I can logon to 20 machines or five or six machines in one go instead of installing them individually."* This lesson was more about the fact that the software was originally developed for an institution rather than to be put across several individual computers.

Providing network access to teaching and learning materials including the books from the project proved to be an issue in some colleges. Where it worked students were very successful

in not only retrieving books but also making use of the Internet on their laptops. Where this access was denied as DBH said, *"If we were allowed internet access at home on our laptops I would have taken it home. Then I could do my homework at home because most of the homework is on the internet."* He later went on to say, *"Can you see if we can get access to the Internet at home?"*

Two colleges overcame the issue of access to the network for the materials by providing students with pen drives (memory sticks). This appeared to work well and as RB stated, *"if you get a book in Publisher [format] we can't save it. But mostly you can do it because you just have worksheets and it has been put onto a memory stick and you can just convert it."* This method of working was confirmed by a member of the sensory support team who said, *"the resource staff are taking work that has been e-mailed from the teaching staff and they adapt it and are putting it on a pen drive that goes on to the laptop and then the students are using EasyConverter to adapt it."*

Downloading worksheets and books from a network requires the understanding of 'pathways' for files and folders, in order for the students to access materials. This proved to be a confusing issue and resulted in several students being unable to access their books, as the Lead on Sensory Support said, *"because Dolphin produced the software and they have all the technical know-how it would've been really useful if they had tutored us at the beginning as there have been lots of pathways and file systems"*. A student described it this way (AB), *"it doesn't work all the time -- it crashes."* Another student commented, *"I do homework -- I can't seem to find the EasyReader -- it lasted over the holidays. I did have problems with EasyConverter because it changed."* Once IT technical support had been requested these issues were resolved.

It appeared that very few laptops broke during the lifetime of the project and in fact only two students mentioned the fact that they had to visit their local technician to have the laptop repair and this tended to mean that the laptop was out of commission for a week although one student was quite cheery about it all, *"the laptop keeps me up so I think I'd give it a four or five (good to very good mark) but mine has broken down and I've been to IT services lots of times."* AS said, *"I had problems -- I turned it on one day and the picture wouldn't come up and I could not get on the Internet a couple of times but that's about it."* However, a TA voiced the concern that one felt many members of staff may have wished to say, *"I worry that there is no support once the project finishes. There is no backup if something goes wrong or software changes, I'm the only one involved in the project."*

Time for IT technicians to work on personal laptops for students is not always available, as was said by a team leader of visually impaired students, *"Getting technician time when they've got so many things to do is very, very difficult. It is very dependent on all these people working together. I think it is very important that we look at this project to see how schools have coped without support as this is what may happen in the future."*

Coping with individual needs is not always easy when it comes to staff and students who are in the midst of busy term schedules. It was clear from the outset that once the delays, bad weather and staff sickness or leave had been overcome there was insufficient time for well-paced specialist software training and extended support.

39 visits were made by the training company who had also installed onto all the laptops (Preparation and installation time per machine – 6 hours)

- Windows XP – some colleges/schools changed this to Windows 7 in the summer
- Office 2003
- Easy Converter
- Easy Tutor
- Easy Reader
- Any available books

One college added SuperNova to their 10 laptops and another added TextHelp Read and Write Gold to their 7 laptops as they had licenses for these products.

There was a wide range in the number of training visits, from 9 to one college down to 2 for four other colleges. The college that had the most visits had 10 visually impaired and blind students and did not have an IT technician available at all times. Students had difficulty using the intranet so pen drives were offered to all participants so that books and worksheets could be more easily transferred. Those colleges that had less visits tended to have one or two students who were dyslexic and were mainly using EasyTutor or Text Help Read and Write Gold. The college that had 7 dyslexic students also had a project technician and was used as a base for most of the meetings and training sessions that could be carried out with larger groups. The head of special needs commented that:

“The trial was one which engaged the students and motivated and enthused them; the students ranged from Years 7 – 9, yet they worked cohesively as a team during all training sessions. What I particularly enjoyed observing was their shared learning, and the fact that they helped and coached each other. Whenever a student was absent from one of the training sessions delivered by Ian, another student volunteered to teach them when they came back to school.

The impact for the students was noticeable, with their reading and writing skills making marked progress. For two students, their attendance improved significantly; these students both have a Statement of Special Educational Needs and had had previous EWO involvement for poor attendance.

The impact for the college was a raised awareness among all staff of alternative means for students accessing and recording; a high number of staff attended an initial training session delivered by the trial providers, and were keen to understand how they could help these students within their classrooms.”

However, at other colleges it was hard to judge the success of training sessions and as the trainer said after a visit to one school when providing the laptops, *“Difficult to evaluate effectiveness of the session (I was alone) although my feelings were that this was a good school with good support staff and the pupils were very keen to start using the technology. Each pupil demonstrated a good understanding of how they would use the software in their lessons. The students here LOVED the goody bags!! (each student received a note book, post-it notes, a pen and the digital recorder with the idea of capturing some notes or ideas from the students.)*

During the lifetime of the project EasyConverter changed its look and feel, with the aim of making it easy to use by individuals rather than professionals. This caused some consternation

where training had already been carried out and more support was required. There were no crib cards available although the latest version of the software has built in help files. Those supporting students really wanted short lists of hot keys, easy to view screen grabs and quick ways of changing the settings to suit individual users.

When it came to EasyReader, although there were no training issues around reading and colour changes etc., there was an issue linked to the pronunciation of words in Daisy Talking Book format. The lexicon has to be made before the book is converted whereas with EasyTutor and TextHelp Read and Write Gold the pronunciation of unknown words can be altered on the fly – as a specialist VI support lead said about a colleague, *“She found that the DAISY book she’d made from Romeo and Juliet kept pronouncing “Montague” as “Montag” when using EasyReader. She was not happy that she was effectively going to have to listen to all of the books she was going to make into DAISY files before converting so she could find mispronunciations.”* However, once the issue was recognised, adding a user defined dictionary related to the books being digitised, could be seen as part of the training.

The success of much of the in-house training and support depended on the personalities involved, so a ‘chocolate challenge’ was an example of a training session to encourage dyslexic students to try EasyConverter with EasyReader to start to make bookmarks and annotations. These were students who had already received their training on EasyTutor and it was a success but as the leader commented... *“if I can say 'right you need the ability to make a Daisy book so you can add your notes' then it [EasyConverter] becomes an incredibly powerful tool ... I would have liked to have had the chance to have set up personalised sets of software.”*

Some students were more competent than their teachers and this was often admitted by the members of staff. *“He loves Windows 7 and he is gone home and looked at the accessibility features and he is now teaching us.”* Another TA commented, *“JST has to show me how to do things on the computer, he thinks it's quite hilarious -- he has to show me!”* This same teaching assistant also highlighted the impact of using the specialist software a few weeks after one of the training sessions, *“when they have the laptops with them there is not so much time needed -- they can get on with it themselves, there is not so much' how do you spell this? How do you write that?”*

Technical problems did interrupt the effectiveness of some training sessions. For example, access was lost to the network and the whole time of the session was spent trying to resolve this. It transpired that space set aside on a network drive had been insufficient and had to be increased. Other sessions had at times to be postponed pending resolution of similar problems.

Summary

Across the board training needs to be better targeted and where possible related to the student’s work so they can see a reason for using the technologies on offer. If a student cannot see a use for a technology it will be abandoned as occurred with some students perceiving that EasyReader had nothing to offer over EasyTutor or how to use the MP3 players.

There needs to be an awareness of the special nature of some of the technical support involved with the use of assistive technologies. The lead from the sensory support unit in one college commented on how important it was for the teaching staff to have this awareness.

She had not only made sure the student laptops had the correct settings but had also provided these settings on crib sheets for the resource staff. She said this takes time but in her words, *“it’s time well spent because they know how to use it, they are always on SuperNova with their hot keys. I make sure the staff know that we’ve got quick guides in different sizes of fonts as prompts for the staff and students. Guides are also on the network so that mainstream staff can look at it all.”*

Training needs to incorporate support that is pertinent to both staff and students at the right time in the academic year. The RRORREAD study found that *“Effective poor reader support systems are characterized by high levels of both teacher and student support. Less effective support systems were found to provide high levels of support either for students or for teachers, but it was the combination of both kinds of support that was crucial for differentiating between effective and less effective support systems.”* Ise, E. et al (2010)⁹

6.8 Input from Sensory Support and Special Educational Needs Coordinators

Support for those with print impairment varies depending on the type of difficulty. For instance for those who are blind or visually impaired the local authorities appear to have a well-structured approach in many cases with a lead officer liaising with the schools, providing advice, alternative formats in some cases and links to other support. Students with dyslexia, on the other hand, tend to depend on Special Educational Needs Coordinator (SENCO) support and are rarely provided with alternative forms of teaching and learning materials.

It became clear that where sensory support teams were linked closely to the teaching assistants (TAs) or learning support assistants (LSAs) there was a strong understanding of how one-to-one support alongside the use of the student's laptop could enhance student's ability to access teaching and learning materials. There was also a complete understanding by all those working with the students that as one TA put it, *“speed is of the essence in this job because we have things coming in all day and a very short time to turn them round”*.

The way support teams provided their materials to those supporting the students varied across the colleges. In three colleges materials were added to the network; in the other five colleges it appeared that there was an ad hoc arrangement with either sensory support staff or teaching assistants and SENCOs. In an ideal situation as has been said, materials were uploaded to the network for support staff to provide students with alternative formats. However, as a team leader for the visually impaired said, *“there is a lot that is going on in the class so you have to get the teaching staff on board with it. The centre has too much to do but if a teaching assistant is working in the right way then they can do it, but what we have found recently is sometimes no one is doing it. So what we're doing is going round all the teachers in getting all the stuff on the laptops as a pump priming exercise.”*

Everyone who was interviewed had a wish for more electronically available materials and as one member of staff said, *“my aim for next year is to have less braille and large print and more laptop and memory stick.”* This came from a school that is yet to be able to link the laptops to

⁹ Ise, E. et al (2010) Support Systems for Poor Readers: Empirical Data From Six EU Member States *Journal of Learning Disabilities* pub July 2010. doi:10.1177/0022219410374235

the Intranet. Where the latest technology is being used a mother commented that, 'the school have been fantastic they have linked the interactive whiteboard system to her laptop, and whatever is on the system can be seen on her laptop and two thirds of the screen shows exactly what's on in large print with the magnifier and you can adjust it herself'.

Where the sensory support team had a systematic approach to the provision of materials via the school intranet or pen drives and even via the Internet at home, students often mentioned this in their interviews. For instance AB said, 'I get work on my memory stick and use SuperNova it converts my work into larger print or I can use EasyConverter.' His sensory support lead also commented.

"Some curriculum areas are much better at giving us work. It is asking staff to work in a different way... We're saying to them as a lot of your documents that you are going to use for the students are there electronically - you're planning is in the shared area. We want you to drop the bits that are appropriate into the VI shared area, rather than giving us a paper copy. If you've done it on a laptop, just e-mail it to us because then we can sort out the font size, or adapt it. We don't want them to send us hundreds of pages -- only the appropriate part. This is still the difficulty - some departments are very good at doing that and putting worksheets on the area but others are not."

One member of a local authority sensory support team also mentioned the fact that awareness was improving, *"teachers are getting better, they're happier to give it to the teaching assistant, so we have targeted the teaching assistants - they can tell the teachers how best to produce the documents. Its patchy, some have it all on the intranet and others are not there yet. It's so much quicker and it can be quite frustrating because we know it can be so much easier for the children. They can use their pen drives to get their work."*

When it came to the production of alternative formats within the sensory support services or specialist resource areas, only one centre appeared to be using EasyConverter for braille. *"We have started to use EasyConverter in the office to produce alternative text and Braille as well, so using it centrally with the amount of scanning and the reproducing the books it takes hours and you can understand why some people just photocopy and blow it up."* However, another centre commented, *"if it was something to scan then I would use the process we've always used but if it was something that was already in Word format then it will be easy just to convert it using EasyConverter."* She went on to point out that having both Duxbury and EasyConverter meant that she had to set up different margins on the Braille embosser. Two other specialists admitted that the Braille line in EasyConverter is not so easy to use as that in Duxbury, *"EasyConverter brings up the text at the top of the screen is really difficult you have to keep looking up and down the screen all the time where is Duxbury brings it up at the bottom of the screen and you can read the line at the bottom and the text at the same time. That was a real issue"*.

It is hard to quantify the time that TA's or LSA's are spending on developing alternative formats for students but the lead on one service said one of her pupils had around 40 hours per week of support and it appeared that 80% of the time was spent on the modification or preparation of materials. Another student received 32 hours of support and she estimated 90% of the time was spent on the modification of materials. This particular sensory support specialist felt that schools would benefit from a central organisation that provided books and more accessible electronic materials as this would free up the time for support assistants to spend more time

with more students rather than creating materials.

The ability to access electronic books and access more materials from a central repository rather than every support service providing its own alternative media was expressed as a wish for all those in the sensory support services who were interviewed.

The final words on the subject of sensory support and a central repository should perhaps go to a specialist working in a centre, who also has a daughter who is visually impaired.

“The other important part of having this centralised is that not only do you release a lot of TA time and presumably government money but also you're enabling the child to become far more independent. If you start off with a child who has got a bank of books that they can access quite possibly on their own - Right - Ok children you are in year eight now, and we're doing this book and that child should be able to go into this thing, pick the book up, chuck it into the font size they want and away they go. That way you are not only enabling the TAs to work with maybe children who may need more help, but you also allowing the child to be more independent. If you can do that that through year seven, eight, nine they'll go on doing it through higher education and work and you're producing somebody who's going to be an independent working tax paying member of the community and that's what I want my daughter to be.”

Summary

Planning ahead to make full use of the electronic books available and to be able to convert worksheets into alternative formats remained a challenge for most mainstream staff. Sensory support and resource teams felt there was an improvement in the provision of electronic documents but much still needed to happen before there was total awareness of the issues that arise for print impaired students.

Support from specialists to assist those in schools who do not have the requisite training to develop alternative formats. As one mother said. *‘It seems to me that they're not terribly used to children who are visual impaired but otherwise very academically able. I think schools need to have specialist advice from outside from the sensory support team as not all the teaching assistants can be specially trained or able to offer one-to-one system. All the teachers use different books and the timetable is not completed until a couple of weeks before the start of each year, and so we don't know what she's going to have ... it's really varied some of the teachers seem to have it sorted out and the teaching assistants have it all ready.’*

It appeared at the outset that there needed to be a 'champion' for the project to ensure digital books and accessible worksheets appeared whether this was a teacher, teaching assistant or special educational coordinator or the leader of the sensory support service. As a specialist in maths support said. *“Some schools have not got an individual who has taken ownership, if you like from a project perspective. It is a lot of extra work and how that manifests itself -- that responsibility varies dramatically from school to school. Obviously, they're all very busy places anyway but if it has fallen on someone who has not got a lot of clout for one reason or another then it can prove quite onerous.”*

7 Evaluation - Specialist Producer Trials

7.1 Approach

The approach taken to evaluate the success from the specialist producer's point of view of the provision of electronic versions of textbooks was one of face-to-face meetings supported by the use of a book log that would allow producers to record alternative format books produced, the time taken to produce them, the method and software used and the issues faced.

The use of a book log was of limited success due to the fact that many producers were dealing with the books in a piecemeal fashion and therefore did not work at regular intervals. There was also the issue of starting on one book and moving across to something else because of the needs of their customers. Time and timing were also issues and we realised we were going to be unable to collect sufficient data in this manner. Four useful logs were received, but it was decided that individual interviews with the specialist producers was the most reliable method to gather specialist producer input and data.

7.2 Findings

Generally, the results of the interviews confirmed but did not add greatly to the knowledge base already available on the generation of alternative formats. Specialist producers usually work in a local authority service, at a resource base in a school or are teaching or learning support assistants. Most modification of materials into accessible formats is done from scanned hard copies of textbooks and by creating hard copy outputs in large print or Braille for pupils, although some books or parts of books are re-typed. There is evidence of increasing use of publishers' electronic files as well as files produced by other specialist producers, usually sourced from the Becta VI-Forum Listserv or more local groups. The number of books converted by Specialist Producers varies widely from a handful to 40-50 each year. The RNIB report states that some convert hundreds. Most output is hard copy large print or Braille which is delivered by hand to the school. A limited but increasing number are delivered electronically and usually on a disk or USB pen drive. Email is not generally used, primarily due to file sizes. There is a trend towards more use of worksheets, but still a strong reliance on textbooks. Materials required are increasingly Powerpoint presentations, Smartboard files and Active Teach interactive books.

It usually takes between 0.5 and 10 days effort to reproduce a book depending on its complexity and whether electronic files are available, but this can increase to around 30 days for the most complex books. This can take anywhere between 3 days and 5 months in elapsed time. One Specialist Producer has been adapting Science GCSE Revision Guides since Easter, aiming for one module a week, and this was still ongoing in November.

Those books that required a considerable amount of image and diagram description such as scientific books took longer. Most of the discussions on the forum for the project had advice and comments related to scientific subjects and the use of other software such as Math Type 6 and Math ML. The head of one transcription service also pointed out that many of the modern textbooks are now full of cartoon images, strips with symbols and other diagrammatic representations which are hard for those of blind or very visually impaired access but may be

very helpful to some dyslexic students. When adapting these complex pages with high visual impact to larger font sizes, it is inevitable that some compromises in layout are required.

The provision of the project's electronic files to specialist producers reduced the time taken to prepare alternative format textbooks by in excess of 90%. In most cases, preparation time was reduced to less than 1 hour. *"Without the MyTextbook Word file, this (a Geography book in 24 point) probably would have taken more than 10 times longer to reproduce."* (Specialist Producer) *"8 days work turned into an hour's work."* (Specialist Producer)

The RNIB survey reports that "100% of respondents reported that the electronic textbook files had saved them time. Respondents highlighted the benefits of cost savings, and benefits to students directly in having quicker access to the books."

As well as massively reducing times, no problems were experienced in using the files and they were considered much better than publisher files which are usually PDF. The RNIB survey confirmed that "93% of respondents were satisfied or very satisfied with the provision of electronic files in Word format."

The RNIB report also states that "100% of respondents agreed or strongly agreed that it would be valuable to have more accessible textbook files like the ones produced from this project."

All those interviewed had used EasyConverter and found that it saved time when used with the electronic books provided for the project - one interviewee said, *"They [ebooks] have been brilliant, especially Geog 2 and Metro which are more complex and save even more time. The files increased the quality of output significantly. I had no problems with using the files at all. I downloaded the files from my PC at home because there were too many access restrictions which made it impossible at work. I then bring them into work on a USB stick."* This particular specialist producer was mainly using EasyConverter for reformatting books that are obtained as a PDF. However, she continued to use TextBridge and Abby FineReader for scanning and processing hardcopy books but commented ...

"when processing books from hard copy, scanning takes around two minutes a page to get it into word for a straightforward text-based book. For a 200 word book, this means 400 minutes, editing in Word would then take around an hour or so. So in total one day plus whereas using the books provided by the project would take around 10 minutes -- maybe a bit more to adjust the font and check page throws -- it is a big difference. For more complex books, the difference is much more for instance scanning/editing a science book can easily take 4 to 5 days but with the electronic files less than one hour."

These comments were corroborated by two other specialist producers who mentioned that *"immense time and effort had been saved by having books in usable electronic formats as the time taken to modify a book can go from months for a science book to minutes."* (Not that any student would be left waiting for months as the sections required would have been selected for modification.) These producers found that *"the files provided by the project were better than the publisher's files."*

Six specialist producers admitted that they would just use Microsoft Word for print modifications and stick with Duxbury for Braille, which confirmed the findings of those working in the colleges and sensory support services. However, two producers in the north-east had seen an increase in use by students of Daisy talking books since the beginning of the project.

All the specialist producers commented that it was easier to work with chapters and sections of books rather than whole books if they were to be used in a classroom situation where students tended to work on small sections at different times and the issue of downloading large files was also considered a problem.

There was however one college that asked for two complete books and it may be the case that with novels there is a need to provide both a complete book of the file as well as individual chapters, particularly where there are lots of very short chapters.

Specialist producers can spend up to 1 day a week chasing teachers in different schools to find out the books and materials that their visually impaired pupils need in advance. Teachers struggle to provide this information in a systematic way.

There is a trend towards schools employing teaching assistants directly rather than using their services via a Local Authority sensory service. This makes the schools more directly in control of staffing and costs. Concern was expressed about whether teaching assistants would have the authority to influence teachers with regard to identifying texts and producing materials in time to meet the needs of their print impaired pupils.

Two instances were quoted of two visually impaired pupils receiving 40 and 32 hours support respectively from teaching assistants in school, and it was estimated that 80% and 90% respectively of the teaching assistants' time was being used to modify materials into alternative formats. It is also common for teaching assistants to be asked to read text to pupils in class when the materials are not available and to provide some materials by using photocopies on cumbersome A3 size sheets which are far from ideal.

Out of the eight specialist producers who were interviewed two commented that they felt publishers were more aware of the need for access or electronic formats but they still had to depend on what was known as the RNIB and 'Reveal web' plus the VI forum to check for items that might have been scanned previously. They felt that publishers still needed to be more consistent with the types of PDFs they were supplying and certainly more timely. There needed to be, *'an easier way to track down alt text and digital versions of books whether in a repository or residing on the publisher's servers.'*

"I think the publishers are much more on board, and they have come on. They are more aware."
(Specialist Producer)

One Specialist Producer has developed a list of web sites of potential sources of electronic files, which included:

http://www.gutenberg.org/wiki/Main_Page

www.online-literature.com

www.nelsonthornes.com

www.literaturepage.com

www.largeprintbookshop.co.uk

WWW.shakespeare-online.com

www.shakespeare.mit.edu

www.shakespeare.com

www.dickens-online.info

www.rnib.org.uk

www.poetry-online.org

www.poetryarchive.org

www.simplylisten.com

www.talkingbooks.co.uk

www.seeingear.org

Specialist producers had problems with network connections and access permissions when trying to access the project FTP server to get the books. Some books had to be provided on disk. At least 4 of the specialist producers were unable to use work-based computers and instead used a laptop with 'dongle' or home computer with internet access to download the files.

When asked what would make a positive difference, the responses were:

- More books please!
- An easier way to track down accessible e-texts and digital versions of books, and preferably a central database of what is available.
- A forum or similar to liaise and exchange knowledge.
- More guidelines and training that needs to be very simple and straightforward otherwise it won't get used.

7.3 RNIBs distribution and report

RNIB undertook a separate survey of Specialist Producers who used their service that was set up to make the MS Word files produced by the project more widely available throughout England. The following are extracts from the RNIB report.

Using the service

- 76% of respondents found the order process through RNIB easy or very easy
- 100% of respondents were satisfied or very satisfied with the provision of electronic files on CD
- 93% of respondents were satisfied or very satisfied with the provision of electronic files in Word format.

Using the files

- Around half of respondents reported that learners used the electronic textbook files without any modification, using a range of assistive technology

- No learners converted the electronic textbooks files into other accessible formats themselves, but three respondents reported carrying out conversions for their learners
- The tools provided on the disk were not widely used. One respondent who had used the tools reported that the demo on the CD did not work.
- Where image descriptions were provided, they had not been used, because the learners had sufficient vision to see the images. However, where image descriptions were not provided, some respondents felt their omission was significant, showing that there are some learners who might still benefit from image descriptions
- A few respondents identified problems with the electronic textbook files. These included faulty disks, difficulty accessing the textbook file on the CD and difficulty converting the text. Some of these problems may have been due to unclear instructions or lack of training of the staff using the files, which may be an area to consider in future projects.

Impact

- 100% of respondents reported that the electronic textbook files had saved them time. Respondents highlighted the benefits of cost savings, and benefits to students directly in having quicker access to the books

"The minimum time to modify the entire book would have been 6 weeks." (School)

- Without the electronic textbook files most respondents would have converted the textbook themselves (or had it converted by other staff), which would have been a time consuming and sometimes laborious process. One respondent would have relied on support staff to read the text to their learner.

"The child would have had to listen to a support person reading the book as she is in the process of learning braille and doesn't have the skills necessary to read yet in braille." (Specialist producer)

- As this evaluation was carried out while the service was still quite new, most respondents had only used the files with one or two learners. However, all respondents felt the electronic textbook files had reuse potential for other learners in the future.

"Yes, they're a great idea for all print disabilities; it means it's more inclusive." (School)

- Respondents varied in terms of how many textbooks they convert annually, from those who do not convert textbooks to those who convert hundreds. This was the case for both schools and specialist producers.
- Respondents reported that the electronic textbook files had made a huge difference, both in terms of saving staff time and resources, and in giving learners better access to learning materials.

"Teaching assistants spend many hours each week modifying textbooks – books on CD save resources in terms of time, paper and ink. Students can access books on CD in a comfortable print size using their laptops. Large print books can be bulky and look different from the original copies which other students are using. This can make VI students reluctant to use them." (Specialist producer)

The future

- 100% of respondents agreed or strongly agreed that it would be valuable to have more accessible textbook files like the ones produced from this project.
- 100% of respondents agreed or strongly agreed that a nationally centralised database of accessible learning resources would save staff time in schools.
- 95% of respondents agreed or strongly agreed that a nationally centralised database of accessible learning resources would be preferable to contacting publishers for accessible versions.
- 86% of respondents agreed or strongly agreed that they would be willing to contribute resources they converted to a nationally centralised database.
- Opinion was divided as to whether the use of textbooks was increasing, decreasing or staying the same. Where respondents felt use of textbooks was decreasing, replacement resources included teachers' own resources, internet resources and photocopying.
- General comments from respondents about accessible electronic learning resources were very positive with many hoping this pilot service would be extended.

"This scheme is ideal and the costs are manageable. I really feel that an awful lot of people are doing the same thing in different parts of the country, replicating work, so it's such a waste of time. I do think it's an important thing. This worries us about VI forum going, but this [service] is brilliant, I've given the list of books available to all departments in school." (School)

8 Evaluation - Production of textbooks

8.1 Approach and guidelines

A standard specification for a structured MS Word file was produced in consultation with Specialist Producers and RNIB which is in Appendix A. The books were password protected and made read only. Each chapter was provided as a separate file within an overall book folder.

A CLA (Copyright Licensing Agency) licence was obtained for the Consortium, and only books required for print impaired pupils where the school already had purchased a hard copy were provided, adhering to the terms of the licence. Schools and specialist producers were asked to identify books that their print impaired pupils would need during the trials period.

Initially, publishers were approached to request electronic files, and they were very supportive, but many of the books requested were old versions and electronic files could not be readily found. Even if a PDF was available, the cost savings of using the file compared with scanning the book from hard copy were not significant. In order to establish a standard, cost effective and timely approach, a process based on hard copy scanning was established.

A hard copy of each book was purchased from Amazon then was sent to Vishal IT in India where it was scanned and then edited to create an MS Word file to match our specification. This was to include image descriptions.

Completed files were loaded to a folder on a project FTP server. From here they were extracted and quality checked. Final versions were then loaded into school or specialist producer folders so that they were only able to access the books that they had requested. Each school and specialist producer was given an FTP login and password. A spreadsheet was used to track the progress of all books.

The target number of books to be produced for the project was 60.

8.2 Results & feedback

8.2.1 Book requests

The project team were shocked by the age of some of the books being used in schools. Some versions were for books produced more than 20 years ago. On a number of occasions, the same book title was requested by different schools, but for different ISBNs reflecting different versions and publication dates. The project policy was to try and meet all requests for different versions so that any child would be using the same version as other pupils in the same class. Clarification was needed on a number of occasions for book requests received as the ISBN details were incorrect.

8.2.2 Books creation

132 books were produced in total compared with an original target for the project of 60. The books are listed in Appendix B. These books included Science and Geography books with complex layouts and diagrams as well as more text-based titles. Only one Maths book was completed. Maths formulae presented major problems for initial coding, conversion and subsequent reading; and quality control of these titles required extended time. Solving these problems was outside the scope of the project, although guidance on the preparation of maths texts was developed for the project and is included in the document specification in Appendix A.

115 of the books were completed with descriptions for every image. This is important for partially sighted pupils. We expected high numbers of images in science and geography books, but some of the highest numbers of images were found in language books. To facilitate completion of some late book requests, 17 books were completed without image descriptions.

8.2.3 Quality of Files

Generally, the files produced by the offshore supplier were of a very high standard with few errors. They adhered closely to our specification and were extremely responsive to queries and any requests for changes. There was a significant issue, however, with the quality of the image descriptions. The quality of the English used was poor. An early decision was made to have the image descriptions replaced/created by our own quality control resources. The feedback about the files from schools and specialist producers has been very positive.

8.2.4 Turnaround times

There were some issues with turnaround times of books.

- There were significant delays in getting book requests from schools at the outset of the project. The plan had been to identify books in advance and prepare them so that they could be used in the trials. However, it appeared that schools needed to get into the trials before they could fully appreciate what it was that was needed for their pupils, and at times this meant books not being available when required. The delays to the start of the trials clearly affected this too.
- The above created a high volume of titles to be converted in a short time frame, and whilst our offshore supplier could cope with this volume, it created a problem for quality control of the returned titles. This was a bigger job than anticipated due to the time taken in writing image descriptions.
- Generally, the turnaround time from request to delivery onto the FTP site was around 6 weeks. This allowed for purchase of the book, despatch to India, conversion in India, checking and image description writing, then loading to the FTP server. However, our offshore supplier could for specific requests turn around books within a week of receipt and sometimes faster, and quality control of these books could be reduced to 1-2 hours without image descriptions.
- As the head of one of the resource services said, *"We wanted Animal Farm for our Year Nines by the time we got it they had gone on to another book. These are obviously frustrations for us."* A teaching assistant commented, *"I wish we had had longer with the books given that we had a six-week holiday and now are getting ready for the exams. Some other timings were not good and we needed to put in more support."*

8.2.5 Production costs

Average production costs were £405 per book. £274 of this was for offshore scanning and production of the MS Word files to our specification, and £131 was for quality control.

Quality control costs are based on an average of just over 10 hours per book for books with full image descriptions. This reduced to 7.5 hours for those without full image descriptions, although text was included with each image to say it existed. Language books with image descriptions required around 32 hours, and a geography book took 48 hours.

Quality control involved checking the multiple files for each book, replacing image descriptions, minor editing corrections and then loading the files into the appropriate school and specialist

producer folders on the FTP server. Even for files with 'no image descriptions', the descriptions provided offshore had to have text replaced.

The maths book produced was done by a maths specialist in the project team which took 84 hours to complete, 23.5 hours of which was spent on scanning and the remainder on editing.

It should be possible to establish an operation with significantly reduced production and quality control costs from these numbers, particularly if image descriptions are not included.

8.2.6 File sizes

File sizes for books can be substantial. The key factor is the presence of images. The following are examples.

- Carries War is largely text based and is in total approximately 0.75mb with individual chapters around 43kb.
- Metro 1 is a French Textbook with many small images and is in total approximately 53mb with individual chapters of around 6-8mb.
- Spotlight Science 8 has a complex layout with images and diagrams and is in total approximately 434mb with individual chapters up to 63mb.
- Geography 1 also has many larger images and totals approximately 262mb, with individual chapters up to 62mb.

For Carries War, it would be practical to have the whole book in one file and it would then be easy for a pupil to navigate around it and they would not need to continually be finding and loading different chapters. However, the other books have very large files and it would not be practical to access and use these as whole books.

8.2.7 Use of FTP Server

An FTP server was the only practical solution to use on the project for the distribution of books to schools and specialist producers. This generally worked well, although as documented elsewhere, schools and specialist producers often found issues in gaining access due to local restrictions with their IT infrastructure. There were also a number of instances where files loaded to the FTP server were corrupted and this required some reloading. It is not clear how this occurred, but it is most likely to relate to interruptions in the upload process. Human error also resulted in some folders being overwritten.

Whilst this was an appropriate solution for this pilot project, it is not an appropriate mechanism for any ongoing operations.

9 Evaluation - project issues and lessons

The project encountered a number of problems and issues, some of which reflect the challenge of undertaking trials of technology within school environments.

9.1 Delays due to changes to software

At the beginning of the project it was expected that students would receive their laptops with a screen reader, conversion software and a book reader program in situ, the type of which depended on their disability. This meant that most visually impaired students received a copy of EasyConverter and EasyReader whereas those with dyslexia were using Texthelp Read and Write Gold, EasyTutor along with EasyConverter and EasyReader.

All those programs were tried and tested but EasyConverter was upgraded to a totally new version during the early months of the project to ensure its usability in a school environment. This caused delay to the start of the project, and in some cases that training was undertaken on the older version which had a different look and feel and then students moved on to the latest version. This in turn caused some understandable frustration with some of the schools, which was exacerbated by incorrect expectations of the date when trials were scheduled to start.

Later in the project a number of the schools updated their operating systems during the summer holidays and this had an impact on the use of EasyConverter as the students found it hard to find pathways for their files on the intranet or on their own laptops. The complexity of file and folder location remains an issue. As a member of the sensory support team said, *"I think the way that once you have converted a document and the way it saves it in all these folders that is very confusing especially for a blind student."*

Lesson learnt – avoid software changes during such a project.

9.2 Difficulties arranging training

As well as delays with the software, there were difficulties in arranging training with schools. Students and staff are not always available for training, the weather and sickness did not help along with staff changes with replacements not being found easily to support the project within individual schools. Training times often had to be rescheduled and each time this occurred, different people attended. Very often too much had to be crammed into too short a time for the training to be as successful as it could have been and there was little chance to tailor requirements for individuals.

Lesson learnt – it is difficult to arrange training in busy school environments and a local champion is essential to help with organisation.

9.3 School/college environments

The school environment has changed considerably in the last few years with the provision of teaching and learning materials in differing formats having expanded considerably. As one

specialist producer said the majority of the work now involves “*PowerPoint presentations, Smart board files, 'ActiveTeach interactive materials'*”. There are also the bite-size chunks of text and images from the Internet, an amalgamation of content and worksheets and an ever increasing number of books on a similar subject.

Students are moving between classrooms and buildings on large campuses so carrying laptops as well as the paraphernalia of daily life in school is not easy. There are issues with carrying technology home and students may become vulnerable to theft of their laptops. Schools are only too well aware of these issues so insurance became a problem in the majority of schools felt it would be wise if the laptops were locked in a secure room. There were also issues with insurance regarding the use of the laptops outside school gates. Policies varied between schools.

Lesson learnt – every school can present different challenges; clear policies need to be established.

9.4 Technology issues and support

There was a clear distinction between how those students with visual impairments were able to cope some of the most complex software in comparison to those with dyslexia. The former had a need to overcome any difficulties with the technology in order to access their teaching and learning materials and this became obvious. They showed an amazing ability to cope having once received their training from both team members and the resource centres.

Those students with dyslexia often came to depend on their text-to-speech software but failed to make full use of EasyConverter and EasyReader. Once trainers had shown them how to use the annotations and bookmarks in EasyReader at least two dyslexic students felt happy to work with the software. Students also need to have the skills to be able to access the college intranets or folder systems on their computers in order to reach the e-texts. This was highlighted by several students who commented on the inability to reach the specific folders that held the books on their college intranet.

Freedom to access the Internet and intranets can prove challenging for both staff and students for instance where a teaching assistant needs to ask permission to download a textbook from the Internet or a student is unable to access the Internet using their laptop for their homework. There was also a fear that once the project had come to an end all types of support for the technology would cease.

There were also issues with changes being made to laptops by IT staff within schools which caused software to be inadvertently removed.

A number of specific issues were encountered with regard to technology which required solutions to be found. These included:

- The need for software to write to local disks but local policies and set ups prevent this from happening.
- The need for software to access textbook files held on networks, allowing sufficient storage space.
- The need to download files from the FTP site which required special access permissions.

Lesson learnt – technology policies and practices vary significantly and this can present significant limitations on technology initiatives, particularly those that involve non-standard software.

9.5 Weather

With the schools being in the north of England, the trials were interrupted on a number of occasions due to particularly severe winter weather in January 2010 and then again in November.

Lesson learnt – allow a longer timeframe for similar trials that can accommodate interruptions.

10 Evaluation - Conclusions

Advances in information technology have the potential to improve the learning experience of students with a wide range of disabilities through the availability of information on the internet and school/college intranets with the use of increasing sophisticated access software.

Easy access to E-texts whether they are whole books, chapters or worksheets have the power to enable to print impaired students to achieve improved academic results and engage more readily within a teaching and learning environment.

Individualised and targeted support can enable print impaired students to gain in confidence and self-esteem to the extent that they can not only cope within mainstream education but also thrive.

Enabling independence of learning with a sense of ownership that comes from successful use of supporting technologies may allow print impaired students to succeed in a fast paced educational environment and beyond.

Print and visually impaired pupils both benefit greatly from the use of personalised portable access technologies and appropriate electronic teaching and learning materials. These contribute significantly to:

- Reading and writing
- Learning and achievement
- Confidence and self esteem
- Independence
- Development of life skills
- Social inclusion

Pupils need solutions that match their individual needs and preferences. Each pupil needs what is right for them which may include, for example, one or more of digital audio books, text to speech, adaptation of font size and background colour, magnification, screen reading or using and adjusting accessibility features built into operating systems. Hardware devices may include laptops, netbooks, MP3 players or other portable devices that incorporate accessibility features.

Electronic files for textbooks and school worksheets that have been prepared in a standard way in Microsoft Word enable both VI and Dyslexic pupils to read them directly using access technologies or convert them so they can then be read. Some VI and Dyslexic pupils can use accessible PDFs.

A structured, integrated 'whole' school approach, with a local champion and the support of pupils and parents, is required to achieve meaningful and lasting benefit.

The capacity of pupils to grasp new technologies should not be underestimated. Our 'pupil centric' approach has been a success and provides a solution that should place less rather than more demands on to school resources and funds.

The concept of using electronic files and access technologies is more established for the support of visually impaired pupils although many still use hard copy alternative formats, but it is very new for supporting dyslexic and other print impaired pupils. The combined population of print impaired and visually impaired pupils provides a much larger target group that will provide much higher benefits from any investment.

'Specialist producers' in local authorities and schools can save significant time and cost by using electronic textbooks and school worksheets in the same standard format to produce accessible files and hard copy outputs for pupils they support.

The current methods of support which are primarily for visually impaired pupils are time consuming, costly and involve significant duplication of effort. The same book can be scanned, edited and transformed into different accessible formats a number of times across the country. The efforts and commitment of staff in schools and sensory support units cannot be doubted, but significant time and cost is being wasted.

There is a critical difference between the electronic files traditionally produced by Publishers for printing (i.e. PDF files) and those required in a structured file that can readily be transformed into different alternative formats. Educational products have complex and eye-catching layouts whilst access and conversion technologies require a more linear presentation of content.

11 Recommendations

The strong results from this project show that print impaired pupils can benefit greatly from the wider application of the use of electronic files and portable access technologies. The following recommendations will facilitate a transition to making the majority of the English School curriculum available in formats that print impaired pupils can easily use.

11.1.1 Dissemination

The project recommends the dissemination of information about the benefits and practicalities of using electronic media and access technologies for school pupils with visual and print impairment. Schools, teachers and parents need to be aware of the benefits to stimulate demand and of the practicalities to be able to take advantage of them. Publishers, technology

and service providers and professionals in special needs need to be aware of how they can develop their products and services to support this emerging market.

A core set of simple guides, documents and training materials available is required that provide the key information needed to support decision making across the range of stakeholders.

In particular:

- Publishers need to be informed of how they can best enable their mainstream products to be accessible, how MS Word files prepared following simple guidelines provide the most easily used output format, and how best they can help should such files not be readily available.
- Technology providers need to be informed of the importance of ensuring their solutions are oriented towards 'pupil end-users' and the school environment as well as consider pricing models and levels that reflect the nature of this emerging market.
- Schools, teachers and support services need to be informed of the benefits for their pupils, the potential cost savings, the solutions available and the best route to successful implementation. They also need to know how to ensure that non-published materials produced in schools, i.e. worksheets, internal exam papers etc., are also made accessible and available. They need to understand how this approach could help all pupils, including those without visual or print impairment.
- Teacher training should include guidance on the use of technology to support visually and print impaired pupils.
- Parents need to know how these technologies can help their children and enable them to work closely with schools.
- A central web site is recommended that consolidates best practise guidelines for all stakeholder groups. Supporting this, a wide approach to dissemination is recommended, utilising existing channels of communication through stakeholder organisations like the Royal National Institute for Blind People (RNIB), Dyslexia Action (DA) and the British Dyslexia Association (BDA).

11.1.2 New national textbook & advisory service

An extended programme of production of textbooks in a standard MS Word format is recommended to ensure that there is a sufficient critical mass of electronic materials available for schools and specialist producers. Schools will only invest in new technology and practices if the materials are readily available to use. The target should be the majority of all commonly used curriculum textbooks in England, but priority should be given to GCSE 'O' and 'A' level resources which are most in demand by schools and pupils. Many of these can readily be identified from exam board lists. A provisional target of 2,000 books over the next 3 years is recommended.

A national service should be established for the efficient and timely distribution of these electronic files to schools and specialist producers. Only by having these books readily prepared in advance can pupils get the accessible versions at the time they need them. As well as ensuring books are available for print impaired pupils, this approach will also reduce

extensive duplication and achieve significant cost efficiencies. One book need only be produced once in a structured MS Word format that can then be easily and quickly downloaded and adapted by different specialist producers or used directly by pupils. This should be on a paid for basis to assist sustainability, either by subscription or pay-per-book.

It is recommended that there is allowance for a 'reactive' service that responds for new requests for specific books as well as an ongoing programme of planned production. The service should be web based with books primarily obtained via downloading, although the size of some files or local access limitations may require some disk distribution.

Educational publishers should be asked to provide their products in electronic form on a systemised basis, subject to appropriate controls. New books should be added as they become available. This should mean only having to provide files once per book rather than having to respond to many different requests. Guidance should be provided on core principles and formatting approaches that make these files accessible. The preference is for MS Word files to be provided as these are easiest to use or adapt, but PDF and XML files have value too, so a combination is desirable. The degree to which Publishers can provide fully prepared MS Word files will vary significantly by publisher and book, and some adaptation of files is still likely to obtain the required level of structure and layout. Please note that there was no evidence of usage or familiarity with XML files amongst specialist producers or schools.

It should be possible for specialist producers to upload existing files that they have already produced to save further time and cost. It should also be possible to incorporate materials from other organisations that produce alternative format books. Some quality control mechanism would be required to reflect the differing approaches and levels of quality of these files.

The service web site should incorporate advisory information and include the dissemination materials above. Easy to find and use online training materials are essential along with guidance about technologies available.

To start with, this service would need to primarily operate using a CLA Licence along with appropriate controls, but it could easily be extended in due course to enable direct or linked sales of published accessible products. Over time, this service could also be extended to parents and individuals.

11.1.3 Standards and technology development

Further work is required to establish standards and guidelines for the production of electronic files. In particular, Maths and Science provide significant challenges for the coding of formulae and software tools need further development so that these can be read accurately.

Further discussion is needed with Publishers to determine how best they can deliver files in electronic formats.

Software tools need further development to meet the specific demands of school and home environments, and new pricing models will be required to make them affordable within the school and home environments.

11.1.4 Sustainability

It is expected that schools will be the main source of funding to pay for technology, training and support and books. They should be able to offset some of the costs currently expended in the preparation of alternative format materials and in support of pupils in class who can become less dependent on others, particularly for reading.

The costs of an initial programme of production of books and the set up of infrastructure for a distribution and advisory service is likely to require one-off funding that would not be recoverable. However, once established, it is anticipated that the service could become sustainable at least in part, paid for on a per book charge or subscription payment from schools and specialist producers. Costs of production per book should reduce significantly as Publishers make files available and as these files progressively require less modification. The level of demand should diminish in the long term as accessibility is built into mainstream products automatically.

At present, significant time and cost is spent in the transcription of textbooks and other materials into accessible formats, both in local authorities and schools. As budgets and responsibility for funding and decision making is transferred to schools, schools will be increasingly able to make decisions about the most cost effective way to support their visually and print impaired pupils. Increasingly, laptops and other technologies are being made available now. Affordability of solutions is likely to be a key factor in take up by schools, and this significant and growing market for technology providers should enable them to lower the costs of provision.

11.2 Next Steps

There has been ongoing dialogue within the Steering Group and beyond including an 'Advancement of Accessible Publishing' forum chaired by BIS (Department for Business, Innovation and Skills) with regard to how such recommendations should be advanced following this project. As this project comes to a close, further dialogue and coordinated action is required across the many stakeholder groups to ensure pupils benefit from the opportunities this project has identified. Responsibilities need to be allocated, detailed plans prepared and where necessary funding and resources sought. A cross industry approach is envisaged, building on the theme of the Big Society. This will require representatives from government, the voluntary sector, technology and service providers (including local authority resources), schools and professionals to work together. This will not happen without some leadership and central coordination.

12 Appendices

A. Production specification for electronic textbook files

This is the specification used to create the files made available to schools and specialist producers.

All files should be saved as a Microsoft Word 97-2003 (compatibility mode) file. The files should be Read Only and password protected using the password ****.

Font & Layout

All font style should be Arial .

Font size should be 18.

Margins should be set at 2cm for top, bottom, left and right.

Paragraphs should be styled with MSWord Normal style.

All paragraphs should be left aligned, regardless of positioning in print.

Line spacing should be 1.5.

Paragraph spacing should be double spacing.

There should be no blank lines inserted with hard returns. All lines should have style attributed to them.

Remember to include all accented letters and diphthongs.

Remember to include any text which hasn't scanned – such as handwritten extracts. (manually insert these)

Each Book should have its own folder with the name of the book and ISBN, and a separate file should be saved for each chapter.

Copyright Page information

The copyright page will have been scanned as it is in the hard copy.

At the bottom of the Copyright information please add the following paragraph:

This copy is made under the terms of the CLA VIP Licence to be used only by a Visually Impaired person. Except as permitted by law, it may not be further copied, nor may it be supplied to any other person without permission.

Headings

Book title – use MW Word Heading style. (This should centre the heading and make the font Arial, size 24, bold.) – See Appendix B for guidance on modifying the headings to the correct font & size.

Chapter headings – use MW Word Heading 1 style. (this should left align the heading, making the font Arial, size 22, bold.)

If a chapter number and the heading text are on different lines, use a soft return (shift+Enter) to split them in the Word file

Section headings – section headings within the chapter use MW Word Heading 2 style (this should left align the heading, making the font Arial, size 20, bold).

Questions, Activities, To Do headings – use MW Word Heading 1 (this should left align the heading, making the font Arial, size 20.)

Diagram, Source headings – Use MW Word Heading 2 style.

Subheadings within sections – for these use MW Word Heading 3 (this will left align the heading, making the font Arial, size 18, bold)

Where print has used block capitals for purely stylistic reasons (headings, titles etc), change to initial capitals only for the first word and on any proper nouns, e.g.

"THE BARBER OF SEVILLE" would become "The Barber of Seville"

"PART V. THE BRAIN AND BEYOND" would become "Part V. The brain and beyond"

"GUIDE TO FURTHER READING" would become "Guide to Further Reading"

Emphasis

There should be no underlining.

Underlining used for emphasis should be replaced with bold and an emphasis style.

Ideally italics should not be used. There will be exceptions – in plays and maths – where the italicised entry has a specific meaning.

Hyphens and dashes

Dashes should be represented by long (em) dashes and should be unspaced from surrounding text and punctuation. (Press Alt & type 0150 for shortcut) , or do Find & Replace Ctl F, Find [space] - [space], Replace, more tab, special tab, Em dash, find next, replace all.)

Page numbering

Page numbers should be kept and inserted directly before the start of the text for that page. Use MW Word Normal style for page numbers.

Keep the page number on a line on their own.

If there are any blank pages of text, but the page has a number please insert page number with page break before and after.

Page breaks

Insert a page break at the end of the text immediately before inserting the page number. (Insert, break, page break)

Images

Retain all images within the word file.

Place them directly underneath any associated text.

All images should be left aligned within the document.

Images include: Graphs, Diagrams, cartoon pictures, paintings, (anything used as a visual aid in addition to the text).

For Daisy/MP3/Braille/LP users a description of the image should be attached to the image. (The most appropriate way is to Right mouse click on the image, select caption, type in the description, Source/Diagram A, b etc, Image starts "type in the description" image ends.) See appendix A.

Using "Caption" will ensure the basic description is attached to the image and will stay with it in the output file.

Complex images will only require a basic description in the caption box, with a separate description written underneath.

Complex image descriptions should be inserted on a new line directly beneath the caption preceded by "image starts" finishing with "image ends".

Tables

Tables should be scanned into the word document as a table.

If it does not appear correctly, convert the text to table using MW Word Table function. (We do not need to attach a description to the table as the conversion can cope with a table layout.)

Questions/Activities/To Do

Lists should use an unordered list style.

The list should end using Ctl+Shift+End to return to Normal style.

When there are lists of questions in an activity section they should be separated by a hard return single line space between each entry.

The question number/alphabetical character should be in bold.

If there are entries such as 2a, b, c, these should be bold, again leave a hard return single line space between each entry.

Repeat the number with each numerical/alphabetical entry for clarity and to align the entries.

Insert a full stop after the numerical/alphabetical entry.

Eg:

3a. What religion did the monarch have to be from 1688?

3b. Who controlled most of the money?

If the question is a paragraph with entries to be completed by choosing from a list of possibilities, the spaces in the paragraph should be represented by using 4 underscore characters. The gaps should also be numbered.

There should be an explanatory paragraph inserted immediately before the list of possible entries.

The list of possible entries should be directly above the paragraph with the gaps. Styled as a list, left aligned.

Eg:

2 Choose one of the words below that best fills the spaces in the sentences below.

Glad

Hot

Cold

Sad

Unhappy

happy

Many Protestants were __1__ that James II had a son.

Many Catholics were __2__ that James II had a son.

If the choices are longer sentences then they will need to have a hard return, single line space between each for clarity.

Eg:

2a. Copy the sentence below that gives the right meaning of 'observation'.

'Observation' is a newspaper.

'Observation' is looking at things closely.

'Observation' is praying.

Footnotes

Move simple footnotes to the end of the paragraph within which they are referenced. (This keeps information together so students are not looking around the page and losing their place.)

Use the Footnote style within MW Word. (On the tool bar choose Insert, reference, footnote)

The entry should say "Footnote", then the footnote number, then the footnote text, then insert "end of footnote".

Quotes

Follow print's use of quotes.

If both inner and outer quotes are used together be sure to get them the right way round, and do not leave a space between them even if print does.

Turn off Smart quotes. (Tools, autocorrect options, autoformat as you type, untick straight quotes with smart quotes)

Speech within speech should remain as single quotes.

Ellipses

The dots of an ellipsis should be unspaced from each other however they appear in print, ... not . . .

Ellipses should be spaced as words, regardless of how they appear in print. They should be spaced from words, but punctuation preceding or following an ellipsis should be unspaced. ...? "... ...: (not ... ? " :)

Unit abbreviations

These should always be spaced from their number (Eg. 5 mm, 17 cm, 10 ml).

The exception: single letter monetary units should be unspaced (eg. 50p)

Index/Glossary

Alphabetical headings must be added to the file if they are not present in the book.

Use MW Word Heading 2 for the alphabetical letter.

Include an alphabetical heading for every letter of the alphabet, even if the book does not contain any entries for that letter.

Bibliography

Bibliography is an encompassing term for works cited, discographies, filmographies, etc.

Bibliography heading must be styled using the MW Word Heading1.

If the bibliography is broken up into sections, use the MW Word Heading2 style on the heading for each level.

Bibliography entries must have the Normal style applied to them.

Parts of the bibliography can be composed entirely of paragraphs, if the section has been written in narrative form.

Maths

Maths expressions and equations need special attention to ensure they are coded correctly. It is not sufficient to scan and save them as an image, as these images are generally not accessible for those with a visual impairment. There are specific software packages available for rendering all manner of mathematical and scientific content in documents, such as MathType or Scientific Notebook. Where these are not available, each maths expression or equation will need to be re-created directly from the keyboard, incorporating the Unicode feature, or via Equation Editor 3.0, a facility built into Microsoft Word. Keyboard entry is appropriate for most straightforward equations and mathematical symbols. Equation Editor

3.0 would be useful for fractions, long division and complex terms such as those requiring an extended root or division sign.

Using the Keyboard and Unicode

Please note that generally, operations and equals symbols should have a space either side. For example, $3+9=12$ should be $3 + 9 = 12$.

It is important to use the correct mathematical symbols. For example, \times is the correct mathematical symbol for 'multiplied by' but is often replaced by the letter x from the keyboard. Such 'look alike' symbols would not necessarily be read correctly by screenreaders and would not translate into Braille accurately.

To ensure the right mathematical symbols are included, use the Unicode feature as follows. Every symbol has a Unicode reference (see the following table). For example, the Unicode reference for \div , the division sign, is 00F7. Typing in 00F7 and pressing Alt-x on the keyboard, will display the symbol and keying Alt-x again restores the code. To check the Unicode for a particular symbol, place the cursor just after it and press Alt-x. For frequently used symbols, individual shortcuts can be created via the Insert Symbol feature.

Please note the 'Autocorrect' facility in Microsoft Word may replace some symbols such as the hyphen in particular circumstances.

Using Superscripts or Subscripts:

Use Superscripts for 'the power of' features. For example, to create 5^2 , either use the Superscript function or press CTRL, SHIFT and = at the same time to set the Superscript function on and off. This can also be used if roots are required, for example,

$${}^5\sqrt{32} = 2 \quad {}^{2.5}\sqrt{9} = 243$$

Similarly for Subscripts, use the built-in function or the keyboard shortcut of CTRL and = to turn the facility on and off.

Equation Editor 3.0

Equation Editor 3.0 should be used for fractions, long division and complex terms such as those requiring an extended root or division sign.

To use Equation Editor 3.0, use 'Insert Object' from the tool bar (Alt I, O from the keyboard) and then choose 'Microsoft Equation 3.0'. There is a wide range of expressions available and these are selected from a grid of twenty generic buttons.

Please note this is a different facility to the Equation Function in MS Word 2007.

Basic Mathematical Symbols and Unicode

Unicode	Symbol	Use	Unicode	Symbol	Use
0021	!	Factorial	03A3	Σ	Sum of
0024	\$	Dollar	03BC	μ	Mu
0025	%	Percent	03C0	π	Pi
0027	'	Apostrophe, minutes	03C3	σ	Standard deviation
0028	(	Left bracket	2013	–	En dash in lists
0029	)	Right bracket	20AC	€	Euro
002B	+	Plus	2190	←	Left arrow
002C	,	Comma	2191	↑	Up arrow
002D	-	Hyphen, minus	2192	→	Right arrow
002E	.	Decimal point	2193	↓	Down arrow
002F	/	Slash, over	2194	↔	l/r arrow
003A	:	Colon, ratio	2195	↕	u/d arrow
003C	<	Less than	221A	$\sqrt{\quad}$	Square root
003D	=	Equals	221B	$\sqrt[3]{\quad}$	Cube root
003E	>	Greater than	221C	$\sqrt[4]{\quad}$	4 th root
005B	[	Left square bracket	221D	\propto	Varies
005D	]	Right square bracket	221E	∞	Infinity
007B	{	Left curly bracket	2220	\sphericalangle	Angle
007C	|	Bar	2234	\therefore	Therefore
007D	}	Right curly bracket	2248	\approx	Almost equal to
00A3	£	Pound	2260	\neq	Not equal to
00B0	°	Degree	2261	\equiv	Identical to
00B1	±	Plus or Minus	2264	\leq	Less than or equal
00D7	×	Multiplied by	2265	\geq	Greater than or equal
00F7	÷	Divided by	25B3	\triangle	Triangle

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<http://www.unicode.org/>

B. List of books produced

Here is the list of 132 books produced in MS Word format and made available to schools and specialist producers. Please note that all books had image descriptions produced except 18 which have (No Image Descriptions) after the title. These titles were produced quickly towards the end of the project, and image descriptions were omitted to save time and ensure delivery to schools.

Title	ISBN
Absolute Science Book 1 (No Image Descriptions)	0007135866
Absolute Science Book 2 (No Image Descriptions)	0007135882
Absolute Science Book 3 (No Image Descriptions)	0007135874
A Christmas Carol	1853261211
A Sense of History The Plains Indians	058508251X
Animal Farm	0582060109
An Inspector Calls	0435232827
Aspects of Christianity	0784752862
Believing and Living	978 0340802151
Biology for Life Second Edition	0174480962
Britain and the Great War	0435312847
Britain and the Great War School History Project (No Image Descriptions)	0719573477
Buddy	0141319208
Burning Everest (Heinemann Plays For 11-14)	0435233181
Carrie's War	9780435122027
Challenge and Change	978-0340742334
Charles Dickens Selection	9780435124458
Charlottes Web	0333294882
Cirque du Freak	9780006754169
Design & Technology foundation course Resistant materials systems & control (No Image Descriptions)	0003273520
Discovering religions - Islam	0435304682
Discovering religions - Sikhism	9780435304706
Discovering the Past? Peace and War? SHP	9780719549779
Easy Learning - English Revision 3-5	0007233531
Easy Learning – KS3 English Workbook Levels 3-7	978-0007265695
Eureka Success in Science (No Image Descriptions)	0435576267
Exploring Science: How Science Works Year 7 (No Image Descriptions)	9781405892469
Exploring Science: How Science Works Year 8 (No Image Descriptions)	9781405895439
Exploring Science: How Science Works Year 9 (No Image Descriptions)	01405895514
Fat Boy Swim	0582848903
Flour Babies	058229259X
Folens focus on KS3 History the twentieth century	9781843034336
Foundation History The Twentieth century	0435316885
Foundation History: The Making of the United Kingdom (No Image Descriptions)	0435316853
Frankenstein's Aunt (New Windmills)	9780435122607
French Grammar: 11-14 (French Grammar 11-14)	043537298X

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French Voila 1	748778470
French Voila 2	0748790942
GCSE English for AQA/A	0435106023
Geography 1 for KS3	0199134499
Geography 2 for KS3	0199134146
Geography 3 for KS3	0199134154
Geography New Interactions (No Image Descriptions)	0748760768
German Klasse 1	0199123381
German Grammar 11-14	9780435305222
Goalkeepers Revenge	9780435121112
Grammar 1	9780194386142
Grammar 2	0194386159
Grammar 3	0194386166
Groosham Grange	0744583446
History The Roman Empire Study Units	043531274X
History, The Native Peoples of America	0340803290
Holes	0007114516
Impact English: Student Book No.2: Year 8	0007194366
Indians of North America	0435314262
Islam in words and pictures	9781851750085
Johnny and the Dead	9780198314929
Kestrel for a Knave	0435124609
Key Geography Connections (New Edition) (No Image Descriptions)	0748728805
Key Maths 8	0748759840
Key Stage 3 Framework Focus: Grammar: Year 7	184085667X
Key Stage 3 Framework Focus: Grammar: Year 8	1840856688
Literacy Objectives: Paper Year 9	0582529883
Literacy Through Texts: Bk. 1	0582434424
LOGO! 1	0435368826
LOGO! 2	0435366602
Logo Grun	0435368206
Logo 3 Rot	0435366904
Macbeth	0521426219
Metro 1	9780435370602
Metro 2 Rouge: Higher - Pupil Book (Metro for Key Stage 3)	0435371320
Metro 3 Rouge Pupil Book - Revised Edition (Metro for Key Stage 3)	0435371347
Metro 3 Vert	0435380109
Millions	978-0330433310
Modern World Religions Islam Foundation Edition	043533610X
Modern World Religions – Sikhism	978043533627 1
Modern World Religions Buddhism Foundation Edition	0435336029
Modern World Religions Christianity Foundation Edition	0435336347
Modern World Religions Hinduism Foundation Edition	0435336185

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Modern World Religions Judaism Foundation Edition	0435336428
Moses Beech	0192714813
Native Peoples of North America, Diversity & Development	9780521428460
NEAB GCSE English	043510232x
Of Mice and Men	0582461464
OxBox Science Works 1 (No Image Descriptions)	978019915245
OxBox Science Works 2 (No Image Descriptions)	9780199152506
Paper Tigers	0198312687
Passwords to English: Students' Book 2: Students Book Level 2	0198320892
Play it Again (Heinemann Plays For 11-14)	0435233181
Private Peaceful	0007150067
Religion and Society (Foundation Edition)	0340850469
Religion and Life (Foundation Edition)	0-340-80185-9
Revolutionary Times 1500-1750 (No Image Descriptions)	0435313517
Roll of Thunder Hear My Cry	0435123122
Romeo & Juliet	0521618703
Room 13	978-0552555913
Scientifica – Champions of Science (No Image Descriptions)	9780748779963
SHP History Year 7	97803040907337
Skellig	978-0340944950
Skills in English	0435192825
Skills in Home Economics: Textiles	0435420011
Splinters	195506987
Spotlight Science 8	0784774734
Spotlight Science 9	978 0 7487 7474 6
Stacks of Stories	0340758597
Statistics GCSE for AQA	9760199147885
Stone Cold	978-0435124687
Teaching Resources for "Holes" (Loose Leaf)	1900085852
Text Generation writing 11-14	0198320701
The Amazing Maurice and His Educated Rodents	9780198314998
The Boy in the Striped Pyjamas	978-0099487821
The Curious Incident of the Dog in the Night Time (No Image Descriptions)	978-0099461464
The Demon Headmaster	9780198320647
The Granny Project	0003302342
The Literacy Kit: Imagine, Explore, Entertain	0198320361
The Literacy Kit: Inform, Explain, Describe - Student's Book	0198320388
The Making of The United Kingdom Study Units	0435312863
The Switch	184428607X
The Tempest (Graphic Shakespeare) [Abridged]	0237519100
The Tulip Touch	0140378081
The Turbulent Term of Tyke Tiler	0140311351
The Turbulent Term of Tyke Tiler (playscript)	9780198314998
The Twelfth Night	0-435-19204-3
The Witches (New Windmills)	978-0435122935

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Think History Modern Times 1750-1990 (No Image Descriptions)	435313703 / 978-0435313708
Think History Revolutionary Times (1500-1750) (No Image Descriptions)	0435313500
Thinking about God and Morality	034079968
Thinking History The Roman Empire	0631905979
This is Hinduism	9780748730933
This is Islam	0748739033
Throwaways (New Windmills)	0435124137
To Kill a Mockingbird	0435120964

C. Sample pages of books produced

A page from Carrie's War....

[Text page 151]

Chapter 15

Even thirty years later, when she was quite old enough to know it wasn't her fault, that a house didn't burn down because a girl threw a skull into a horse pond, she still cried in much the same way when she thought of it. Not in front of the children but later, when they had all gone to bed and to sleep. Only the oldest boy stayed awake and he heard her, crying softly in the next room. On and on, like a waterfall ...

In the morning he told the others they were not to disturb her. She was tired, he said; they would go for a walk before breakfast and let her sleep as long as she needed.

He knew where he was going. He led them at a smart pace along the path where the railway had been and though they grumbled about the branches scratching their legs his sister and his brothers followed him. But when they came to the Grove, they stopped and hung back.

A page from Metro 1....

[Text page 28]

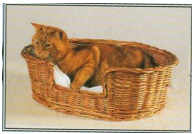
3. As-tu un animal?

Talking about pets



A. un chien

[Image starts. This photograph shows a collie dog. Image ends.]



B. un chat

[Image starts. This photograph shows a ginger cat in a basket. Image ends.]



C. un lapin

[Image starts. This photograph shows a rabbit. Image ends.]

Some pages from Spotlight Science 8....

[Text page 149]

We use our ears all the time.

We need them to make **sense** of the world around us.

Sound waves are useful to us in many other ways as well,
as you will discover ...



[Image starts. Cat with large ears lying in the grass. Image ends.]

[Text page 150]

8L1.Sound moves

Learn about:

changing pitch, loudness

the speed of sound

echoes

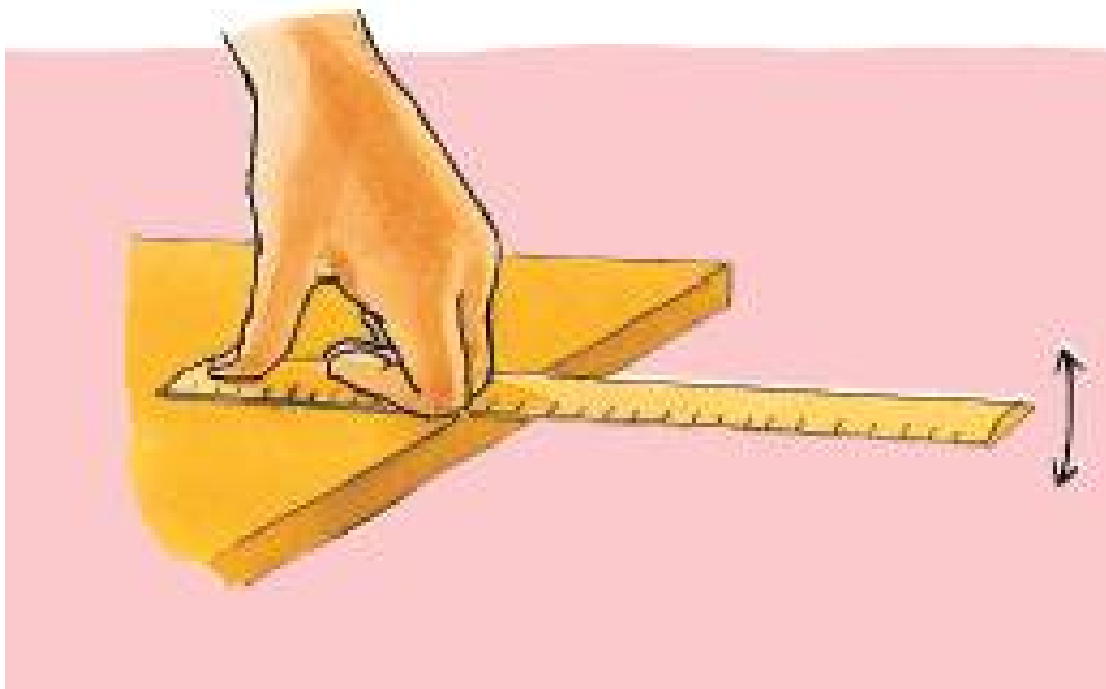
Sit quietly and just **listen**. Make a list of all the sounds you can hear in one minute.

Write down as many "sound" words as you can.

For example, boom, bang, crash, squeak,

Touch the front of your throat while you make an "aaah" sound. Can you feel it **vibrating**?

Hold a ruler firmly with part of it over the edge of the table. Then twang it.

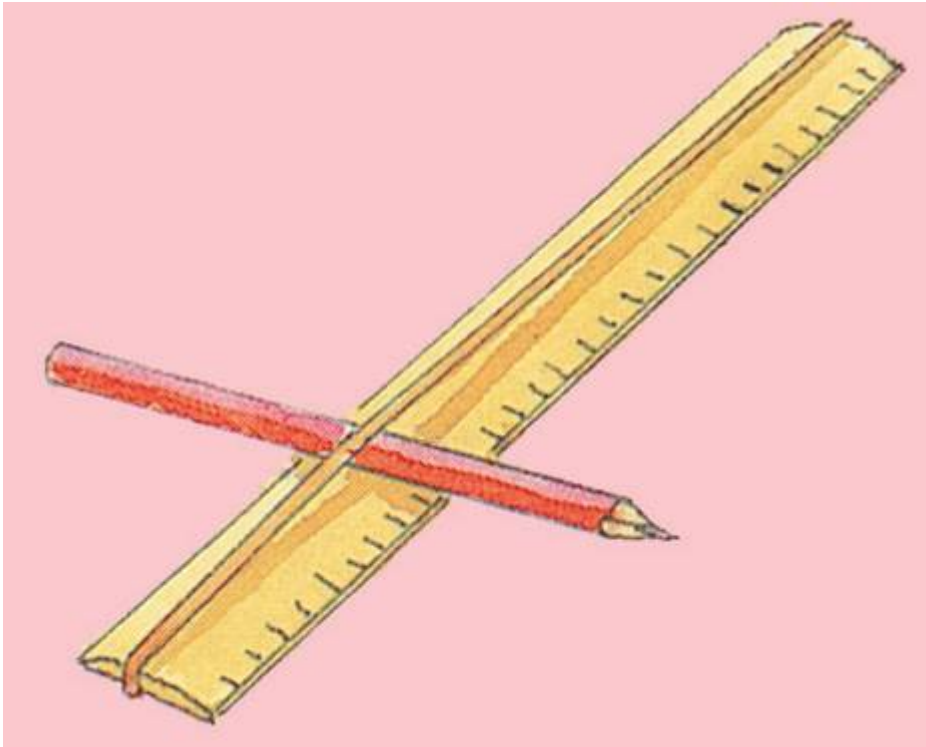


[Image starts. Hand holding the end of a ruler firmly down on a table edge. The other end of the ruler is shown to be moving up and down by an arrow. Image ends.]

- a. What is the end of the ruler doing?
- b. When does it stop making a sound?
- c. How can you make the sound quieter? How can you make it louder?
- d. How can you make it sound a higher note? And then a lower note? Can you play a tune—for example, "Jingle Bells"?

Now repeat steps **a** to **d** with the other two "musical instruments" shown here [below]:

rubber-band guitar.



[Image starts. A pencil is attached at right angles to a ruler about one third of the way along the ruler by an elastic band. Image ends.]

Some pages from Geography 1....

[Text page 46]

4. Changing the way we shop



[Image starts. This vintage photograph shows a couple standing in the doorway of their tailor's shop. Image ends.]



[Image starts. This photograph shows a glass fronted modern clothes shop called 'French Connection'. Image ends.]

[Text page 47]

The big picture

This chapter is about shopping—where we buy what, and how shopping is changing. These are the big ideas behind the chapter:

- ◆ Shopping is all tied up with geography!
- ◆ We're willing to travel further for some goods than others.
- ◆ Shops need to be located where they'll get enough customers to make a profit.
- ◆ Shopping is always changing. Out-of-town shopping and internet shopping are examples of changes.

Did you know?

- ◆ Until the 17th century, most 'shop' were market stalls.

Did you know?

- ◆ 200 years ago, your clothes would have been sewn by hand ...
- ◆ ... because sewing machines were not invented until around 1850.

Your goals for this chapter

By the end of this chapter you should be able to answer these questions:

- ◆ What are convenience goods?
- ◆ What are comparison goods?
- ◆ For which of those goods are people willing to travel further?
- ◆ Why do shops set up in some places—and not others?
- ◆ Why do bigger settlements have a larger range of shops than small settlements do?
- ◆ What is an out-of-town shopping centre, and what am I likely to find there?
- ◆ Who may benefit from out-of-town shopping—and who may lose out?
- ◆ How does internet shopping work?
- ◆ Who may benefit from internet shopping—and who may lose out?

D. Draft guidance for school implementation

The following points are offered on a draft basis to provide simple guidance for schools wishing to build on the approach introduced by this project. It is hoped that follow up work to this project will establish full guidance for all stakeholder organisations.

- 1 Plan and scope your initiative
 - Which and how many pupils?
 - Are you thinking about how all pupils can use electronic media?
 - What materials are you going to create and store electronically and where are you going to get them from?
- 2 Ensure a whole school approach
 - Involve Head, Teachers, SENCO, ICT and Assistants, pupils and parents; ensure everyone understands what is required from them
 - Appoint a champion
- 3 Establish or confirm policies and procedures
 - Storage and use of files on your Learning Platform
 - Use of laptops and other portable devices in school, including insurance, network and learning platform access, internet access, changes to the ICT environment
 - Use of laptops at home, access to the internet and learning platform, insurance, e-safety, parental obligations
 - Guidelines and procedures for the creation of accessible electronic materials by teachers and support staff e.g. worksheets and presentations, including what should be included and when and how these should reach the pupils that need them
 - Ensure that everyone understands the copyright limitations of published materials
- 4 Choose your service providers, and organise
 - Selection and purchase of technologies, both hardware and software, including support and maintenance agreements
 - Set up of technologies, including individual personalisation by pupils
 - Easy reference guidelines
 - Progressive training
- 5 Target and source externally produced electronic materials
- 6 Monitor and support pupils and staff
 - Review progress and establish regular plans for ongoing support and development

E. Producing materials that work for everyone

By following a few basic principles, you can easily produce worksheets or hand outs that can be used by all pupils using electronic media including those using assistive technologies, for example a screen reader, or requiring larger print or Braille. The following was produced as an initial guide for the creation of more accessible MS Word documents.

Use Word Styles

- Use Heading 1, Heading 2, Heading 3 etc for headings and subheadings instead of changing the font of the specific heading text. This means that the headings can be used in Daisy digital books for navigation, and that the headings can easily be adapted for pupils needing larger fonts when they apply their own styles preferences. They can also be differentiated as headings in Braille and text to speech.
- Use the Normal Style for most text. Avoid blank lines. If you need to start a new page, insert a page break.
- Use the Emphasis Style if you want to emphasise particular text. Avoid using italics and underlining except where essential.
- Remember you can easily modify the Styles.

Use MS Word Numbering, Bullet Points and Indents rather than using your own.

*Only use Headers and Footers when essential. **These can be read using assistive technology but the reader needs to know they exist. Refer to them in the main text if you use them.***

Remember that page numbers will be adjusted when larger font sizes are applied to your file and may not be useful for reference.

Images

- Any images (including pictures, graphs, diagrams etc) need to be described so that they can be accessed by pupils with limited or no sight. These descriptions can also be useful for other pupils. There are 2 ways to do this. You can use the Caption to write the description. Right click the Picture and select Insert Caption. This ensures the description stays with the picture in the file. Although Microsoft Word automatically adds a figure number for each figure, this can be removed once the caption has been created. For longer, more complex descriptions, you can describe the image in text

immediately following the image. Whichever solution you use, include “image starts.” and “image ends.” at the start and end. For example,



[Image starts. This colour photograph shows a white and grey husky dog against a mountainous background. Image ends.]

- Keep images left aligned and avoid wrap around text.

*Tables can be difficult to use in most accessible formats so only use if essential. **Make sure all tables have headers across the top. Avoid merging cells.***

*Use of colour and contrast. **Ensure good colour contrast within charts and images for text if this is important in explaining terms. Check this out by printing in black and white.***

By following these simple guidelines, you can readily share your files with pupils in the knowledge that they should be able to adapt them into their required alternative formats if they have the right assistive technologies.

Please let us know if you have further suggestions for these guidelines either through your project representative or via our web site www.mytextbook.org. We have more detailed guidelines for the production of textbooks. These include greater explanation of how to describe more complex diagrams and images and can be made available on request.

F. Links to useful resources

The following is a short list of some web sites that can provide support for those needing to produce accessible materials.

Guides and resources for producing accessible learning materials.

www.lexdis.org.uk

The High Tech Center Training Unit creates training manuals and tutorials on how to process textbooks into accessible documents using multiple types of software. There are also tutorials on how to train and use different types of assistive technologies.

www.htctu.fhda.edu/trainings/manuals/tutmain.htm

Publisher lookup site.

www.publisherlookup.org.uk/index.php

Guide to obtaining publications in alternative formats.

www.publisherlookup.org.uk/whattoexpect.php

A guide to accessible publishing.

www.odi.gov.uk/inclusive-communications/channels/publishing.php

Clear Print guide from RNIB.

www.rnib.org.uk/professionals/accessibleinformation/text/Pages/clear_print.aspx

Guide to obtaining textbooks in alternative formats .

www.techdis.ac.uk/getaltformat

A portal for information and links related to alternative formats.

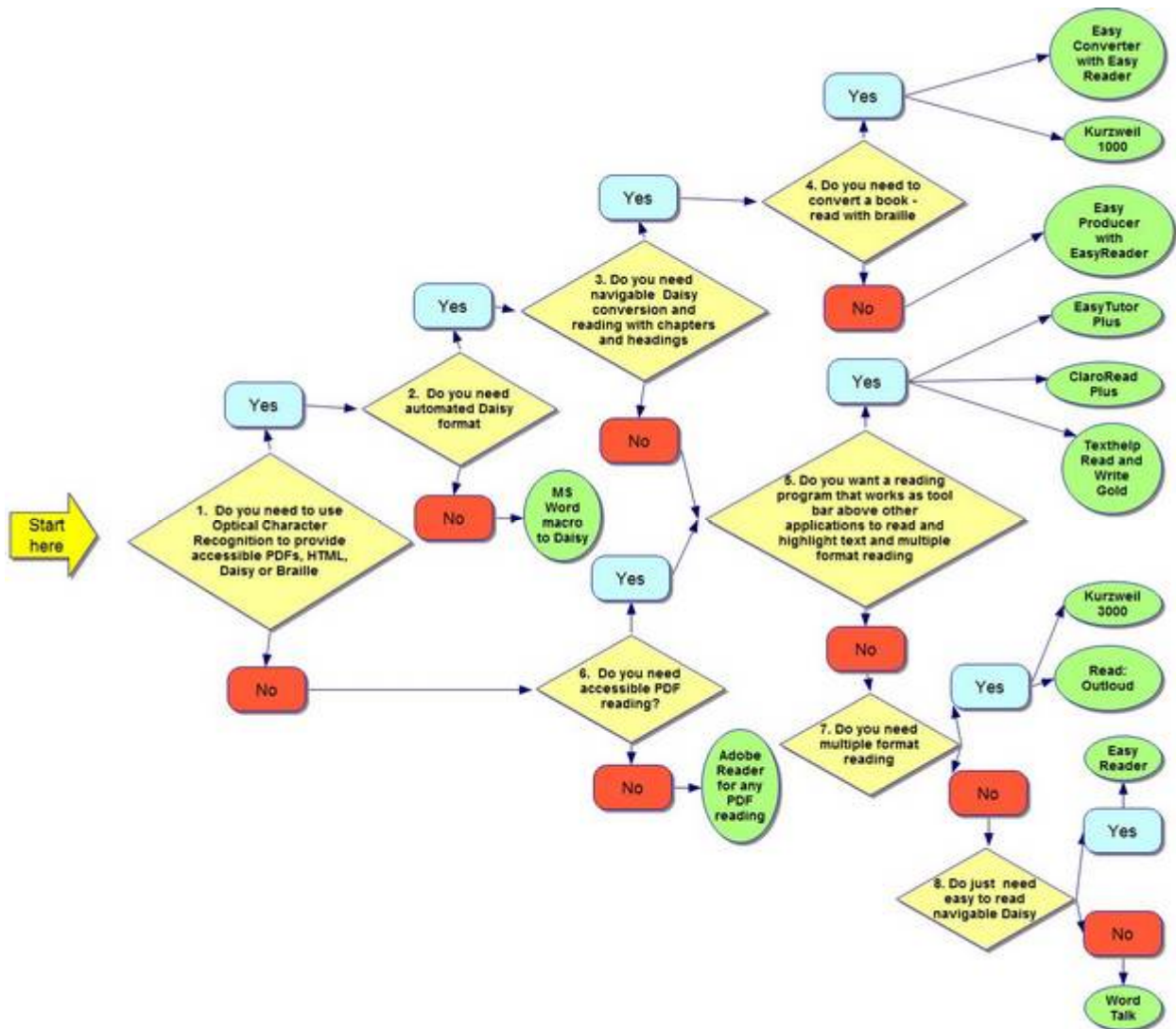
www.altformat.org

Further guides on producing accessible materials for learning.

www.open.ac.uk/inclusiveteaching/pages/using-these-resources/accessible-learning-materials.php

G. A draft guide to software choices

As part of her evaluation role on the project, EA Draffan produced the following guide to software options in the form of a decision tree and matrix. This is not an exhaustive list of the software choice available, but may provide a useful introduction to support decision making on access technologies.



Department for Education Accessible Resources Pilot Project

Features	WordTalk	Adobe Reader	ClaroRead Plus v. 5	EasyTutor	Read:Outloud	Kurzweil 1000	Kurzweil 3000	TextHelp Read and Write Gold	EasyReader 4.01	EasyConverter with EasyReader	EasyProducer with EasyReader	Word to Daisy
Text to speech	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
choice of voices	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
control reading speeds	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	
add pauses between speech			✓	?		✓	✓	✓				
read image descriptions (alt tags)			✓	?		✓	✓	✓				
read menus, toolbars etc			✓	✓		✓	✓	✓	✓	✓	✓	
text highlighting as read			✓	✓	✓	✓	✓	✓	✓	✓	✓	
customise colours of text and background			✓	✓		✓	✓	✓	✓	✓	✓	
change font size in document via application			✓	✓	✓	✓	✓	✓	✓		✓	
offer style sheets for documents									✓	✓	✓	
change menu/toolbar appearance			✓	✓		✓	✓	✓				
add bookmarks						✓	✓		✓			
Read daisy book with navigation						✓	✓	✓	✓	✓	✓	
convert to daisy										✓	✓	✓
convert to audio file (Mp3)			✓	✓	✓	✓	✓	✓		✓	✓	✓
convert to braille						✓				✓		
convert to large print										✓		
convert to text			✓		✓	✓	✓	✓		✓		
keyword highlighting for notes						✓	✓	✓				
accessible PDF reading		✓	✓		✓	✓	✓	✓				
OCR for conversion and reading			✓	✓		✓	✓	✓		✓		
ICT skill requirement - Intuitive user			✓	✓		✓	✓	✓		✓		✓
ICT skill requirement - Novice user	✓	✓			✓				✓		✓	
Suitable for blind						✓	✓		✓	✓	✓	
Suitable for visually impaired	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Suitable for specific learning difficulties	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
Suitable for dexterity difficulties	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	