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Supporting the achievement of learners with vision impairment in higher education

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VISION IMPAIRMENT CENTRE
FOR TEACHING AND RESEARCH

SUPPORTING THE ACHIEVEMENT OF LEARNERS WITH VISION IMPAIRMENT IN HIGHER EDUCATION

FOR HIGHER EDUCATION PROVIDERS IN THE UK

NatSIP
National Sensory Impairment Partnership

Department for Education

CONTENTS

INTRODUCTION AND ACKNOWLEDGMENTS

This guide has been produced to aid Higher Education (HE) professionals understand how they can best work with students who have vision impairment, to facilitate a positive and inclusive experience. Vision impairment among young people is very low incidence, which means HE professionals often have limited experience to draw upon to inform their practice. Despite this, graduate statistics and research evidence demonstrates that, with appropriate adjustments, students with vision impairment can thrive in HE.

Research into the experiences of young people with vision impairment as they have made the transition into HE demonstrates that there is often a period of learning and adjustment for both HE provider and student as they navigate how best to facilitate an inclusive learning experience (eg, Hewett *et al,* 2015). The guide has been designed to equip HE providers to be better prepared to support students with vision impairment from the start of their learning pathway.

The resource will help staff in Higher Education to:
- ensure that students with vision impairment have the support they need to be able to access, remain and succeed within and progress from HE in line with the national strategy proposed by BIS (2014) and HEA (2015)

- implement as a minimum the 'reasonable steps' required under the Equality Act 2010 (or the Disability Discrimination Act (1995) in Northern Ireland) to make sure that students with vision impairment are not treated less favourably than other students.

The guidance is written with the UK context in mind, but the broad spirit of the document can be applied in many international university settings.

UNDERSTANDING VISION IMPAIRMENT AND ITS LINK TO LEARNING

WHAT IS VISION IMPAIRMENT?

Vision impairment can be considered as a continuum of loss of visual function (Douglas and McLinden, 2005). In the UK vision loss is categorised as either 'severely sight impaired/ blind' or 'sight impaired/partially sighted', depending upon the degree of visual loss (McLinden and Douglas, 2013). Broadly speaking vision impairment relates to individuals who have a reduction in visual function which cannot be corrected by wearing standard glasses or contact lenses.

Severely sight impaired/blind – individual likely to function mainly through touch and hearing, although it does not necessarily mean that the individual has no useful vision at all.

Sight impaired/partially sighted – sufficient vision to manage some tasks but may require the help of specialist teaching methods and materials to account for their visual difficulties. (McLinden and Douglas, 2013)

It is estimated that two in every 1,000 (0.2%) children and young people up to the age of 25 in the UK have vision impairment, while five in every 10,000 (0.05%) children and young people are estimated to be severely sight impaired/blind (Vision 2020 UK, 2015).

There is a wide range of eye conditions which can affect individuals in different ways. For example, some individuals may have difficulty in seeing objects at a distance; some may have an eye condition which means that they have an uncontrolled movement of the eyes, whilst others may face difficulties due to light sensitivity. It is also possible that an individual may have more than one eye condition which affects them in different ways. Therefore, when working with a student with vision impairment it is important to consider their individual support needs.

Vision impairment in young people can sometimes be associated with additional special educational needs and other medical conditions or disabilities such as hearing impairment or autism.

VISION IMPAIRMENT AND PROGRESSIVE EYE CONDITIONS

Some individuals have progressive eye conditions, which mean that they lose visual function over a period of time. This will be challenging for the student emotionally and practically. The strategies that they may have had before in the past to, for example, access information or get around independently, may no longer be appropriate. Instead they will

need to acquire new skills and strategies during the course of their degree studies. In these cases it may be necessary to review support strategies more regularly.

Case study: Illustration of individual needs

Martha has a progressive eye condition. When she started in secondary school she was able to read print-based material and get about with her friends relatively independently. As her vision deteriorated Martha eventually started to learn to use speech software and Braille to be able to read. At the same time she also started to learn to get around using a long cane and how to adopt new strategies to cook and clean around the home. As she did not start learning some of these skills until sixth form, she was still developing her skillset once she arrived at university.

SPECIALIST SUPPORT DURING COMPULSORY EDUCATION

During compulsory education within the UK, a young person with vision impairment will typically receive specialist support to equip them with the necessary skills to be able to live and work independently. This support is often overseen by specialist teachers called Qualified Teachers of Children and Young People with Vision Impairment (QTVI), and is delivered as part of an 'additional curriculum'. The additional curriculum includes support and training to develop skills and strategies to perform tasks such as:

- accessing information independently
- using equipment such as assistive technology and low vision aids
- getting around independently.

While many learners with vision impairment will enter HE with a broad range of strategies, it is inevitable that students will be faced with scenarios they haven't encountered before such as conducting independent research or referencing material for assignments. Therefore, at first, the student may need additional assistance to develop these new strategies.

Case study: Course tutor's first meeting with a learner who has vision impairment.

'When we actually met her, she came across as really independent… it was a case of "I have done my A levels, I have gone through, I want to get on, I can do this, this and this, and I want you to do this, this and this."'

MOVING INTO HIGHER EDUCATION

EXTRA INFORMATION REQUIRED BY YOUNG PEOPLE WITH VISION IMPAIRMENT

Research evidence (Hewett *et al*, 2015) shows that often young people with vision impairment base their decision on which HE institution to attend on their perception of how well that institution can support their needs. It is important for learners with disabilities to have sufficient information to help them with choosing an institution. Providers can facilitate this through:

- ensuring that all information such as prospectuses and information about accommodation options are available in advance and in an accessible format
- provision of information about the types of services and resources available to students with vision impairment. Examples could include information on the range of assistive technology available or voluntary buddy schemes to help students with disabilities accessing clubs and societies
- helping individuals develop a better understanding of their prospective course. A challenge for students with vision impairment is anticipating the type of equipment and non-medical support that they will require once in HE. If contact is established in sufficient time, it could be arranging for students to sit in teaching

sessions in the academic year prior to entry to give them a better understanding of the way in which the course is delivered
- provision of contact information for key members of staff who could provide helpful support and advice for the student. Examples could include a course representative, disability support, transcription services, mobility support and library services.

Case study: Selecting a course

Tina is sight impaired. She spent a lot of time researching courses with her Mum before entering Higher Education. In particular they investigated the reputation of the institution in terms of how well they have supported students with disabilities. Tina was hoping to study a course with lots of visual content, and therefore she viewed it as important to prioritise an institution that would be equipped for making appropriate adjustments to enable her to access this.

OPEN DAYS

Open days are an important opportunity for all students, but for students with disabilities such as vision impairment they can form a critical part of their experience of transitioning into HE:

- they can offer an opportunity for the student to meet key people, such as learning support, welfare tutors and accommodation officers, to learn more about the institution and how it can best suit them
- they enable the student to get a better understanding of the layout of university buildings, which is extremely helpful for students who may require mobility support
- they provide an opportunity for the student to view different accommodation options and to assess which might be most appropriate for him or her and whether any adjustments might need to be made.

Appropriate adjustments for a student with vision impairment during open days and UCAS fair could include:

- offering to provide private tours
- offering appointments to meet with key staff
- providing documentation in advance in an accessible format.

Case Study: Attending an Open Day

'They were just brilliant. I remember, I went on the open day, and firstly, you know the UCAS fayre they do? They were the only uni to give me a braille brochure for the uni, and then when I got there they were asking straight away "OK, do you use Jaws [specialist access technology], do you use this, do you use that?" I was like "they seem to know what they are on about, I like this"'.

SELECTION PROCESS

In accordance with the Equality Act 2010, education providers must not discriminate against students with disabilities, including at point of admission. The provider has a duty to make reasonable adjustments to ensure that a student with disabilities is not put at a disadvantage compared to his or her peers.

During the selection process this may include offering to make reasonable adjustments for interviews and assessments. Appropriate assessments could include:

- providing the candidate written information in an accessible format
- allowing extra time for a candidate to complete an assessment
- allowing the candidate to use assistive technology to enable him or her to complete an assessment.

DISABLED STUDENT ALLOWANCE

Many students with vision impairment do not apply for DSA, despite being eligible for it. Research evidence indicates that one reason for this is the student not understanding the type of support which is available (Hewett *et al*, 2015). Staff should encourage students with vision impairment to investigate the DSA scheme, including providing examples of the ways in which DSA can aid them to be independent in Higher Education. Guidance about DSA is provided in the RNIB online resource 'Starting University' **www.rnib.org.uk/young-people/starting-university**

Often DSA assessments are conducted by assessors who do not have specialist knowledge of the range of assistive technology and type of support available for students with vision impairment. Disability staff in HE should consider directing students to either:

- DSA assessors with a specialist knowledge of vision impairment, or
- DSA assessors they have an established working relationship with, who will work with the HE provider in finding the best possible outcome for the student.

Students should be encouraged to apply for DSA at the earliest possible opportunity to ensure that they have the specialist equipment and support that they require in place for the start of the academic year.

Disability staff and course leaders should assist students with vision impairment to consider the range of support and equipment that they may require: especially as the assessment is designed to anticipate the specialist technology that the student will require for the duration of their course.

SUPPORTING STUDENTS WITH VISION IMPAIRMENT IN HIGHER EDUCATION

PROVIDING AN INCLUSIVE LEARNING EXPERIENCE

'Inclusive learning and teaching in Higher Education refers to the ways in which pedagogy, curricula and assessment are designed and delivered to engage students in learning that is meaningful, relevant and accessible to all. It embraces a view of the individual and individual difference as the source of diversity that can enrich the lives and learning of others.' **Hockings (2010)**

Recent policy changes in England have placed greater responsibility on HE providers to offer an inclusive learning experience, to all students, based around a social model of disability. This is outlined further in a publication by Department for Education (DfE, 2017), which serves as a useful reference point for HE providers seeking to develop inclusive practice. Figure 1 shows a model which is proposed by Department for Education to illustrate how HE providers should structure their support for students with disabilities.
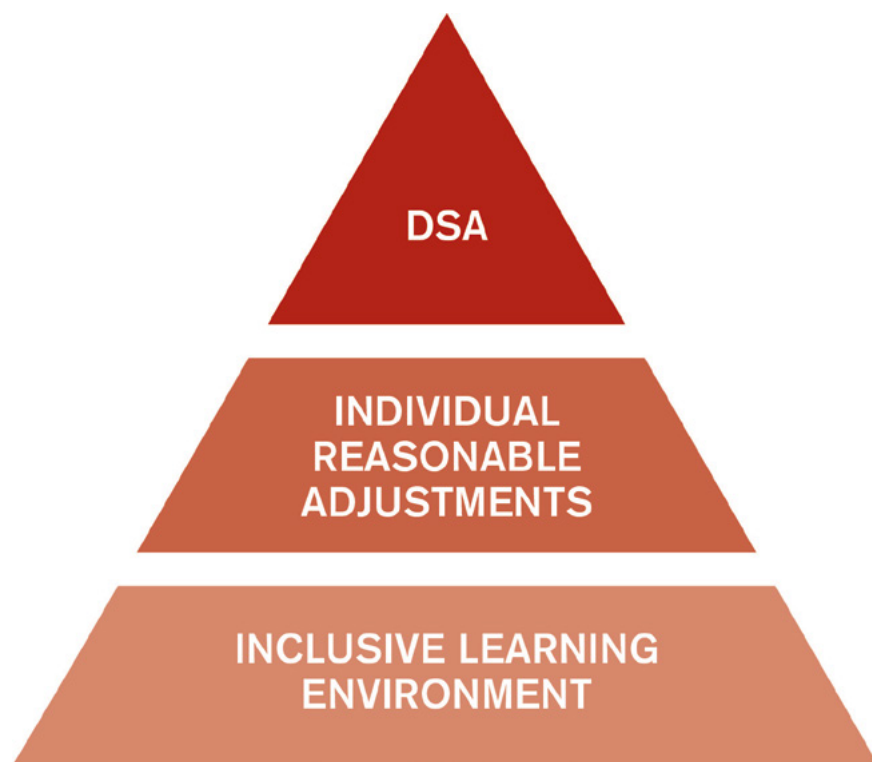

Figure 1: A model for supporting disabled students in HE, reproduced from DfE (2017)

The model shows that at the foundation of the support for students with disabilities in HE should be an 'inclusive' learning environment. This means that many barriers that students with disabilities might otherwise have faced are addressed through the core design of the institution. For example, this includes ensuring that the university virtual learning environment is accessible to all and that any documentation such as course handbooks is available in an accessible format. The model does however recognise that not all barriers can be removed through an inclusive approach, and in certain situations it will be necessary to make individual reasonable adjustments, such as providing sighted assistance in practical sessions. (Further guidance on inclusive practice and individual reasonable adjustments are provided in later sections).

Finally, in situations where a student may require specialist support and equipment, the government provides funding through the Disabled Student Allowance (DSA). This can fund specialist support such as note-takers who are specially trained to work with students with vision impairment and mobility training.

Case study: Access to lectures

David is sight impaired and is studying a STEM based subject in HE. He is able to work independently providing accessible materials are made available to him in advance of lectures which he can then adjust into his preferred format. He spoke positively about being able to access lecture notes on his laptop during lectures and explained how it meant that he felt more included in lectures: 'It just meant that I could … when we were sat in the lecture if I couldn't get close to the front, I didn't have to be sat close to the front, I could sit wherever I liked and could keep up with what was being said. That was quite beneficial. A lot of people took laptops to lectures as well, so it wasn't like in school where you are the only one, it's just normal at uni.'

PROVIDING INDIVIDUAL REASONABLE ADJUSTMENTS

As stated previously, the focus of HE providers should primarily be on offering an inclusive learning experience, which removes many barriers to learning and participation for students with disabilities. Inevitably, however, and especially in the case of students with severe vision impairment, there will be circumstances where it is necessary to make individual adjustments. This section outlines specific examples of reasonable adjustments that HE providers should consider making for students with vision impairment.

What are reasonable adjustments?

The Equality Act 2010 states that education providers should make appropriate adjustments for students with disabilities to ensure that they are not at a disadvantage when compared to their non-disabled peers. The Equality and Humans Rights Commission (2016) provides a comprehensive overview of reasonable adjustments, and is a useful reference to HE staff.

'If you are a disabled student, the duty requires Further and Higher Education institutions to take positive steps to ensure that you and disabled students generally can fully participate in the education and other benefits, facilities and services provided for students. This includes taking advance action where it is reasonable to anticipate disabled students' requirements so that it is then not difficult or too late to make adjustments when disabled students ask for them.' **(Equality and Human Rights Commission, 2012 p.14).**

Guidance is also provided by the Office of the Independent Adjudicator for students in Higher Education which has published a good practice framework for supporting disabled students (OIA, 2017).

In some cases it will be appropriate to make adjustments for students with vision impairment that might appear to give them an advantage over other students. Examples include:

■ Preference for making module choices above other students. This may be an appropriate accommodation to enable a student with vision impairment to choose a module that they anticipate being readily accessible.
■ Reading lists or assignment titles in advance of other students. This can compensate for the additional time it can take to source accessible texts.

Why focus on making anticipatory adjustments?

The Equality Act places a duty on HE providers to take an *anticipatory* approach: adjustments should be proactive, not reactive.

HE providers should consider in advance the barriers that a student is likely to face and make anticipatory adjustments for them. Research evidence (eg, Hewett *et al*, 2015) demonstrates that failure to do so can have a wide range of consequences on students with vision impairment.

Case study: Importance of anticipatory adjustments

Emma has a severe vision impairment which means she reads using speech software or by using braille. When she started in the first year of her HE course, she was unable to obtain reading lists from one of her lecturers until the module had already started. In order to be able to access the core textbooks, it was necessary for the library to make contact with publishers and request them to provide books in an alternative accessible format. As she did not receive accessible copies of the books until towards the end of the first semester, this had several negative consequences. Firstly, she felt excluded from seminars during the first semester as she was unable to access the core text which they were discussing. Secondly, because she was unable to take the exam at the first sitting she had to take it during the retake period, resulting in additional expense of travelling back to her HE institution during the summer and arranging accommodation. Thirdly, having to spend time over the summer period revising for the exam restricted her in being able to obtain work experience during the summer vacation: something which is shown to be extremely important for students with vision impairment to increase their prospects of finding paid employment upon graduation.

WORKING IN PARTNERSHIP

Progressive partnerships

Inclusive education should be seen as a progressive partnership between the institution, its staff, students and other stakeholders (QAA, 2012; BIS, 2014; Hewett *et al*, 2017).

It is likely that the adjustments put in place for supporting a student with vision impairment will evolve over time, as all parties learn together about what types of adjustments work best. It is important for the student to communicate with staff if they are experiencing challenges, and it is important for staff to provide opportunities for the student to do so. Due to the progressive nature of courses, it is also likely that not all learning needs will be clear at the beginning of a course and instead will emerge over time.

Interviews with students with vision impairment demonstrate that sometimes the student can be reluctant to raise problems that they are facing with their courses because they do not wish to appear unappreciative of other adjustments that have been made for them. **(Hewett *et al*, 2015).**

It is important that the student is given the opportunity to express their thoughts and preferences when support arrangements are being put in place. In certain cases, such as when working with a student with a severe vision impairment, or a student who is studying a course with practical elements, support arrangements are going to be complex at first. In these cases, it would be advantageous if key staff members and the student meet together. This investment of time at the start of an academic year can improve student outcomes and is likely to save time overall.

Case study: Working in partnership

'In September we met with [student] as well, beforehand, just to talk through really what the issues were for her, and then how we would kind of deal with those, or how we would try and deal with those, and then have quite a fluid situation so she could give feedback as well, to see if interventions are actually working.'

Specialist Access and Learning Facilitator
Some students may benefit from the support of a specialist professional such as a QTVI who can provide specialist guidance to both the HE provider and the student on how best the student may have a positive learning experience. Students with vision impairment may also benefit from a specialist mentor. There are a number of benefits to such support, including:

1. The student has a representative who can mediate with the institution on matters they are less informed about or have the time to undertake
2. The institution has access to advice and guidance that supports them in achieving expectation of both the student and their legal duty
3. They can support the student in knowing what is reasonable and achievable.

When identifying a specialist professional it is important to communicate the type of course that the student will be studying and the medium that they hope to approach their studies in (for example braille or electronic).

In general, it is also important to consider whether support workers may require specialist subject knowledge in order to be able to provide the level of support that the student requires. For example, a student who requires assistance in physics laboratories will benefit from working with a support worker who has a good understanding of the concepts they are investigating.

HOW LEARNERS WITH VISION IMPAIRMENT ACCESS INFORMATION USING TECHNOLOGY

There are many different ways in which people with vision impairment access information, including using various types of assistive tools and software. A brief overview of the types of approach and equipment available for different tasks is presented below. A more comprehensive overview of technology is available as part of RNIB guidance to students in HE at **www.rnib.org.uk/young-people/ starting-university**
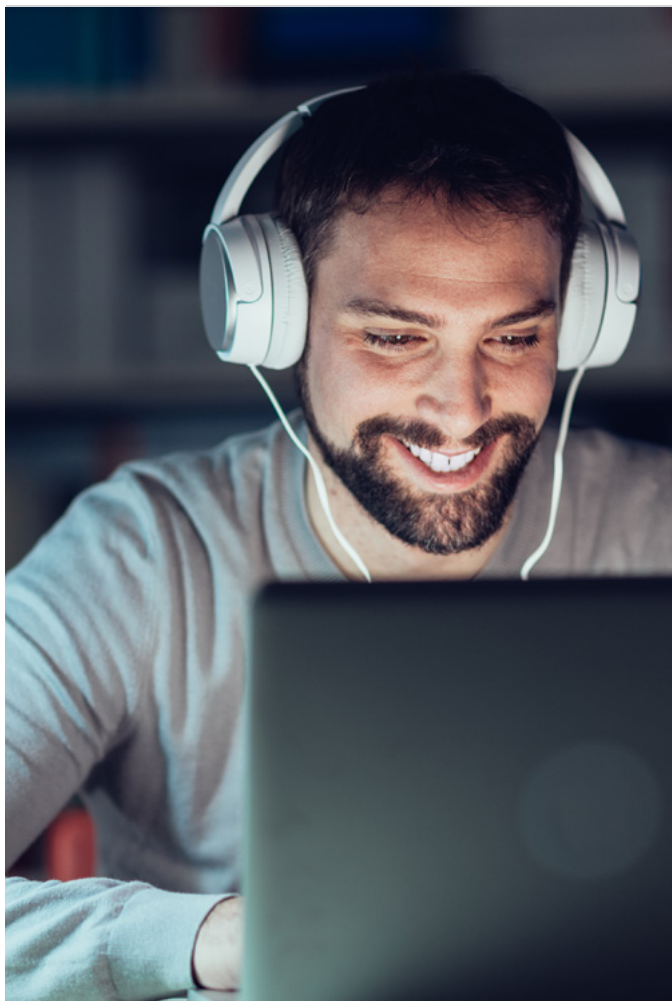
Printed materials
Some people with vision impairment prefer to use printed materials, as they find it difficult to look at a screen for extended periods of time. To facilitate this, they may adjust the font size of the material or change the font used to make it easier for them to read the document. As part of inclusive practice, materials should be prepared in a minimum font size of 12 using a clear font without flourishes, such as Arial or Verdana (AbilityNet, 2017).

Braille
One option for learners with severe vision impairment is to access literacy through the tactile medium of braille. Braille can be prepared through several means including: braille typewriter; braille printer and electronic 'refreshable' braille device. It is even possible to get a braille printer, which prints out both braille and tactile diagrams. Not all students with severe vision impairment will have been taught braille sufficiently in school to be able to use it as a primary way of accessing material in HE.

Low vision aids
Some students may be able to optimise their vision by using low vision aids. There are various types of low vision aids, which can be used for different tasks. These include hand-held magnifiers which are normally used for short periods of reading, stand magnifiers which are used for longer periods of reading and a monocular which can help a person see something at a distance. There are more high-tech solutions such as CCTVs, which are video magnifiers that project a magnified image onto a video monitor or cameras with zoom lenses that can capture something at a distance and display it on a screen. There is also a range of apps that have been developed for smartphones and tablet computers which can enable these devices to be used as assistive tools.

Tactile material

Tactile material comes in a range of formats and can be used by people with severe vision impairment. Diagrams can be printed using special braille printers which both provide a tactile depiction of the diagram and accompanying labels in braille. Swell paper is a specialist paper on which images are printed, before being applied to a heat source which causes the lines of the images to 'swell', producing a tactile image which can be explored by the student through touch. Similarly, plastic embossing film works by drawing an image on the paper which in turn swells the paper, creating a tactile image.

Standard adjustments on a computer

Some learners will require minimal adjustments, such as making simple adjustments on their computer. This could involve having their laptop in front of them in lectures, and making simple adjustments like changing the font size of a document or the resolution of their screen.

Magnification software

Some learners may prefer to use magnification software, which can be used to enlarge the content of a screen. There is a range of magnification software available, including a mouse that can be used to magnify specific parts of the screen or software that is installed on the computer and magnifies the entire screen. Such software may also be used to change colour contrast or enlarge a mouse pointer.

Speech software

Students who are restricted in reading printed text may use speech software called a 'screen reader', which is used to enable them to access information audibly. The student navigates through a document, webpage or programme by using different shortcuts on their computer, following heading structures in the document.

Optical Character Recognition (OCR)

OCR is technology which can enable a person with vision impairment to convert a printed piece of text into a format which can be read back to them audibly. It does this by scanning a document and then converting the words into electronic text.

E-books and audio material

Some students with vision impairment prefer to access reading material through e-books. This means that the student is able to get accessible copies of books promptly. They then can make adjustments to read the material, such as enlarging the text on their reading device or choosing to listen to the material as an audio version. RNIB manage a database of accessible texts. More information of RNIB Bookshare may be found at **www.rnibbookshare.org/cms**

Case study: Accessing the curriculum as a person with severe vision impairment

Aimee is registered severely vision impaired and cannot read printed material. She is studying an Arts based course which is structured around lectures, seminars and independent reading. Aimee prefers to use a range of methods for accessing information, applying different skills to different circumstances. In lectures she chooses to follow lecture notes using her braille display as this means she can read the notes whilst still listening to the lecturer talking. When reading books she prefers to use e-books as she is able to get copies quickly and in an accessible format – she then listens to the books using inbuilt audio options in the app of her tablet computer. When reading through essays Aimee prefers to use a screen reader on her laptop as this enables her to check the text is correctly punctuated.

Case study: Accessing the curriculum as a person with vision impairment

Catherine is registered sight impaired. She finds it difficult reading material produced in a small font size and also reading text at a distance. In lectures Catherine chooses to sit near the front of the lecture room to be able to see what is written on the board. She uses a tablet computer to be able to zoom into lecture slides to see descriptions on diagrams, and through a note-taking app, makes her own annotations to slides during the lecture. She prefers to read large pieces of material electronically as she can then adjust the font size to her needs. She prefers to use mainstream technology, which, through experience, she can skillfully use to access information.

INCLUSIVE PRACTICE AND REASONABLE ADJUSTMENTS TO FACILITATE INDEPENDENT LEARNING

The objective for HE providers should be to create a learning environment in which students with vision impairment can study as independently as possible. This section outlines some examples of good practice and reasonable adjustments that an HE provider may make, including suggesting ways in which students with vision impairment may benefit from human support.

COURSE CONTENT AND LEARNING OBJECTIVES

When considering what are the reasonable adjustments which could be made to enable a student with vision impairment to participate in a course or a module, it is always important to review what the intended learning objectives of that module are.

Case study: Review of learning objectives

Jill is studying a module which normally requires the use of a piece of statistical software that is commonly used in her field of study. The software is proving to be inaccessible with her assistive technology which means that she is unable independently to complete her assignments. The learning objectives for the module centre round understanding the statistical tests which the software is performing and understanding the outputs, rather than developing a knowledge of how to use that specific software. An appropriate reasonable adjustment in this situation is to find alternative software that can perform the same type of analysis, and to provide support for Jill to use this alternative software.

ACCESSIBLE LEARNING MATERIAL

Many of the barriers to access that are faced by students with vision impairment can be addressed through the provision of learning materials in accessible formats. This means that the materials are prepared in such a way that learners are able to read them independently, using appropriate strategies. AbilityNet (2017) provides guidance on creating accessible documents. The key principles highlighted are:

- use a proper 'headings' structure
- write in short, simple sentences
- write in plain language and avoid jargon and abbreviations
- use a common, plain font and a text size of at least 12 point
- use proper list formatting for numbered or bullet lists
- provide a meaningful description of important images
- check the accessibility of your document using MS Word's built-in checker.

PDF documents should be produced as a text file, rather than an image file, to be compatible with speech software.

Some HE institutions provide centralised transcription services which can be used by academic staff to convert teaching material into formats which are accessible to students with disabilities such as vision impairment.
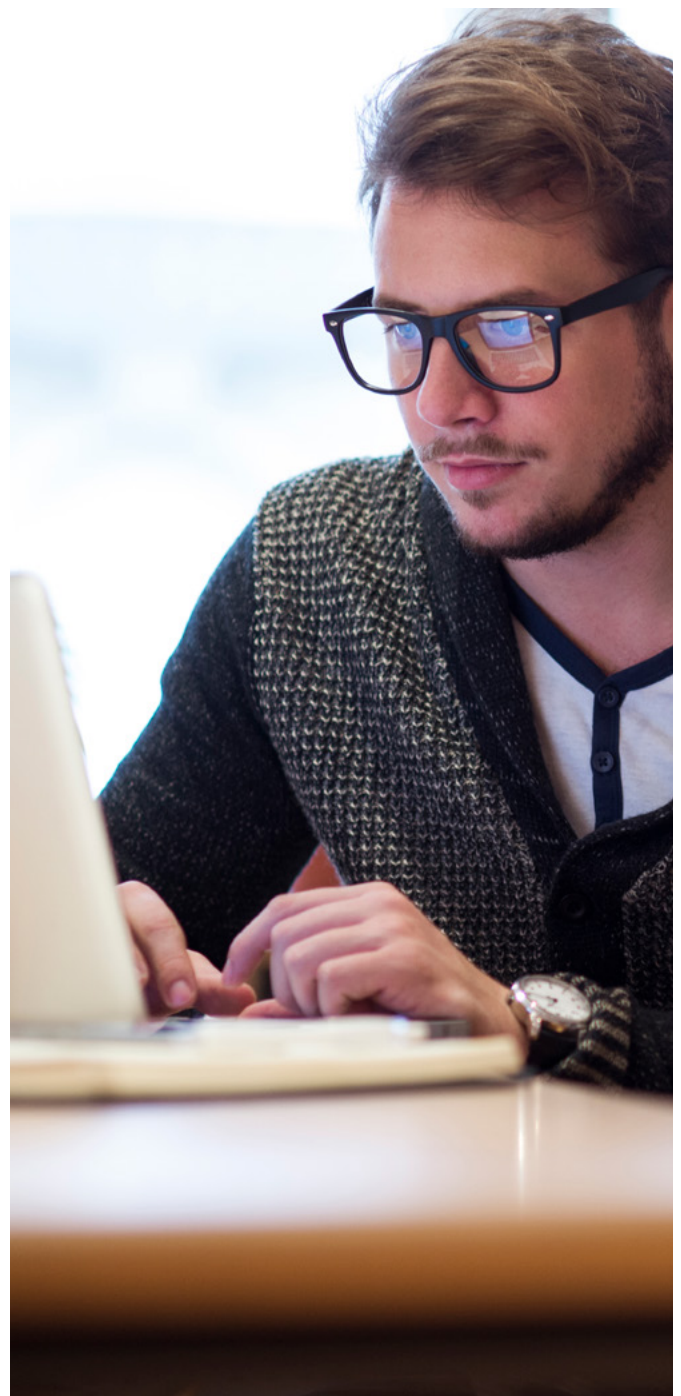
ADJUSTMENTS TO TEACHING SESSIONS

Even with the provision of accessible notes in advance of lectures, teaching sessions can present barriers for students with vision impairment. This is particularly true if the lecturer communicates through visual cues such as pointing to information on a board, or moving quickly between PowerPoint slides without

providing a verbal reference. To ensure effective inclusive practice lecturers should seek to:

- provide verbal cues to indicate to students that they are moving between slides
- avoid simply pointing at information, and provide additional verbal instruction
- describe any written information which is not in the students' notes, such as diagrams or mathematical workings which are written on a whiteboard.

Case studies: Inclusive teaching practice

'He's actually altered the way that he sort of goes through things in his lectures to make it easier for me. Because I follow the PowerPoint presentation on my laptop, he's come up with a way of making me aware of when he changes slides, without making it aware to everyone else, so he just says something like 'and now' or something, just so that I know we are going onto the next slide, but without making it too obvious to everyone else.'

'If it was images and things that they were drawing on the board, then they would try and explain it in the course of the lecture, but if it was diagrams to do with phonetics and things, then I would have a separate appointment with them.'

Many students with vision impairment find it helpful to record lectures, or refer back to lectures that have been recorded using lecture capture software. Lecturers should facilitate this wherever possible.

Some students with vision impairment find it beneficial to have a note-taker in lectures as, due to their disability, they find it challenging to keep up with the pace of lectures. It is important, however, that note-taker support should not be given to compensate inaccessible learning material.

Case study: Benefits of note-taker support

'Very, very beneficial. It's very difficult to follow the lecture because you have to make extra effort in the lecture either on the iPad or your computer, and having to do that whilst taking notes and listening to what the lecturer is actually saying, doing three things at once it's quite difficult. So having a note-taker takes a lot of the strain off.'

INDEPENDENT RESEARCH

At the core of HE is the opportunity for students to become independent learners and to conduct their own independent research. This can present barriers for students with vision impairment as often reference material is presented in a format which is not readily accessible. HE providers can provide reasonable adjustments by:

- assisting students to obtain alternative formats of books from publishers
- identifying details of alternative texts to give more choice
- providing transcription services
- providing research assistants to help the student identify relevant text
- purchasing alternative formats of books, such as e-books.

Case study: Independent Research

Maria is registered blind and a braille reader/ screen reader user. At the time of interview she was in the final year of her degree course and working on her dissertation. Her chosen course was heavily text-based and therefore required a lot of reading. Maria shared that she was confused at the start of the project regarding how best to work with her assistant. Positively her research assistant had worked with students with visual impairment before and was able to offer some suggestions:

'So my research assistant said that what she done before with a visually impaired student before was she would, together they would browse shelves, or go on the online library for text, and then instead of having every single book they found made accessible only to be discarded if it was irrelevant, she would go through the index and find any relevant passages and then read those passages to the student, and then the student would say whether they wanted that passage or that chapter or that book or whatever made accessible. So that's basically how I have been doing it.'

Maria also found her own techniques for managing the large amounts of information she has to process as part of her dissertation:

'What I do then is, when I get the section made accessible and emailed to me, I read through and make a separate document just full of notes and page numbers for that chapter, and I mainly just work from my own notes, I don't really go back to the original documents.'

STEM SUBJECTS

It is important when supporting students with vision impairment who are studying STEM (science, technology, engineering and mathematics) subjects to have clear strategies prepared in advance for how the course will be made accessible to the student. For example, for students who use screen readers to read material it will be necessary to convert mathematical material into a format which can be read by the student, and for students who are unable to see visual material, it will be necessary to produce diagrams in an alternative format such as a tactile diagram, written description or 3D model.

There are several resources available which are designed to aid HE professionals to develop a more inclusive learning environment for STEM courses, and also specific resources for supporting STEM students with vision impairment, and an overview is provided in Appendix C.

Case study: accessing mathematical content with a screen-reader and braille

Robert is studying a course in HE with a high amount of mathematical content. Before he started the course he met with representatives from the course and disability department to develop strategies which would enable him to be able to access lecture material independently. As a result of this discussion the department committed to converting all lecture material into Latex, a document preparation system commonly used to produce scientific documents. Robert committed to learning to use Latex with his screen reader to be able independently to access the notes which were produced. In lectures Robert worked with a note-taker who had a specialist understanding of the course who assisted him in interpreting diagrams that were being described by the lecturer through the use of plastic embossing film (or German film paper).

It is important to consider that in addition to the provision of alternative material, the student may require support in learning how to interpret this material – particularly if it provides a new concept which is not readily accessible.

EXAMINATIONS

One of the most common types of adjustments for students with vision impairment is personalised examination arrangements. These could include:

- a separate room
- modified papers
- extra time
- a laptop
- assistive technology such as magnification software or a screen-reader
- a reader
- an scribe
- a practical assistant to support students in navigating complex exam papers
- an alternative assessment which meets the same assessment objectives.

It is important to discuss examination arrangements with the student. The student will have had lots of experience of sitting exams previously, and therefore will be likely to have a good understanding of the types of adjustments which work for them. Guidance can also be taken from the type of adjustments which they received in exams in school or college. RNIB have published guidance on exam access at **www.rnib.org.uk/examaccess**. Whatever access arrangements are agreed it is essential that students have the opportunity to practice using them properly before their exams.

Case study: Examination adjustments

'…they gave me a 'bland computer' which had no internet, basically no way that I could cheat, but they gave me some of the exams on the computer. That was great, I could do what I want with it, I could chop up bits, move them away or something, or could enlarge without going to the photocopying room, so I did like that, and again it was just a bland computer that they provided with nothing on it really.'

ESSAYS AND OTHER ASSESSMENTS

Students with vision impairment may require extra time to complete essays and other assessments to take account of the additional amount of time involved in obtaining accessible copies of reading material and also to compensate for the fact that it can take students with vision impairment longer to read a document than it takes the typical student.

Students with vision impairment may also require assistance with appropriate referencing and with proof reading their assignments, as both are visual tasks.

Case study: Assistance in submitting assignments

'She helps me source books from the library, and once I have got an assignment, then she helps me format it, in terms of making sure all the fonts are the same and I am referencing correctly in terms of putting the footnotes, just how it looks. She's not allowed to help me with the actual content, just how it looks.'

FEEDBACK

It is important that feedback is provided to students in an accessible format. It may be appropriate to arrange to meet with a student to give them feedback which is specific to their disability. For example, research has shown that students with vision impairment sometimes do not use enough references to support their essays, due to challenges in accessing reading material independently.

LIVING ACCOMMODATION

It is important that a student with vision impairment should be able to make an informed decision about the type of accommodation which they are placed in. For many of the students, it will be the first time that they have lived away from home, and therefore they may need some guidance. Questions to consider discussing with a student include:

- What location would the student prefer? – while some buildings may be closer than others, buildings further away may be more suitable if there are fewer obstacles, such as roads with poor crossing opportunities
- Would the student prefer catered or non-catered accommodation?
- Does the student need to have an en-suite bathroom or private kitchen?
- Would the student like to have accommodation with a shared communal space to help them meet other students?

Reasonable adjustments that the HE institution should consider making include:

- Subsidising the cost of accommodation. Often HE providers direct students with vision impairment to the closest accommodation, or accommodation with private facilities, due to reasons associated with their disability. As this type of accommodation is normally more expensive, the provider should consider subsidising the additional cost of the accommodation above that of a standard room. The provider should also subsidise the cost of providing a larger room if it is specifically to accommodate the student's guide dog.
- Making appropriate alterations to the accommodation in advance of the student arriving, such as tactile markings on kitchen equipment and extra desk space to cater for the student's assistive technology.
- Informing other students in the students' accommodation block if that student has a guide dog. This will provide the opportunity to address cultural challenges that may otherwise later arise.

MOBILITY AND ORIENTATION

The support that a student with vision impairment will require to enable him or her to get around independently will depend upon the nature of their vision impairment. For example:

- Some students will need very little input, but may benefit from a private tour around the main parts of the university
- Some students will need someone to show them where specific buildings and facilities are
- Some students will need mobility training to learn to navigate around the environment with a long-cane and/or with a guide dog.

To facilitate this, reasonable adjustments that HE providers should consider include:

- Allowing first-year students the opportunity to move into accommodation early to give them time to learn routes to get around independently before other students arrive
- Having a buddy system at the start of the first term to give the student the time to develop more confidence for getting around independently
- Providing timetables in sufficient time for student with vision impairment to be taught to get independently between buildings

- Minimising the number of buildings that a student with vision impairment will need to navigate between for lectures
- Providing necessary facilities, following guidelines set out by Guide Dogs (2015)
- Notifying the student if there is going to be building work that might disrupt their normal routes between buildings to enable the student to be shown alternative routes.

SOCIAL AND LEISURE OPPORTUNITIES

Having opportunities to join societies and other interest groups is an important part of the overall Higher Education experience. Not only does it provide an opportunity for students to meet peers with shared interests, it can lead to the development of important skills and experiences that the student can then reference when seeking employment.

Research (eg, Hewett *et al*, 2015) has shown that often students with vision impairment can feel restricted in accessing these activities for a variety of reasons, including:

- Not being able to get to the venue independently
- Feeling overwhelmed with the initial transition into HE
- Students leading the societies and groups not knowing how to accommodate a student with a vision impairment.

To help facilitate access to these groups, HE providers and student unions should consider:

- offering support such as a buddy system to enable student to safely get to and from meetings

- making advanced preparations to ensure that the student has as smooth a transition into HE as possible
- facilitating students groups to make reasonable adjustments for students with disabilities through guidance and financial support.

STUDY OPPORTUNITIES ABROAD

Students with vision impairment should be encouraged to take opportunities to study abroad, if they wish to do so. Disability staff should liaise with the host institution to facilitate the transition into the overseas institution and to help the student get an oversight of the type of support that is available.

Case study: Study Abroad Opportunities

Harriet studied languages in HE. As part of this course it was expected that she would study abroad for a year. She chose to study in Latin America where she felt she would have good opportunity to develop her Spanish speaking skills, but also to receive a rich cultural experience. Her HE provider identified a link tutor through existing partnerships between themselves and the host institution. The student, domestic institution and host institution worked together to agree support arrangements in advance of her starting. It was agreed that whilst in the UK the student preferred to get around independently in her local environment, this was not a realistic prospect in the host country as they did not offer the same standard of tactile paving and crossings for people with disabilities as in the UK. Instead the student compromised by receiving support from a sighted guide for the year.

SUPPORTING THE TRANSITION TO EMPLOYMENT

Statistics show that students with disabilities have poorer employment outcomes compared to their peers without disabilities. HE providers have responsibility for supporting all students into, within and from their institution. As well as providing the standard support offered to students, careers services should offer specific guidance to students with disabilities, including:

- Advice on how to declare their disability
- Information on support that the student might draw on in the workplace, such as Access to Work
- Advice on how to request reasonable adjustments for interviews and assessments
- Advice on how best to approach discussing reasonable adjustments that an employer might make for them in the workplace.

Research evidence demonstrates the importance of students with vision impairment having had previous work experience to enable them successfully to find employment upon graduation. This can be challenging for students with vision impairment who often are restricted in obtaining work in the usual student settings such as retail and restaurants. To improve long term outcomes careers services should encourage students with vision impairment to look for suitable summer work placements or voluntary opportunities and support them as they apply for these opportunities

WORK PLACEMENTS

Some students take courses which incorporate year-long work placements. Students should be supported with finding a placement and in overcoming challenges that they might face because of their vision impairment. As discussed above, this could include guidance on declaring their vision impairment and discussing reasonable adjustments. Students on work placements which pay above the national minimum wage are entitled to apply for Access to Work. RNIB offers advice for people with vision impairment in the workplace: **www.rnib.org.uk/information-everyday-living/ work-and-employment**

SUMMARY OF KEY RECOMMENDATIONS

1. HE institutions should develop an inclusive environment to enable students with disabilities such as vision impairment to become independent learners, minimising the need for individual adjustments.
2. HE institutions should support students through individual reasonable adjustments in situations where it is not possible to overcome barriers through inclusive practice.
3. HE institutions should view students as individuals and consider their individual support needs.
4. HE institutions should ensure that they are anticipating and planning for the reasonable adjustments that student's need and which they should be providing by law.
5. HE institutions should keep the student at the centre of any discussions on support arrangements, including inviting them to attend meetings between disability support staff and departmental staff.
6. HE staff and the student should seek to work together in partnership to identify solutions to barriers encountered. This partnership should be considered as progressive, with a focus on facilitating the student's independence and ability to embrace all the opportunities that Higher Education offers.
7. HE institutions should provide students with vision impairment with tailored support to prepare them for making the transition into employment, including advice on disclosure of their disability and information on employment rights and support available once in employment, including Access to Work.

ORGANISATIONS FOR FURTHER INFORMATION AND OTHER RESOURCES

FURTHER INFORMATION

Blind in Business: **www.blindinbusiness.org.uk**
Guide Dogs: **www.guidedogs.org.uk**
National Sensory Impairment Partnership (NatSIP): **www.natsip.org.uk**
Royal National Institute of Blind People (RNIB): **www.rnib.org.uk**
Royal Society for Blind Children: **www.rsbc.org.uk**
Thomas Pocklington Trust
VICTA: **www.victa.org.uk**
VIEW: **www.viewweb.org.uk**
Vision Impairment Centre for Teaching and Research:
www.birmingham.ac.uk/VICTAR

OTHER RESOURCES

RNIB: Starting University
RNIB has published guidance material to facilitate students with VI in Higher
Education: **www.rnib.org.uk/young-people/starting-university**

Thomas Pocklington Trust: Housing Guide for People with Sight Loss
TPT has published resources for people with VI who are looking for a new home.
There is specific information given for students: **www.pocklington-trust.org.uk/
guide-finding-home-visually-impaired-people1**

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APPENDICES

Appendix A: A model for supporting students with VI in HE, examples based on DfE (2017)

Example access issue	Inclusive learning environment	Individual reasonable adjustments	DSA
Accessing lectures	Lecture notes made available to all students in advance of lectures in an accessible format	Providing written descriptions for diagrams and other visual content	Provision of specialist equipment such as magnification software or screen readers
Accessing reading material	Providing reading lists in advance of modules starting	Assisting students in sourcing accessible versions of text, eg, by contacting publishers	Provision of specialist equipment such as an electronic magnifier
Accessing university environment	Providing an accessible campus environment with tactile paving and clear signage	Arranging teaching timetable to minimise the number of rooms that the student will need to navigate between	Funding of mobility officer to teach student routes to be able to get independently between lectures

Appendix B: Checklist: Making sure a student with vision impairment has an effective transition into HE

Is information about your institution and its course accessible to people with vision impairment?	
Are there opportunities for students with vision impairment to meet with key staff at open days?	
Have you encouraged students with vision impairment to apply for Disabled Student Allowance?	
Have you directed the student towards an assessment centre which either has specialist knowledge of vision impairment, or has worked closely with your institution before?	
Have you facilitated opportunities for students with vision impairment to learn more about their course to help prepare them better for DSA needs assessments?	
Have you met with the student to discuss the type of support that they require?	
If required, has a meeting been set up between the student and key staff to discuss specific support arrangements for the course?	
Where necessary, have arrangements been made for the transcription of lecture notes into an accessible format which will enable the student to work as independently as possible?	
Are induction materials available in an accessible format?	
Has the student been given the opportunity to move into accommodation early?	
Has the student been given his or her timetable in advance to facilitate mobility sessions?	
Has the student been given his or her reading list in advance to facilitate getting accessible textbooks?	
Has a buddy been assigned to help the student get around the new environment and to attend social events?	
Is key information for accessing services such as library support and transcription services available in an accessible format?	
Has the student been encouraged to inform the disability office in the event of any problems?	

Appendix C: Resources for supporting STEM students with vision impairment

Building momentum towards inclusive teaching and learning. Institute of Physics, 2017: **www.iop.org/publications/iop/2017/ page_69352.html**

STEM Enable: a searchable database for those with print impairments in STEM. Institute of Physics and University of Bath: **http://stemenable.referata.com/wiki/ Welcome_to_STEM_Enable**

Teaching STEM subjects to blind and partially sighted learners, RNIB: **www.rnib.org.uk/ knowledge-and-research-hub/research-reports/education-research/stem**

Good Practice on Inclusive Curricula in the Mathematical Sciences: **www. mathcentre.ac.uk/resources/uploaded/ inclusivecurricula.pdf**

Obtaining Braille mathematical documents: **www.heacademy.ac.uk/system/files/ msor.7.3d.pdf**

Mathematical equations in Braille: **www.heacademy.ac.uk/system/files/ msor.7.2m.pdf**

Grapheel: a project to improve the accessibility of STEM subjects in Higher Education: **www.grapheel.com**

The National Sensory Impairment Partnership (NatSIP)
is a partnership of organisations working together to
improve outcomes for children and young people with
sensory impairment.
www.natsip.org.uk

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