



Accessible Curricula

Good Practice For All

Carol Doyle and Karen Robson
edited by Simon Ball and David Campy

Acknowledgements

Several members of staff at UWIC contributed to the initial compilation of this book:

- ▶ Gabriel Jezierski and David Campy, Learning and Teaching Support Unit
- ▶ Mathew Williams, Disability Department, Learning and Teaching Support Unit

The following provided a review of the book during the editing process and their comments and assistance are gratefully acknowledged:

- ▶ Professor Alan Hurst, Department of Education and Social Science and Adviser for Students with Disabilities, UCLAN
- ▶ Professor Brenda Smith, Head of LTSN Generic Centre
- ▶ Mike Adams, Principal Co-ordinator, National Disability Team
- ▶ Lyn Bibbings, Liaison Officer, LTSN Centre for Hospitality, Leisure, Tourism and Sport
- ▶ Dr. Gary Bunt, Project Officer, LTSN Centre for Philosophical and Religious Studies
- ▶ Sophie Corlett, Skill: National Bureau for Students with Disabilities
- ▶ Mrs E.A. Draffan, TechDis Accessibility Database
- ▶ Tom Franklin, Senior Technology Adviser, TechLearn
- ▶ David Sloan, Project Lead, Digital Media Access Group
- ▶ Dr. Steve Walker, Consultant, LTSN Centre for Physical Sciences
- ▶ Mike Wray, Project Co-ordinator, DEMOS Project

The authors wish to thank these and everyone else who provided input for their valuable contributions.

Accessible Curricula

Good Practice For All

Carol Doyle and Karen Robson
edited by Simon Ball and David Campy

Foreword

The publication of this Book is timely on several counts. Looking at the sector as a whole, the diversity of students continues to grow and with it, the variety of needs that have to be addressed in our learning, teaching and assessment strategies. Students from a wider range of backgrounds and with differing prior knowledge and experience are participating in higher education. Considering how we might try to meet these needs presents us with a welcome opportunity to reflect on our current curricula and classroom practices.

Within our student groups it is increasingly likely that some will have a disability or learning difficulty. Sometimes this will have been disclosed “officially” but some students might prefer to keep this hidden. Significant progress has been made in recent years in ensuring that this long-neglected group can take the opportunity to go to university, obtain important qualifications, and join the labour market to secure their full independence and participation in society. Building on this progress, institutions and their employees need to consider the quality of experience they provide for students with disabilities and/or learning difficulties.

All the funding councils have started to provide a small amount of additional funding in recognition of the additional costs which institutions might incur in developing high quality policy and provision. There have also been a number of special initiatives to fund specific projects. Both Scotland and England have a system for the national co-ordination of policy and provision. Arguably the most significant move forward came in 1999 when the Quality Assurance Agency for Higher Education published its Code of Practice on Students with Disabilities.¹ This was well-received and prompted considerable discussion and some action regarding the implementation of the Precepts set out in the Code.

Of greater significance have been the efforts made to ensure that meeting the needs of students with disabilities and/or learning difficulties has shifted from being an optional add-on extra to becoming a part of core activities of higher education providers. This process has been prompted by a number of significant developments. Firstly, in Scotland, the “Teachability”⁴ Project has acted as a valuable catalyst in encouraging academic staff to consider the extent to which their course and curricula are accessible to students with a range of impairments and what might be done to improve accessibility. Secondly, the growing activities of the LTSN Generic Centre and the Subject Centres through their publications and conferences are ensuring that the needs of students with disabilities and/or learning difficulties are not overlooked.

Finally and very significantly, changes in anti discrimination legislation are occurring. The Human Rights Act (1998)⁸ includes significant possibilities for action if those with disabilities feel that they have experienced discrimination – certainly a similar piece of legislation was used successfully by students with disabilities against a university in New Zealand some years ago. There is also the Special Educational Needs and Disability Act (2001)² which targets the “less favourable” treatment of students with disabilities and/or learning difficulties compared to that experienced by their non-disabled peers. In avoiding “less favourable” treatment, institutions are required to make “reasonable adjustments” to all of their services including learning, teaching, assessment and many other dimensions of their courses and curricula.

This Book complements the progress and developments summarised above. It is intended as a source of information to help busy members of staff to be aware of recent changes and to be ready to comply with the new legislation. It offers a series of practical suggestions for modifying the learning and teaching environment to provide effective and efficient support for all students. Perhaps it is becoming a truism but it is worth reiterating the point that what constitutes good classroom practice for students with disabilities and/or learning difficulties is also good pedagogic practice for all students. We are moving slowly but steadily to the position where it will be fair to claim that we have fully inclusive high quality policy and provision for students with disabilities and/or learning difficulties in higher education. Access for all has become access to excellence for all.

Prof. Alan Hurst

Department of Education and Social Science and Adviser for Students with Disabilities,
University of Central Lancashire

Prof. Brenda Smith

Head of LTSN Generic Centre

Preface

This Book has been produced to assist you to design and deliver your coursework to allow for the divergent needs of student populations. Designing accessible curricula is good practice and is now a legal requirement. The Disability Discrimination Act Part 4 (the **Special Educational Needs and Disability Act (2001)**)², will be implemented in September 2002 and Higher Education institutions will need to comply. The **Quality Assurance Agency's (QAA) Code of Practice on Students with Disabilities**¹ outlines a number of precepts in relation to accessible curricula.

Using this Book will assist you in producing 'barrier-free' course materials and to deliver them appropriately. This term 'barrier-free' is taken from the 'universal design' literature, the underlying principle being that the full range of users should be considered at the design stage. In doing so, there will be 'built-in' access for a wide range of users with or without disabilities.

The aim of the Book is to offer you a 'quick reference' manual for curriculum-related disability issues. The term curriculum is used in a broad way and refers not only to physical course materials but also includes issues such as field trips, work placements, laboratory practicals and assessments.

I hope this Book proves as useful in other institutions as the original material did at UWIC.

Professor Kate Ashcroft

Vice Principal (Academic) University of Wales Institute Cardiff

CONTENTS

	Page
Foreword	i
Preface	iii
Abbreviations	vii
Introduction	1
Section 1: Parity of Learning Experience	6
Can we create equality of learning experience?	6
Different learning styles	6
Inclusivity	7
Universal design	8
Conveying information to your students	10
Section 2: Understanding the Needs of Students with Disabilities	12
Contact with your students	12
What do I need to know when . . . ?	12
Student uses tape recorder or laptop during the lecture	12
Student requires the use of a sign-language interpreter	13
Student wishes to bring their guide dog into class	14
Student requires the use of a notetaker during lectures	14
Student wishes to use 'Speedtext'	14
Student wishes to distance learn	14
Student wishes to use video-conferencing facilities	15
Section 3: Preparing Yourself, Your Materials and the Learning Environment	17
3.1 Effective Teaching Strategies	17
What do I need to do?	17
General classroom strategies	17
Reading lists	18
Production of course materials	19
Wearing a microphone	19
Outside speakers and microphones	19
Taping of lectures	20
3.2 Learning Materials	21
How can I help all students?	21
Lecture outlines and other documents in advance of the lecture	21
What are the benefits of providing lecture outlines in advance	21
Providing information in alternative formats	22
Use of overhead projectors	25
What other things do I need to consider when designing overheads?	25
Use of PowerPoint presentations	26
Use of video and audio equipment	27

3.3 The Lecture Theatre	28
What must I think about when choosing a lecture theatre?	28
Choosing an appropriate lecture theatre	28
Changing the location of a lecture	29
Overcrowded/noisy lecture theatres	29
Lectures in darkened environment	30
Section 4: Learning in Small Groups	31
How do I provide an accessible tutorial?	31
Flexible attendance	33
Presentations during tutorials	33
How do I co-ordinate group work for students with disabilities?	34
Section 5: Laboratory Practicals	35
How do I ensure accessibility in the practical?	35
Needs of students with disabilities in the laboratory	36
Good laboratory practice	36
Laboratory practices orientated towards students with disabilities	37
Section 6: Work Placements and Field Trips	38
How do I organise accessible work placements and field trips?	38
Work placements abroad	40
Field trips	41
Section 7: Assistive Technology and Equipment	44
What is assistive technology?	44
Types of user and assistive software	44
Types of equipment for students with disabilities	44
Demonstrations	47
Useful Resources	47
Section 8: Assessment and Examinations	48
Why is it important for equality in assessment and examinations?	48
Planning and Information	49
Physical Environment	49
Alternative Formats	50
Alternative Timing	50
Practical Assessment	50
Marking	51
Computer Aided Assessment	51
Useful Resources	51

Section 9: Web Accessibility	52
Can you make your Web page and online coursework accessible?	52
9.1 Background to disability access to the Web	52
Universal design and Web accessibility	52
Web content accessibility guidelines (W3C)	53
Checking whether your site is accessible	54
9.2 Basic design	56
9.3 Accessibility Problems and Solutions	57
Scripts, applets and plug-ins	59
Acrobat and PDF	59
Useful Resources	60
Section 10 Case Study: UWIC's Library and Information Services - Library Division	61
How to make your service accessible to all	61
Appendices:	
A Special Educational Needs and Disability Act (2001)	63
B Disability Discrimination Act (1995)	64
C Human Rights Act (1998)	65
D Disability Rights Commission	65
E QAA Code of Practice - an Overview	66
F1 Case Study Example: UWIC's Learning & Teaching Strategy 2000-2003	67
F2 Case Study Example: UWIC's Widening Access Strategy 2001-2003	68
G Disabled Students Allowance	69
H Useful Web Addresses	70
References	73

Abbreviations used throughout the Book

NOTE:

The term 'disability' will relate to both disabilities and learning difficulties for the purpose of this guide.

BSL	British Sign Language. A visual form of communication used by some people who are deaf or hard of hearing and their interpreters. The language structure differs markedly from English, which is often the second language of BSL users.
CAA	Computer Aided Assessment.
CCTV	Closed Circuit Television.
DDA	Disability Discrimination Act (1995). UK legislation outlawing discrimination against people with disabilities in employment, the provision of goods and services, and the selling and letting of property.
DRC	Disability Rights Commission. An independent body created by the UK Government to help secure civil rights for people with disabilities.
DSA	Disabled Students Allowance. Payments from the UK Government to people with disabilities incurring any costs or expenses relating to their life as a student that arise because of their disability. See Appendix G.
GUI	Graphical User Interface. The use of icons, menus and graphics to access computer applications and programmes (e.g. Windows desktop).
HEI	Higher Education institution.
LEA	Local Education Authority.
LTSN	Learning and Teaching Support Network.
PDF	Portable Document Format. A file type created using Adobe Acrobat, usually for documents intended for hard-copy printing.
QAA	Quality Assurance Agency. A body created by the UK Government to promote public confidence that quality of provision and standards of awards in Higher Education are being safeguarded and enhanced.
RNIB	Royal National Institute for the Blind.
RNID	Royal National Institute for the Deaf.
SENDA	Special Educational Needs and Disability Act (2001). UK legislation preventing discrimination against disabled staff and students in the provision of education, training and other related services.
UCAS	Universities and Colleges Admissions Service for the UK.

continued over

VLE	Virtual Learning Environment. Online systems (often proprietary software packages) in which a discrete module or course can be created and used, often within an MLE (Managed Learning Environment) which includes the whole range of information systems and processes of an institution that contribute directly or indirectly to learning and learning management.
WAI	Web Accessibility Initiative. The World Wide Web Consortium's (W3C) commitment to lead the Web to its full potential, in part by promoting a high degree of usability for people with disabilities.

Referencing System: numbers = references
① = footnotes

Introduction

What does accessible curricula mean?

Accessible Curricula refers to designing course materials that are barrier-free. If course content is well designed so that students with disabilities are able to gain access to it, it will enable them to receive the same learning experience as their contemporaries. A corollary of this approach is that if course materials are made accessible for students with disabilities, the more 'usable' it is to all students.

How will you be able to make your course materials accessible?

Making course materials accessible can often require a very simple adjustment, for example facing the class when teaching a student who is deaf or hard of hearing or wearing a microphone² during a lecture. This Book will set out procedures for practical and more advanced technical issues (e.g. VLEs) in order to make your course content fully accessible.

Who may find difficulty accessing your course?

Identifying who the learners are should be done via the Admissions Process. If the student has ticked a box or boxes on the disability section of the UCAS application form, then they would be identified at this early stage.

Upon receipt of the UCAS form the course tutors will be able to liaise with the student and the department with responsibility for disabilities on specific issues relating to their needs, including accessibility of their preferred courses.

The UCAS codes for disabilities have recently changed, and at the time of publication were as follows:

- 0 None
- 1 You have a specific learning difficulty (e.g. dyslexia)
- 2 You are blind or partially sighted
- 3 You are deaf or hard of hearing
- 4 You use a wheelchair or have mobility difficulties
- T You have Autistic Spectrum Disorder / Asperger Syndrome
- 6 You have mental health difficulties
- 7 You have a disability that cannot be seen, for example, diabetes, epilepsy
- 8 You have two or more of the above
- 9 You have a disability, special need or medical condition not listed above

Why will some students choose not to disclose their disability?

A number of students may commence studies and choose not to disclose their disability and may 'slip through the net'. Some of the reasons students choose not to disclose are:

- ▶ Fear of self-disclosure (mental health problems, epilepsy etc.) and perceived stigma associated with their disability/learning difficulty.
- ▶ They do not wish to address their problem as a learning difficulty.
- ▶ They are afraid of being labelled with the term 'learning difficulty' if, for example, dyslexia is diagnosed.

² go to Section 3.1

- ▶ Individuals do not consider that they are disabled and a climate of encouragement to disclose may need to be created in order to highlight the benefits that disclosure can provide.

What happens if students enter the institution through other routes?

A number of students may enter institutions through routes other than UCAS, and thereby may not have the opportunity to disclose their disability. In these situations it is important that tutors ask applicants if they have any disabilities.

Good practice: encouraging students to disclose

There may well be occasions when lecturers will not be aware of a student's disability at the beginning of the programme of study. At the commencement of the academic year it is good practice to address your students. Encourage them to use confidential opportunities to disclose a disability as this will enable the student to get support. It is also good practice to inform students of what teaching and learning support is available to them if they are having difficulties (real or perceived) through a disability. The statutory code of practice for providers of post-16 education and related services sets out that institutions should be proactive in encouraging students to disclose a disability. Further, the QAA's Code of Practice on Students with Disabilities states that "Disabled applicants' support needs to be identified and assessed in an effective and timely way, taking into account the applicant's views".

Institutions should consider the following: developing an environment within which individuals feel able to disclose their disability; providing specialist advice in order to ensure those decisions by admissions tutors are as well informed as possible; developing systems which ensure that applicants with disabilities are not subject to undue disadvantage in terms of support if they apply later through the 'clearing procedure'; drawing up agreements with individual disabled students and all concerned which specify details of support and arrangements.

*"A student decides not to tell his institution that he has dyslexia despite several opportunities to do so. The course tutor notices that his test results are poor and asks the student whether he might like to consider having a diagnostic assessment to see whether he has dyslexia. The student brushes the tutor off and says he was just feeling tired that day. This appears to be a credible explanation of the student's performance, and the tutor gives a low mark for the student's test."*⁴

The institution may be able to reasonably claim that it did not know of the student's disability. **This is a reasonable justification under the new legislation.** There may well be occasions when lecturers will not be aware of a student's disability at the beginning of the programme of study. For further information on Disclosure, the DfES guide '**Finding Out About People's Disabilities: A Good Practice Guide For Further and Higher Education (2002)**' is a useful tool. In this example it would be advisable for the institution to keep a record of conversations with students regarding disability. Consideration should be given to how and where these records are kept (see also <http://www.cowork.ac.uk/development/materials/admissions/coventry.htm>).

Further the QAA's¹ Code of Practice on Students with Disabilities Precept 6 states that

“Disabled applicants’ support needs should be identified and assessed in an effective and timely way, taking into account the applicant’s views.

Institutions should consider:

- ▶ Developing an environment within which individuals feel able to disclose their disability.
- ▶ Providing specialist advice . . . in order to ensure those decisions by admissions tutors . . . are as well informed as possible.
- ▶ Developing systems, which ensure that applicants with disabilities are not subject to undue disadvantage in terms of support if they apply later through the ‘clearing procedure’.
- ▶ Drawing up agreements with individual disabled students and all concerned which specify details of support and arrangements”.

Why do I need to make sure that I make my teaching and learning practices accessible?

- ▶ As a matter of good practice.¹
- ▶ Recent educational legislation.²
- ▶ It is morally right to do so (Equal Opportunities Policy).
- ▶ Institutional strategies (e.g. UWIC’s Widening Access and Learning and Teaching Strategies⁴).

When will I need to make changes if changes need to be made?

Changes to teaching and learning practice should be implemented immediately as most of the education sections of the DDA (1995) and SENDA (2001) come into force from 1st September 2002. Similarly the QAA requires curriculum accessibility issues to be addressed.

You may find that you are already carrying out **accessible teaching practices** that are recommended in this Book, e.g. putting up lecture outlines on the Intranet. You may have taught students with specific disabilities for a number of years and are used to making ‘reasonable adjustments’ – this is good practice. Institutions need to build on the good teaching practices that are already being employed so that all curricula eventually become fully accessible. Thinking about why you need to make changes will facilitate further thought as to how soon and how easily you can implement them.

Attitudinal changes to disability

Attitudes to disabled people have changed significantly during the last century. From seeing disabled people as the passive recipients of charity, society has come to recognise the legitimate demands for disabled people to have equal rights. However, traditional preconceptions and long held prejudices still prevail. Barriers that prevent full participation in society confront disabled people every day of their lives. Activities that the rest of society takes for granted are denied to many disabled people.

Attitudes and subsequently social policy are beginning to respect diversity. Recently the change in attitude has been underlined by legislation.

The Human Rights Act 1998⁸ (see Appendix C) emphasises that individuals should not be denied the right to education.

Neither the legislation nor the QAA¹ can force changes in attitude: this must come from within.

"Education is vital to the creation of a fully inclusive society, a society in which all members see themselves as valued for the contribution they make. We owe all children - whatever their particular needs and circumstances - the opportunity to develop to their full potential, to contribute economically, and to play a full part as active citizens."⁶

Inclusion of disabled people throughout their school and college life is one of the most powerful levers in banishing stereotypes and negative attitudes towards disabled people amongst the next generation. When disabled and non-disabled people are educated together, this sends powerful messages to the whole community about the potential for a truly integrated and diverse society.

The right to inclusion is not sufficient in itself.

"Disabled people must have the right to pursue their education without unfair discrimination. What value do we place on education when a disabled person has rights against discrimination under the DDA (1995)⁵ when going to the cinema, but not whilst at school or college?"⁷

Part 4 of the DDA outlaws discrimination against people with disabilities and places the onus on educational institutions to make 'reasonable adjustments' to allow them access.

"The most beautiful and enriching trait of human life is diversity - a diversity that can never be used to justify inequality. Repressing diversity will impoverish the human race. We must facilitate and strengthen diversity in order to reach a more equitable world for us all. For equality to exist, we must avoid standards that define what a normal human life should be or the normal way of achieving success and happiness. The only normal quality that can exist among human beings is life itself."

Dr Oscar Arias, President, Republic of Costa Rica

DID YOU KNOW ...?

- ▶ Disabled people are twice as likely as non-disabled people to be unemployed and to have no formal qualifications.¹⁰
- ▶ The research finds that 61% of under-35 year olds said that they had no contact with individuals with disabilities/learning difficulties.¹¹
- ▶ Over 75% of people in Great Britain feel that there is prejudice against disabled people with only 6% believing there is none.
- ▶ In 1999/2000 there were 15,000 students with known disabilities studying for a first degree at universities in the UK.
Using the UCAS groupings, out of the 15,000::
 - ▶ 5,620 were students with dyslexia
 - ▶ 4,870 had an unseen disability
 - ▶ 690 were deaf/hard of hearing students
 - ▶ 520 were wheelchair users or those with mobility difficulties
 - ▶ 500 were blind/partially-sighted students
 - ▶ 300 had mental health difficulties
 - ▶ 30 required personal care
 - ▶ 590 had multiple disabilities
 - ▶ the remainder had unspecified disabilities

This list is not exhaustive – it is intended to give you an idea of the divergent nature of student disabilities and learning difficulties. The fact that a student is disabled may not be known by the institution in many instances.¹²

Section 1:

Parity of Learning Experience

Can we create parity of learning experience?

Parity of learning experience can be created if course materials are designed with accessibility in mind. If course materials are not designed in this way, it can act as a barrier to access for students with disabilities or learning difficulties. Accessibility and inclusivity are closely linked. It is good practice for coursework to be designed to be accessible to all. The QAA states that “institutions should plan and employ teaching and learning strategies which make the delivery of the programme as inclusive as is reasonably possible.”

(see Appendix E for further information on QAA¹ and Programme Specifications)

SOME THOUGHTS ...

- ▶ Students with and without disabilities fall along a continuum of learner difference rather than constituting separate categories.
- ▶ Teacher adjustments for learner differences should occur for all students, not just those with disabilities.
- ▶ Curriculum materials should be varied and diverse, including digital and online resources, rather than centring on a single textbook.¹³
- ▶ Instead of students learning from set curricula, curricula should be made flexible to accommodate learner differences.¹³

Different learning styles

As every teacher knows, there are large differences in the way individual students respond to the demands of education. A long tradition in educational research has been to attempt to pin down the learning style or cognitive style - the unique way of thinking and reasoning that characterises an individual learner. In essence individuals learn best in many different ways and the lecturer needs to be aware of this.

STUDENTS

May use a variety of learning styles.

May require a more flexible environment.

May not think they are very good at learning.

LECTURERS

Should consider presenting information and learning experiences in a variety of ways, to reach every student's needs.

Need to deviate from traditional forms of delivery and enable flexibility for a divergent student population.

Should consider introducing students to new ways of learning.

Tracey's story

Tracey has ME, which causes problems with muscle weakness, short-term memory and concentration. It affects her stamina and she finds being in college for the whole day very tiring. She has had ME for two years, being largely confined to the house prior to coming to university.

Tracey says, "I think if you have a disability and you're out and about a lot anyway you probably don't particularly notice it, but if you have something that impairs that you do notice - it really is a culture shock. It is quite difficult going into tutorials⁶ and having the confidence to say what you think, what you feel. It can also be very difficult to catch up if you have been away through illness."

As a consequence of being ill during the first year, the institution agreed that Tracey could do $\frac{1}{3}$ of the first year to begin with and then $\frac{2}{3}$ of it in her second year.³

Inclusivity

In line with the government's desire to promote widening access in higher education, some institutions have developed widening access strategies. The strategies should aim to attract more students with disabilities/learning difficulties, mature students, single parents, ethnic minorities, individuals from socially deprived areas etc. These learners may have diverse learning styles and require a flexible style of learning in order to fit in with work, childcare and other commitments.

If an institution wishes to attract and retain these students it is important to offer inclusive and flexible curricula. A useful resource can be found on the Teachability⁴ website <http://www.ispn.gcal.ac.uk/teachability/resources/inductionofstudents.html>.

Universal Design

Learners have different methods and rates of learning. If the curricula are designed with this in mind and use the basic premise of barrier-free design, it will allow for fully inclusive curricula. Thus all students, no matter how they access course materials, will be able to receive the same learning experience as their peers. This is the premise of universal design.

Curriculum design theories have been drawn from the area of universal design in the physical world. To draw on an example of physical accessible design consider the use of a curb ramp for individuals with wheelchairs (Newell & Cairns, 1987).¹⁵

Although the curb ramp is extremely beneficial for wheelchair users, it is estimated for every one individual in a wheelchair, 100 other users will use it (e.g. mothers with prams, shopping trolleys, bicycles, pedestrians). Thus the premise of universal design highlights that accommodations that are made for specific individuals can greatly benefit all individuals.

For many students, commencing university is a very traumatic experience. It may be the first time that they have left home or they may have been out of education for many years. Students with disabilities may not feel very confident about their academic abilities due to their particular impairment; they may also be feeling particularly anxious about talking to lecturers about their impairments and the kind of support that they will require.

David's story

"I remember when I first started at university – it was difficult finding my way around and when I got to the lecture theatre, ¹⁶ I couldn't see the projector image. I asked the lecturer and subsequent lecturers if they would give me lecture outlines on disc prior to the lecture so that I could print them off in large text. I did have to remind a couple of the lecturers a few times but then they were all consistently giving me the notes in advance and asking the class whether anybody else required them. After that I felt much better about being able to cope with lectures."¹⁵

Student with mental illness

Students with mental health problems will also need to be considered if they are away from studies due to depressive episodes, anxiety attacks etc.

If you have a student who has disclosed a mental health problem, take time out to find out about their particular condition and how it affects them so that you are sensitive to their needs. It will also enable you to have an understanding of why the student might need to take time off/have longer for assignments etc.

In order to retain students it is vital that good communication and an ongoing dialogue are maintained.

It will ensure that:

- ▶ The lecturer is informed when the student is ill and unable to attend lectures⁵/tutorials⁵/practicals²⁸ etc.
- ▶ If the student has email facilities at their home, the lecturer can keep in contact with him/her and can send lecture outlines.
- ▶ The lecturer will know that they need to go through the relevant channels to allow the student extra time for assignments, exams and completion date of course etc.
- ▶ Flexibility of learning can be established.

Gaynor's story

Gaynor had a mental health problem and because of the medication she was on, was finding it increasingly difficult to get to her first morning class. After several weeks during which she had missed all her morning classes, the tutor approached Gaynor and asked her in private if there was anything wrong. When she told him, he then approached the Head of Department to have a more flexible learning environment put into place for Gaynor, i.e. part-time attendance on a full-time course.³ By arranging flexible learning, the student was empowered to continue with the course and the institution did not lose a student.

Sue's story

Sue is doing a one year post-graduate course in IT support. Sue has clinical depression. Her main difficulties are concentration and motivation. Her mind is often too pre-occupied with her personal situation for her to be able to study. She is very glad to be doing the course, even when she finds it difficult, because it gives a structure to her day and gets her out of bed in the morning. It provides her with a goal, even if sometimes that goal does not seem very inspiring.

Since Sue disclosed her mental illness to the University the two-way communication enabled her to continue her course. She felt that the institution was very supportive academically by putting lecture notes up on the Intranet so that she could print them off when she was well.

CHECKLIST

- Listen and understand the student
- Ask what support a student may need
- Help plan workload
- Direct student to Disability Officer
- Be aware of own limitations - consult Disability Officer
- Form 'network of support' e.g. study groups
- Keep in contact if student is away from studies

Conveying information to your students

If there are specific issues such as reminders about a field trip, change of lecture location etc., that you need to convey to your students, it is important to consider doing so in a number of ways. This will ensure that no matter how the student accesses the information, they will be able to assimilate the information that you have distributed.

Verbally: If you need to inform students of a specific course issue, ideally it is better to inform them in the classroom when you have a captive audience. However, with the increasing divergent nature of the student population it may be that some students will not receive information in this way due to, for example, inability to attend lectures because they had to work to finance themselves, or their child was ill, or they were on agreed absence or have a hearing impairment. Course managers may need to think about how to identify problems individual students may be experiencing, for example by getting students to sign in to lectures, and how this information will be used.

For good practice, this information should be conveyed in several other ways if reasonably possible so that all students will receive the relevant information.

On the Intranet: If you need to contact all your students regarding cancellation of a lecture for example, you could post a message on your Web page (Intranet or Internet based). Some students will use the Internet on a regular basis and will be able to access this information. However, it should not be the only communication tool that is used, as a student may be away from the campus for a number of reasons and may not have an Internet connection at their living accommodation.

For students with disabilities: Students with disabilities may access the Intranet in many different ways. In line with the DDA (1995) and the QAA¹ it is fundamental that material posted up on the Web conforms to Web accessibility¹⁰ guidelines and good universal design.

By email: Email can act as an effective two-way communication between lecturer and student. It is an efficient, direct access tool in that most staff and students have access to email facilities within the institution, and a large percentage now have email facilities at home.

It should be noted that many students (particularly 'widening access' students) will have different ways of accessing email information (that is, from an old black and white laptop, hand-held computer, using magnifying equipment, screen reader software etc.). Access methods should be considered if you are attaching large files as these might take a long time to download over a slow

Internet connection in a student's home. Nevertheless, email can be extremely useful for lecturers wishing to contact students on work placements in the UK or abroad. It is particularly useful for all students to arrange appointments with tutors as it can be kept in the written form for reminder purposes. If students need to make an appointment to see their tutor, a diary system could be utilised in an email format or on a personal Web page.

For students with disabilities: For some students with dyslexia, using email can act as an aid to short-term memory problems. Other students with dyslexia may feel more comfortable with face-to-face discussions than the time it takes to compose an email; they may feel more able to express themselves in the spoken medium than the written medium. Students with visual impairments are able to enlarge the text on the computer screen, print off the email in large font or use a screen reader to read the message out loud. Students who are deaf or hard of hearing or with speech or language difficulties will also find email facilities a very useful communication tool.

Notice boards: If you have to put up a notice with the aim of reaching all your students, an inclusive practice would consider the following:

- ▶ Ensure that the notice board is accessible to all students, particularly those with mobility difficulties.
- ▶ Put up a note in large print (18 pt. sans serif font).
- ▶ Be aware of background/foreground colour.
- ▶ Don't put too much information on the page.
- ▶ Be aware of text format – don't use blocks of large text or italics.

Text-messaging: A vast number of students own mobile phones. Text messaging on mobile phones is a very useful communication tool for contacting students, particularly if you are aware that they may not be utilising email, Intranet/Internet or notice boards, assuming you are in an area with connectivity.

For students with disabilities: For deaf or hard of hearing students the evolution of text-messaging has revolutionised their lives and is an invaluable tool. Students who have some kind of speech or language difficulty may find text messaging very useful. Fax and minicom text phones are also useful.

Section 2:

Understanding the Needs of Students With Disabilities

Contact with your students

At the beginning of the academic year it will be invaluable for academics to spend a little time with students to discuss study strategies. Through this process the lecturer and the student can collaborate on issues that they feel will be demanding and thus may avoid potential difficulties that lie ahead. This will enable the lecturer to learn new ways of teaching and the student, new ways of learning.

"I went to my first lecture with Dr and he had a beard and moustache which I knew would cause me problems lip-reading. I introduced myself to him at the end of the lecture and said, 'You know, I'm deaf. Would you be able to give me lecture outlines in advance?' He did remember because the next day he came up to me and gave me some notes which was really helpful."¹³

For students with disabilities: Good communication between the lecturers and their students at the commencement of the programme is fundamental. The lecturer may have several students in their class who have 'hidden' medical conditions such as epilepsy, diabetes, ME, cystic fibrosis, asthma etc., or they may have fluctuating conditions. As a result of these medical conditions (or as a consequence of the prescribed medication) these students may become fatigued and be unable to attend a class or a tutorial. Illness, or the need to attend a hospital or GP appointment may also prevent students attending.

Language should be carefully chosen when addressing students, regardless of whether you have a student with a disability in your class. If you are unaware of the correct terminology for a particular disability, try to research the subject on the Web (see, for example, TechDis or Skill websites) or speak with your institution's specialist disability staff.

What Do I Need to Know When . . . ?

. . . Student uses a tape-recorder or laptop during the lecture

For students who have difficulty in getting down lecture notes, use of tape recorders, minidisks or laptops in lectures is extremely beneficial as a tool for learning. It is good practice to encourage the use of tape recorders in lectures and make provision for users to sit in the front for high quality sound and possible use of electrical points. It is advisable to recommend that students have sufficient battery power in such appliances to remove the need for trailing wires, which can be a Health and Safety hazard.

NOTE: In the event that you are planning to publish your lecture notes and have concerns regarding students taping your lecture, you can protect your copyright by getting the student to sign a release form agreeing not to release the tapes or otherwise hinder your attempts to copyright the lectures.

. . . Student requires the use of a sign language interpreter

If a student uses an interpreter for your class it may be helpful for you to understand the following guidelines:

- ▶ Ensure that the student and interpreter are seated at the front of the class so that there are no distractions.
- ▶ Face the deaf student and speak directly to the deaf person, not the interpreter. The interpreter is not part of the conversation and is not permitted by professional ethics to voice personal opinions or enter the conversation. Face the hearing-impaired student and speak to them in a normal manner. Do not make comments to the interpreter you do not wish to be interpreted to the deaf student, even if the deaf student's back is turned. The interpreter is there to provide a service, not chat with individuals.
- ▶ Remember that the interpreter is a few words behind the speaker. Give the interpreter time to finish before you ask questions so that the deaf student can ask questions or join in the discussion.
- ▶ Treat the interpreter as a professional. It is courteous to introduce the interpreter to the class at your first opportunity and to explain why they are attending. Do not ask interpreters to introduce themselves.
- ▶ Provide good lighting for the interpreter. Any time a presentation requires darkening the room to view slides, videotapes¹⁶ or films, auxiliary lighting is necessary so that the deaf person can see the interpreter. If a small lamp or spotlight cannot be obtained, check to see if room lights can be dimmed while still providing enough light for the student to see the interpreter and the interpreter to see the lecturer.
- ▶ Allow only one person to speak at a time during group discussions. It is difficult for an interpreter to follow several people speaking at once. Ask for a brief pause between speakers to permit the interpreter to finish before the next speaker starts.
- ▶ Speak clearly and in a normal tone when using an interpreter. Do not rush through a lecture, tutorial or practical. The interpreter or the deaf person may ask the speaker to slow down or repeat a word or sentence for clarification.
- ▶ Allow time for students to study handouts, charts or transparencies. A deaf person cannot watch the interpreter and study written information at the same time.
- ▶ When facilitating discussions, call on individual speakers rather than waiting for people to speak up. As the interpreter needs to be a few words behind, deaf students do not always have an opportunity to become involved in discussions. Also, individuals who are deaf or hard of hearing do not realise that other people are starting to speak and thus their contributions are passed over. Perhaps hand-raising to indicate the desire to comment in the discussion may prevent the deaf student being disadvantaged relative to the rest of the class.

¹⁶ refer to Section 3.2

. . . Student wishes to bring their guide dog into class⁷

For students with visual impairments with guide dogs, it is important to treat the dog as a working dog and not as a pet. Never pet the dog without the owner's knowledge and permission.

Things to be aware of with guide dogs

- ▶ It can be hazardous if the guide dog is distracted.
- ▶ The dog is usually 'working' when wearing the harness.
- ▶ When organising space for the guide dog – remember it is highly disciplined and requires very little space!³⁰

. . . Student requires the use of a note taker during lectures

For a number of students performing the dual tasks of listening and notetaking is an impossibility. Note takers are employed to take comprehensive and clear notes at lectures that are typed up and passed to the student within a short time period. This service allows the student to concentrate on the lecture via lip-reading⁷, using an interpreter or just listening. The cost of note takers may be met by the DSA. Student Services may be able to provide a note taker for students that require this service.

. . . Student wishes to use 'Speedtext'

Deaf students may wish to use 'Speedtext' (a notebook computer which utilises speech to text and is linked by cable to the Royal National Institute for the Deaf (RNID)). An operator will type 'live' what the lecturer articulates, and the student will receive the text on their screen. At the end of the lecture the student will be able to take away a transcript. This system is operated by the RNID. The costs for this system may be met by the DSA.

. . . Student wishes to distance learn

If students are accessing a programme via distance learning, there are a number of issues that need to be considered at the design stage, e.g. is the online material accessible to all students? The under-mentioned are some areas that need to be considered:

- ▶ Coursework will need to be in an appropriate format.^{1b}
- ▶ CD-ROMS will require a voice synthesiser – screen readers and text-to-speech are only possible if this is installed.
- ▶ Use of email^{1b} as a means of providing written information is strongly encouraged.
- ▶ If students are using assistive technologies⁷ ensure that course materials are fully inclusive.

As with any other form of learning, distance learning should ensure that 'reasonable adjustments' are made to ensure that the disabled student is not placed at a substantial disadvantage.

Case study: Cyril

Cyril has a visual impairment and is following a distance learning course. He submits his essay electronically and receives typed comments that his screen-reader can relate to him instead of hand-written comments which would be of no use to him.

. . . Student wishes to use video conferencing facilities

Many institutions have recently introduced video conferencing teaching suites. Video conferencing will enable collaboration and communication with individuals across the world.

For students with disabilities: For deaf students, the use of video conferencing may aid their learning experience since video conferencing at high bandwidth (e.g. ISDN 6 or better) is based on vision (unlike the telephone that is based on hearing). It may well give deaf students the opportunity to participate with their peers and thus will provide a fully inclusive curriculum. This type of access to education for deaf students may be central to the strategies of a particular institution. For examples, see Appendices F1 and F2, the Learning and Teaching Strategy and Widening Access Strategy employed at UWIC.

A study carried out in collaboration with Gateshead FE College and British Telecom³² focussed on the delivery of specialist courses for deaf individuals who were taught by deaf teachers. Central to the project was the ethos that video conferencing could 'remove the isolation of the individual learner and open up new opportunities . . .'.

"The reaction of the deaf audience was very powerful and there was a tangible sensation of barriers being broken down when the people in Southampton appeared on screen and people realised gradually the genuine communication opportunities which were literally opening up before their eyes."

A deaf student stated:

"With high quality video conferencing, we could have access to courses in our own language and would not have to travel so far away from home. It is unimaginable how this technology can change our lives and help to put us on an equal basis with hearing people all over the world"

CHECKLIST

- ☑ When taking part in video conferencing, students should wear plain clothing and if possible, use a dark blue screen as background.
- ☑ Communicating through British Sign Language via video conferencing is very tiring. Ensure that you allow sufficient breaks for both student and interpreter.
- ☑ Make conferences as brief as possible to avoid waning concentration affecting the learning outcomes of the exercise.
- ☑ Arrange the linkup in advance.
- ☑ If deaf or hard of hearing students are going to access the equipment independently, make sure there is a textphone number for the people at the other end. This is necessary to check the linkup arrangements. Alternatively use PCs with chat, IRC, ICQ, ICU or NetMeeting

Useful Resources

- ▶ A very useful video for staff development is 'Creative Teaching: Inclusive Learning' produced by the Tertiary Initiative for People with Disabilities, Queensland University of Technology, Australia.

Section 3: Preparing Yourself, Your Material and the Learning Environment

3:1 Effective Teaching Strategies

What do I need to do?

There are simple, practical steps you can take to ensure that all students will understand your lecture and will have the same learning experience as their peers even if the information is presented in a different way.

General classroom strategies

- ▶ Face the class when speaking.
- ▶ Encourage students to ask questions and ask students to repeat the question if you are unsure as to whether they understood OR
- ▶ Repeat discussion questions from other students since not all students will be able to hear their peers.
- ▶ Give both oral and written instructions.
- ▶ Use OHP etiquette¹ – e.g. put key phrases on the overhead projector or on the whiteboard/blackboard.
- ▶ Vary your presentation methods and teaching strategies.
- ▶ Prepare course materials early. This will ensure that you, the student or any other support staff have enough time to make any adaptations such as enlarging the materials or providing them on disc to the student.
- ▶ Provide students with a list of new technical terms or subject-specific abbreviations.
- ▶ Make assignment sheets and reading lists available in electronic format (e.g. electronic mail on the Web) or offer enlarged text or provide on disc.
- ▶ Do not walk around the class or pace back and forth.
- ▶ Repeat discussion questions while facing the class.
- ▶ When using videos provide a written summary of what the video shows in advance of the session or arrange for it to be subtitled or provide a transcript.

For students who are deaf, hard of hearing, or have a speech impairment: For some deaf or hard of hearing students who may need to lip-read, it is essential for them to sit at the front of the class and for you to face the class as you speak. Avoid standing in front of a light source such as a window or bright light. The bright background and shadows created on the face make it almost impossible to lip-read. As lip-reading takes great concentration it is imperative to speak clearly and offer contextual clues to enhance the student's understanding. (It is common practice for individuals who lip-read to pick-up only 10-15% of what an individual is saying). Lip-reading is a demanding

task and it is recommended that frequent breaks be implemented within the programme of lectures to allow the student a short rest. Some deaf students may be using an interpreter¹⁵ so ensure that you provide sufficient time for complex terminology to be relayed to the student by the interpreter. If lecture outlines are given in advance, the student will be able to give the interpreter the outline prior to the lecture for them to learn any complex and subject-specific terminology. This is an important element of signing. Moreover, sign language interpreters will require frequent breaks, as it is quite an arduous task to translate spoken English into British Sign Language, which has a different grammatical structure.

For students using wheelchairs or with multiple disabilities: Some students have multiple disabilities. For example, a wheelchair-using student may need to use a laptop, and may need to sit at the front of the class to plug the computer in. Also, it is of no use to a student to be placed in a designated wheelchair area at the back of the lecture if he or she cannot hear the lecture.⁶

When talking with a student using a wheelchair, talk to them at eye-level (not looking down from above), make eye contact and do not lean on the wheelchair.

For students with dyslexia: It will be beneficial to express essay and project titles in clear, unambiguous language; preferably reiterating this information in a varied form¹⁶ (Intranet, noticeboard, handouts etc.).

For students with visual impairments: Preferential seating is important for the visually impaired student. When visual cues are not available, the student must receive all auditory cues possible. Reading out OHPs is good practice. Seating arrangements should be made at or before the first lecture. It will be good practice to orient the student to the room by explaining where things are located and to guide the student around the room.

For visually impaired students with guide dogs¹⁷: It is important to treat the dog as a working dog and not as a pet. It can be hazardous if the guide dog is distracted. Never pat the dog without the owner's knowledge and permission. Normally, the dog is 'working' when wearing the harness. However, it is good practice to provide a water bowl for the dog.

Reading lists

Making reading lists available well in advance of the start of studies is good practice for it will allow all students to purchase the books prior to the start of the academic year and will allow enough time if they or the library has to order them.

For students with disabilities: Having the reading lists well in advance can be a crucial aid to their learning. Dyslexic students who may have difficulty with reading for long periods or need to utilise strategies for basic reading and spelling difficulties will find having the books in advance extremely beneficial. The extra time for these students allows them to work their way through the reading materials and assimilate the information. For this group of students, it will be useful to direct them to core texts and chapters rather than simply giving long reading lists. If you offer hard copies of reading lists rather than online documents, it will be of great benefit to offer them in different coloured papers for dyslexic students.

Similarly, blind students will benefit from early receipt of reading lists in order for required literature to be translated into Braille or put onto audiotapes prior to the commencement of studies. The Royal National Institute for the Blind (RNIB) and the National Library for the Blind have an extensive library and reading lists can be organised with them. Both visually impaired students and students with dyslexia will benefit from having the lists in advance either online, on disk or printed off in large text.

Mature students who may have other commitments, single parents, people who work to support themselves etc., will all benefit from advanced receipt of reading lists.

Production of course materials

It would be good practice when printing course material, whether in-house or through an outside design/print agency, to have the documents assembled in the 'comb-bound' format. Comb-bound materials, which lie flat when opened, will enable all students to use the book without using both hands to keep it open and they can therefore utilise the computer at the same time. Also if comb-bound, pages can be scanned more easily for screen reading if not available electronically.

For individuals with manual dexterity difficulties this type of bookbinding can be extremely beneficial.

Wearing a microphone

The wearing of a microphone can be useful for all students, particularly if you are lecturing in a large lecture theatre or in a lecture theatre that has considerable extraneous noise. Ensure microphone is working prior to commencing the lecture delivery.

Outside speakers and microphones

A number of programmes invite outside speakers to talk to the students. When outside speakers use large lecture theatres or theatres that may be overcrowded or have extraneous noise, they should be required to wear a microphone.⁶

It is important to explain to the speakers the importance of wearing the microphone. Although these individuals are not employees of the institution, under the DDA it is the institution's responsibility to ensure that students are not discriminated against by any employee or agent of the institution, including guest speakers. In other words, it is the institution's responsibility to arrange for guest speakers to wear the microphone. It is also important to adhere to health and safety issues, e.g. ensuring that no one will trip over leads or wires as a consequence of using the equipment.

For students with hearing impairments the wearing of a microphone by the lecturer may enable the student to fully understand and participate in the lecture, dependent on the quality of the microphone and loop.

Taping of lectures

Some students will value the taping¹⁵ of lectures as their method of receiving information. If this is the preferred method for students, then the lecturer should ensure that the students are able to sit in the front of the lecture theatre⁶ or in an area where there are electrical points. Consideration should be given as to how one articulates diagrams, graphs and other visually orientated materials to students who prefer to tape lectures. If you have concerns regarding the taping of your work and copyright issues, please consult your institution's legal adviser prior to delivery of the lecture. Further resources on this topic can be found on the website of the Distributed National Electronic Resource at <http://www.jisc.ac.uk/dner/>

Further useful resources on the provision of course materials can be found at:

<http://www.cowork.ac.uk/development/materials/lectures/lectures.htm>

<http://www.ispn.gcal.ac.uk/teachability/resources/lectures.html>

Section 3: Preparing Yourself, Your Material and the Learning Environment

3:2 Learning Materials

How can I help all students?

The lecture still remains one of the main tools for delivery of information to the student. In order for all students to obtain a positive learning experience from the lecture there are a number of issues that need to be considered. Most academics will use lecturing materials and equipment as aids to their lectures. Consideration needs to be paid to the types of equipment that are used, how they are used and how to ensure that all the students in the lecture will be able to have equality of learning experience as a result.

Lecture outlines and other documents in advance of the lecture

It is recommended that lecture outlines (e.g. general handouts, OHPs etc¹⁶) be offered in advance to the student. The QAA¹ states that Institutions should make adaptations to deliver in accordance with particular students' needs. All students will ultimately benefit when lecture notes are delivered in advance. For example:

- ▶ Prints out the lecture outline in large text (e.g. 18 point type) for students with visual impairments or specific learning difficulties (e.g. dyslexia).
- ▶ Gets lecture outlines printed in Braille (following prior consultation with the student regarding their requirement).
- ▶ A dyslexic student who finds it easier to read information on coloured paper will be able to download the lecture outline from the Intranet, enlarge the text and print off on favoured coloured paper.¹⁷
- ▶ A student who is deaf or hard of hearing requires the use of an interpreter¹⁸. The module has complex terminology. Receiving lecture notes in advance will enable the interpreter to learn the signing for this vocabulary.

NOTE: Braille or audiotape transcriptions may take considerable time to organise. Also check students can log onto the intranet from home as the institution firewall may prevent this.

What are the benefits of providing lecture outlines in advance?

If students bring to the lecture previously distributed notes that they have worked through, they will have the benefit of background information. They will be able to scan the notes and listen to the lecture and may be more able to raise any issues/questions that they have because they will not be furiously scribbling down (often illegible) notes. Annotating your notes will also help them expand their knowledge.

Providing information in alternative formats

Why is it so important to provide information in an alternative format?

According to the QAA Code of Practice on Students with Disabilities¹: “Institutions should consider making arrangements which ensure that all academic and teaching staff plan and employ teaching and learning strategies which make the delivery ... as inclusive as is reasonably possible.”

They should:

- ▶ Make adaptations to delivery that are appropriate for particular students.
- ▶ Provide handouts in advance and/or in different formats such as Braille, on disc etc.
- ▶ Provide information in alternative formats and ‘take on board’ confidentiality.

A disabled person has the right to request that the existence of their disability be treated as confidential. The student may feel embarrassed by their disability and may wish to keep it from their peers. The lecturer must therefore consider alternative ways of making ‘reasonable adjustments’.

Case Study: Jack

Jack has a visual impairment and requires course notes in a 16 pt. font. The normal practice is for the lecturer to provide large print handouts at the start of the lecture. However, because Jack has requested confidentiality, the lecturer agrees to give him handouts in advance so that he can look at them before the lesson but does not have to be seen reading them during the class.

Photocopying up notes from A4 to A3 to enlarge the text is unsatisfactory as it makes them unwieldy – try to stick to an enlarged font size on A4 paper. This is an example of good practice and under the DDA might be an appropriate ‘reasonable adjustment’.

PLEASE NOTE: In some cases a confidentiality request might mean that a less satisfactory ‘reasonable adjustment’ is provided or that no ‘reasonable adjustment’ can be provided.

Case Study: Paddy

Paddy, a student with AIDS on a Chemical Engineering course, does not want other students to know of his condition. His condition means that he sometimes needs to have time off. His tutors have offered to arrange extra time in the laboratory for him after hours to make up for the time he misses. However, he has refused this on grounds of confidentiality. Instead they offer to provide him with extra lecture outlines.¹³

Although this adjustment is less effective, it is likely to be deemed a ‘reasonable adjustment’ under the DDA (1995).

For students who do not have access to your lecture outline on the Intranet (which will be minimal since most students will use college computer workstations and many have Internet access at home): It is recommended that an outline be put on disc. This is particularly useful for individuals using assistive technologies or for students who have been away from the course due to illness and do not have Internet access at home.⁹

For students with visual difficulties and specific learning difficulties such as dyslexia: Lecture outlines in advance will help to alleviate some of the anxiety and frustration that they have regarding 'getting down' lecture notes. Further, putting the information on the Intranet will enable students with dyslexia to download the information for themselves and print off in the format they desire, such as in large font size or different coloured paper.¹⁷

Case Study: Jeff

When Jeff reads text, his peripheral vision vibrates. Fluorescent or white lights exacerbate this. Tinted spectacles and a daylight lamp help to reduce the vibration. When writing, he makes a lot of spelling mistakes and sometimes reverses sentences. When he reads over his work, he does not see the mistakes. He says he usually makes several spelling mistakes in the title of an essay and even in his own name. Computer spell-checkers do help to some extent, but tend not to have specialist dictionaries relevant to his subjects. He finds taking notes in lectures very difficult. Writing requires a lot of concentration for him and he rarely does it in lectures because it is too distracting. He tries to get copies of handouts before lectures, so that he can read over them in advance and he may write one or two words onto the handout in the course of a lecture, otherwise he simply listens. He says copying is awful because it involves both reading and writing. If he has to copy anything, he does it letter by letter and still sometimes gets the letters wrong when he writes them down. He also has difficulties with his short-term memory: he sometimes cannot remember from one hour to the next what he is supposed to be doing.¹⁷

Good Practice: it would be very beneficial to someone like Jeff to have the full lecture notes transcribed on to tape. Jeff could do this by utilising a tape recorder during the lecture and arranging for the tape to be transcribed following the lecture.

"It helps to have the notes beforehand especially with a new subject, so that when you arrive at the lecture you are already warmed up."¹³

For students who are deaf or hard of hearing: It is very useful to give lecture outlines in advance for the interpreter.¹⁸ It would also be very useful for students who lip-read⁷, for lip-readers aren't able to actively follow what the lecturer is saying and write down notes at the same time.

"I can't listen and make notes at the same time." (Lip-reader)

"Having the notes online is good as you can look at the spelling of technical words"
- student with dyslexia

“Online coursework is great because I download it to my PC and can enlarge text and don’t have to constantly use a spellchecker ” - student with dyslexia and visual impairment.¹⁶

Lecture notes in advance: good practice

CHECKLIST

- It enables students to prepare for the lecture.
- It allows students to listen to the lecture.
- Students won’t have to rush to write down what was on the PowerPoint presentation or overhead projector before it is whisked away.
- Students will be able to be more active participants within the lecture environment.

For students with disabilities: The above good practices will serve to assist a wide variety of students with disabilities. Providing lecture outlines in advance will facilitate a barrier-free programme of study. Deaf, hearing impaired students, students with motor impairments or dyslexia will particularly benefit from receiving handouts in advance of the lecture.

Elise’s story

Elise describes herself as speech deaf. She can hear sound, but cannot decipher the words, unless, as happens occasionally, they are at a certain frequency. If she can see the speaker, then she lip-reads:

“My hearing is the equivalent of radio stations being jumbled up where you might get one word, but when they look at you ... I'm not saying it's 100%, but the difference is phenomenal.”

In lectures she asks the lecturer to wear a radio mike which amplifies sound into an earpiece that she wears. She finds it difficult to take notes in lectures, because she cannot lip-read and write at the same time. If she has not managed to take many notes during a lecture, she asks the lecturer for a copy of the lecture outline. She finds it difficult if a speaker turns away, covers their mouth or speaks quickly. She went to one lecturer recently to ask him to speak more slowly:

“I said to him “you rushed through it and I ... got the odd word now and again, but I couldn't keep up.” I can't remember looking at the notes I did take because I was busy trying to get them down, trying to watch him and I was missing all sorts. The result is I can't fill in, so I went and I asked him if I could have a copy of the lecture and he said yes.”

Elise could possibly have used the services of a note-taker, paid for out of her Disabled Student Allowance and co-ordinated by the Disability Department. This would have enabled her to try and listen to the lecture whilst gaining good quality lecture notes from the note-taking service.

Use of overhead projectors

Although overhead projectors are hardly a new technology, advances in related technologies have changed the way this equipment is used. For example, many lecturers now insert complex diagrams and typed text onto the transparencies.

“I hate it when lecturers put typed information on the overhead projector – the result is often that there is far too much information on them for me to copy down, that is, if I can see it clearly enough to copy from.”

Although the above comments are a criticism of putting too much information on an OHP, typed information is (usually) more legible for all students than the hand-written form.

However, in taking note of the above student’s comments, it is wise (and good practice) not to insert too much information. All students may have difficulty reading vast amounts of text on the screen because:

- ▶ students could be sitting at the back of a large lecture theatre⁶ and
- ▶ it serves to increase cognitive overload.

It is wise to pay some thought to the distance students may be from the projector, i.e. they may be sitting at the back of a large lecture theatre. Even students with 20/20 vision may have difficulty reading complex diagrams from the back of a large lecture theatre. Diagrams should be accompanied by a printed version.

What other things do I need to consider when designing overheads?

- ▶ Use a font size of at least 30 pt.
- ▶ Be aware of type of font used – ‘sans serif’ fonts such as Arial or Comic Sans are easier to read for many people.
- ▶ Blocks of upper case tend to be harder to read compared to lower or mixed case. It is recommended that you use mixed case.
- ▶ Use bold to highlight rather than Italics or underlining (as this can make the words ‘run together’).
- ▶ Do not put too much information on each overhead - 6 bullet points are optimal. Overflow on to the next slide, if necessary.
- ▶ Use bullets or numbers rather than continuous prose.
- ▶ Keep lines left justified with ragged right edge.
- ▶ Use boxes or increased spacing between lines to break up text.
- ▶ Use wider spacing between sentences and paragraphs.
- ▶ Do not begin sentences at the end of a line.
- ▶ Allow only one subject matter per slide.
- ▶ If you have to use complex diagrams ensure sufficient colour contrast - do not use yellow and light green for example – they will not show up particularly well at the back of a large lecture theatre.

- ▶ Colour labels appropriately with strong colours.
- ▶ Use contrasting brightness as well as colour.
- ▶ Never put more words on an OHP than you would on a t-shirt – keep all visual materials clear and concise.

For students with dyslexia, colour visual impairments and other visual difficulties: If you design overheads to the above recommendations these students should be able to follow them. However, further recommendations are:

- ▶ Be aware of background/foreground combinations, as some are very difficult to distinguish for those with visual impairments.
- ▶ Do not use colour to convey meaning as some students may have visual difficulties e.g. colour blindness for red and green.
- ▶ For students with dyslexia ensure that the layout of each slide is easy to understand if inserting a diagram, graph, complex table etc.



Useful resources on the use of colour can be found at:

<http://www.cowork.ac.uk/development/materials/video/video.htm>

<http://www.rnib.org.uk/seeitright/welcome.htm#8>

Use of PowerPoint presentations

If PowerPoint presentations are used for the delivery of course materials they should follow the rule-of-thumb of overhead transparencies (see above).

A FEW MORE POINTERS ...

- ▶ A dark background and light text is best for dark rooms.
- ▶ A light background and dark text is best for light rooms.
- ▶ Keep the same background colour throughout the presentation.
- ▶ Avoid patterned backgrounds.
- ▶ Minimise volume of text – use phrases not sentences. Use bullet points.
- ▶ When using graphics/visuals to add interest, be aware of the colour combinations.
- ▶ Only use one or two text colours, one or two font styles and one or two animation or transition effects.

By following the outlined specification, you will ensure that most students will be able to read the slide from a considerable distance.

PowerPoint handouts: If you offer handouts to students in advance of the lecture it is good practice to:

CHECKLIST

- Put the presentation on the Web for student to download. Ensure that it conforms to Web accessibility standards.¹⁰
- Prepare the slides ready for printing off by students; use no more than three slides to a Web page and enlarge the slides to a minimum of 12 pt.
- Print off copies of notes in large text (minimum of 14 pt) for students with visual impairments or specific learning difficulties such as dyslexia, in case they do not have access to the Intranet because of part-time study, illness etc.

NOTE: Please be aware when putting a large PowerPoint presentation on the Web or your institution's VLE or intranet it will cost the student a considerable amount of money to download. It may be helpful therefore to:

- Save the slides as a RTF file and import into two columns in a Word document that can be accessed from the Intranet or handed out in the lecture.
- Save as HTML rather than as gifs.
- Encourage and explain how to transform PowerPoint presentations into black and white Word documents to save printing time and money.

Use of video and audio equipment

It is good practice to provide transcripts for video¹⁶ and audio presentations carried out in the lecture. Individuals may not remember all the key points from a video or audio presentation and thus the transcription can act as a learning aid.

For students with disabilities: Transcripts for deaf and hard of hearing students should encompass universal design principles by enabling the students to have access to the same information as everyone else.

If you have students with impaired hearing it would be useful to provide them with a list of course related television programmes with subtitles that are available. To view BBC TV subtitles either select page 888 on Ceefax or follow the set top box instructions to get digital TV subtitles. Information on BBC subtitles can be found at: http://www.bbc.co.uk/info/progs/pro_h2.shtml.

It is good practice for videocassettes to have subtitle captions. It may be reasonable to introduce captioning as more in-house videos are produced for courses with a large number of students. Moreover, it may be that academics need to demand that service providers produce videos with subtitles so that it is in line with the new educational legislation, in fact media services may already be covered by the DDA as a service to others. Further resources can be found on the websites of the Distributed National Electronic Resource (<http://www.jisc.ac.uk/dner/>) and the British Universities Film & Video Council (<http://www.bufvc.ac.uk>).

MAGpie is a tool for captioning computer-based video and multimedia material. It can be downloaded from <http://ncam.wgbh.org/webaccess/magpie>

Section 3: Preparing Yourself, Your Material and the Learning Environment

3:3 The Lecture Theatre

What Must I Think About When Choosing a Lecture Theatre?

It is often an arduous task to plan and allocate lecture theatre space. For all students, noisy or overcrowded lecture theatres can act as a barrier to learning. However, with skill and planning, these environments/situations can be avoided. In the case of organising lecture theatres for students with disabilities, the task is made easier if the lecturer is aware in advance that they will, for example, be teaching a student with a hearing impairment or who is a wheelchair user.

It is essential when organising lecture theatre allocation that one understands the needs of students with disabilities e.g.:¹³

- ▶ A student with a mobility impairment may not be able to walk up the stairs.
- ▶ A student with a visual impairment or who is deaf or hard of hearing may need to use assistive software such as Braille 'n' Speak or Speedtext¹⁴ and may require an electrical point to plug in their laptop, although it is advisable to recommend that students have sufficient battery power for the lecture to avoid dangerous trailing wires, which can be a Health and Safety hazard.
- ▶ A dyslexic student may need to use a tape-recorder and/or laptop and will require a lecture theatre that has electrical points at the front.

Choosing an appropriate lecture theatre

When organising lecture theatre space, it is important to consider the types of students that you will be teaching. Collaboration with the department with responsibility for disability issues and the student prior to the commencement of the academic year will allow you to make decisions about a lecture theatre's suitability. However, there may be occasions when lecture theatres have to be re-arranged.

In order to address the suitability of a lecture theatre for all students, it is important to consider:

CHECKLIST

- Has it got a hearing loop for students with hearing impairments?
- Check microphone is in place and working correctly.
- Has it got wheelchair access that does not make the wheelchair user unnecessarily conspicuous?
- Will it be suitable for a student who has a guide dog?¹⁵
- Has it got power points in the front for students to place tape recorders or for the use of laptops?

- ☑ Has it got networked points for accessing the Web as part of a lecture?
- ☑ Is the room going to be overcrowded and is there extraneous noise?
- ☑ Is there enough time for students with mobility difficulties to get to their next lecture theatre at the other end of the campus?

For students with hearing impairments: If you are aware that you have students with a hearing impairment attending your lecture, it will be necessary to choose a lecture theatre with a hearing loop for those using hearing aids. The lecturer will need to wear a microphone² that will be linked up to the hearing loop. When the hearing aid is switched to the telecoil position (T) it is able to pick up speech transmitted as a magnetic field by the loop system. The hearing aid user will know that the system is in place by recognising a displayed 'T' sign and they won't be able to hear other sounds.

Changing the location of a lecture

It may be necessary on occasions to change the venue of a lecture at short notice. If this is the case, it is fundamental that all students are considered. Currently some lecturers may post news and information up on their Web site or on the Intranet. Other lecturers may post information on notice boards. If you do have to change the location of a lecture it is good practice to offer a number of different methods of notification. This will ensure that all students will get the information.

"You get lectures moved quite considerably and they put messages on the department computer screen. Because the computer screen flicks, I can't read the whole screen before it flicks to the next one and so have real difficulty in understanding messages."¹⁷

Offer a number of different methods of notification.¹⁸

Overcrowded/noisy lecture theatres

It may be difficult for all students to concentrate on the lecture in an overcrowded environment. Interference from extraneous noise can distract all students, resulting in them not being able to follow the lecture and taking poor quality lecture outlines. This can later cause problems when the student wishes to transcribe them into high quality and understandable notes.

For students with disabilities: As outlined above, overcrowded lecture theatres can be a disadvantage to all students but for students with particular difficulties it can make taking down lecture notes even harder to deal with. For example:

- ▮ Students who experience panic attacks and anxiety problems may find overcrowded rooms particularly anxiety-inducing.
- ▮ Wheelchair users often have other disabilities or learning difficulties. Some lecture theatres dictate that wheelchair users are sited at the back of the lecture theatre. This may cause great difficulty to the student if they have a hearing or visual impairment.

If the lecturer has no alternative but to use a lecture theatre that they know will be overcrowded, it would be good practice to offer good quality lecture outlines in the classroom. These lecture outlines can also be:

CHECKLIST

- Posted on the student Intranet.
- Given as handouts at the lecture.
- Placed in the library or specified resource room for photocopying.
- Provided on disk, if requested by students.

Lectures in darkened environment

If you are presenting a slide show or video and require a darkened room, be aware that students will not be able to take down notes. It will be very useful to distribute copies of your presentation with extra notes prior to the lecture.

For students with disabilities: Students who lip-read⁷ will not be able to see your face. It will be necessary to use a spotlight. Individuals who require sign language interpreters will require lighting in the lecture theatre in order for the deaf student to be able to see their interpreter.¹⁸ Students with visual impairments may require a greater light level than other students.

NOTE: It is important to liaise with both your institution's estates department and disability officers if additional features are required in lecture theatres.

Section 4:

Learning in Small Groups

How Do I Provide an Accessible Tutorial?

GENERAL

Tutorials are usually part of a course programme that can be used to stimulate discussions in small informal groups. They enable collaboration and provide an opportunity for students to address the lecturer with specific issues and questions relating to an area of study. They are also very useful as a vehicle for giving students the opportunity to develop presentation skills.

The tutorial environment will offer the tutor an opportunity to become more aware of difficulties that particular students may face. These difficulties may be due to a number of factors, e.g.:

- ▶ Mature students may have been out of the educational system for a number of years and do not feel very confident.
- ▶ Some students may never have delivered a presentation before.
- ▶ Through their disability, a student may be anxious about group participation or carrying out a presentation.

For tutors who will be teaching in small groups, it is good practice to adopt a sensitive approach and to encourage the students to be honest about any issues that they may have difficulty with so that there is room for discussion and resolution of the problem.

There are a number of other practical things that the tutor can do to enable the student to fully participate in the tutorial:

- ▶ Consider seating arrangements – i.e. form chairs in a semi-circle so that students who lip-read⁷ can see everyone's face.
- ▶ Only allow one individual to talk at any one time.
- ▶ Repeat what the student has said.
- ▶ Rephrase what the student has said if it isn't particularly clear.
- ▶ Use a flipchart or whiteboard to aid what the student has said and allow them to follow.
- ▶ Put the main ideas of discussion on a board or a chart.
- ▶ Provide a discussion paper prior to the tutorial – this will enable students to prepare for the discussion and potentially increase their confidence levels.
- ▶ Have breaks if the tutorial is particularly long so students remain active participants.

For students with disabilities: Visually impaired students and students with specific learning difficulties (e.g. dyslexia) will find it very useful to receive discussion papers in advance of the tutorial since they may wish to use assistive technologies¹⁷ to read the paper or to print it off in large font or Braille.

A student's reflection: Elizabeth

I believe group work can badly affect disabled students - especially those who have long term illnesses that require a different lifestyle to that of able bodied and/or fit people. University is challenging for everyone who attends, but most students will acknowledge that there is no need to be at lectures for 8 hours per day, 5 days per week. I chose to study at university for this reason, rather than to aim for vocational qualifications. I planned to use the rest of the time to recuperate physically at home whilst reading for my assignments and exams. Many of us feel that the traditional ways of employment are not suitable for us and we need to structure our lives differently – finding ways to work from home either part- or full-time. University can often be the only route to this kind of employment (perhaps writing journal articles, researching for organisations or tele-working via a networked computer in our homes etc). Group work seems to be based on a set idea of what 'work' means that does not apply to us all (the same could be said about placement modules which some colleges and universities are bringing in).

Many students like myself enjoy collaborating and working with other students – in our own time, on our own terms and in a situation where we will not be penalised for the laziness or lack of academic ability of others. Exams and essays may not be to everyone's taste but at least you get marked on your own work. At the end of the day, the degree that you get only has your name on it, not those of others you have worked with.

Elizabeth is in her 20s and has had ME for 10 years

For blind or visually impaired students: If you have any blind or visually impaired students in your tutorial class, ask anyone who speaks to introduce themselves, including yourself. Get into the habit of verbalising to the student when anyone is entering or leaving the room.

For students with language impairments: It may be particularly useful to repeat what has been said in order to help facilitate the presentation or to aid the student to participate in the discussion.

For students who are deaf or hard of hearing: It will be useful to have breaks (particularly if the tutorial is long) for students who lip-read since this can be tiring. If a student is using a British Sign Language (BSL) interpreter¹⁶, union rules dictate that an interpreter has a break every hour. It is good practice that if an interpreter is to be required for a half-day or longer, two interpreters are employed who can take turns. For hearing-impaired students who wear a hearing aid, the use of a radio microphone² will assist the student to fully participate in the tutorial, particularly if there is extraneous noise.

"I felt as if the lecturer was thinking, 'She is not really present, she is away in another world, she is not contributing.' I knew that was what he was thinking. But I couldn't hear! I was trying to hear, but I was getting lost all the time in what everyone was saying."¹⁷

Jane – hearing-impaired

A break during the tutorial will also be good practice for students who may have a medical condition, since they may become fatigued easily.

For students with physical and motor impairments it may be necessary to relocate the tutorials if your room is not accessible.

Some students with medical or mental health issues may need to attend hospital or visit their GP regularly and will not be able to attend some tutorials. Providing them with information/handouts will ensure that they can catch up. Other students may require long periods of agreed absence from their studies. Providing them with written information or keeping in contact with them via email⁹ or the telephone will ensure that they do not feel isolated and may prevent them from thinking about leaving the programme of study.

Flexible attendance

A number of students with differing needs may benefit from agreed flexible attendance at tutorials. Students who have to work to support themselves, mature students, single parents etc., may all have other commitments and will find a flexible approach to tutorials less stressful on their already overburdened time. 'Reasonable adjustments' should be made regarding their attendance.

Presentations during tutorials

Presentations for some students can create anxiety-related issues. It is important to discuss with the students strategies for building up their confidence and how to use alternative methods to carry out a presentation if PowerPoint, overhead projectors or flipcharts, for example, pose difficulties.

Case study: Daniel

Daniel had verbal communication difficulties, which made him very self-conscious when talking to groups. His self-esteem was quite low. He was particularly nervous about presentations and participating in tutorials. However, presentations formed part of the programme he wished to access. Having spoken to the admissions tutor at the university, they jointly agreed on how best he would be able to contribute. Daniel would utilise PowerPoint and the tutor would be happy to repeat Daniel's articulation to the group. He would also sit next to Daniel with a notepad and pen to address and clear up any misunderstandings.

"I felt that the university was very proactive in being able to find ways around my verbal communication difficulties. Without the sensitivity and guidance of the tutor I wouldn't have gone past the first few weeks without giving up, feeling absolutely worthless."⁴

How do I co-ordinate group work for students with disabilities?

Group work may be a necessary requirement of the course, the basic idea being that it encourages collaboration, communication, time management and other important skills that will be of use in the workplace. If the group work involves students working together to produce a piece of written work (e.g. an essay of 10,000 words, to make a poster or to give a presentation) consideration should be made as to how the groups are formed. This is important because students will come to the group with diverse backgrounds. Mature students, single parent students, students from ethnic minorities and students with disabilities may have very little experience of working within mixed groups. Indeed, some of these students may have very little confidence in conferring with peers or may feel dis-empowered because of previous experience. Encouragement and sensitivity are the key to ensuring that each student fully participates and offers an equal contribution to group work. Tutors should 'lead by example' by making the whole class aware of specific disability and widening access issues in a sensitive way without making any student feel uncomfortable.

If the premise of the group work is that students arrange to meet regularly and share out the workload between them, the tutor should ensure that if there is a student who is likely to have difficulties, they are considered relative to the rest of their peers. It is important that everyone takes responsibility for presentations and that all members of the group make the most of their strong points and are supported by each other on their weaker ones.

Section 5:

Laboratory Practicals

How Do I Ensure Accessibility in the Practical?

GENERAL

When designing programmes that include laboratory procedures, working in studios etc., consideration should be made to the required student learning outcome. You need to decide whether the objective is for the student to merely understand what is being carried out or whether the student needs to be an active participant. The key aim should be to negotiate with the student in order to jointly reach an innovative solution to any potential difficulties associated with practical tasks.¹⁸

Is learning by observation sufficient to achieve the course objectives? This can be a key component of many practical settings. If, however, being a 'hands-on' participant is a necessary part of the programme, a student with a disability may be able to work with an education support worker and direct them through the task. This would be good practice and would incorporate the principles of inclusive learning.

What preparation can the student do? If an outline of the practical is given in advance to all students it can aid them to prepare for the task prior to the laboratory/studio session.¹⁹

For students with disabilities or learning difficulties: Having an outline of the laboratory or studio work is important in order for the student to be prepared and to discuss any potential barriers that they may face in the environment.

There is no reason to assume that students with disabilities will be less careful or will pose a greater hazard than other students in the laboratory. This argument was borne out by a study carried out in Washington in 1987 by Stern, Lifton and Malcolm when they carried out research with 1400 disabled laboratory employees.³¹

Case history: Nick

"We carried out experiments in a huge lab that was very noisy. I have a hearing impairment and on my very first class I found it very stressful that I could not hear the lecturer. I spoke to my lecturer who offered to give me typed instructions at the very next class. He did! It was so much easier."

There is certainly a need to enforce good laboratory practices and sensible safety measures for all students. The suggestions that follow are good practice for all students. This is not an attempt to provide a comprehensive discussion of laboratory safety. For further information on safety in laboratories, see <http://www.hsl.gov.uk>

Needs of students with disabilities in the laboratory:

Disability/Learning Difficulty	Practical Issue	Resolution
Deaf/hard or hearing	Unable to hear demonstrator over noise	Use written information
	Unable to hear video ¹⁶	Use captioning or transcripts
Students who use wheelchairs	Work bench too high	School to purchase adjustable height benches†
Visually impaired/Dyslexia/ Motor impairments	Use of virtual laboratories	Ensure access to assistive software is available (e.g. screen readers/magnifiers) and that material is presented in the most accessible way possible
Various disabilities	e.g. use of hand-held magnifiers	Purchase equipment, e.g. clamps for holding items

† Every teaching laboratory should have at least one adapted workbench²⁴

Good laboratory practice

- ▶ Always discuss procedures and any special safety considerations with the students before allowing an experiment to begin. Safety rule sheets should be available in alternate formats such as on disc or large print.
- ▶ Arrange, and discuss, evacuation plans for fire and other emergencies. Review such plans periodically. Ensure the evacuation plan covers individuals with motor difficulties and visually impaired students.
- ▶ Give all students safety quizzes or safety-rule sheets to read, sign, date, and return to the instructor. Go over these procedures and rules with the students. Ask open-ended questions to obtain clarification. Provide in alternative formats such as on disc or large print.
- ▶ Ensure copies of safety rules are posted at heights to suit all laboratory users.²⁰
- ▶ Give the student with impaired vision an opportunity to become familiar with the laboratory before the first session. The student can then participate in the safety-orientation programme with little trouble and will already know the locations of exits, showers and extinguishers.
- ▶ Discuss and resolve any limitations with students who have impaired vision. Can the student read labels? Are the labels big enough? Are Braille labels or raised-letter reagent bottles available? Consult with the student as to whether there are any operations too risky for the student to handle alone.
- ▶ Assign the student with impaired mobility to a lab station on an outside aisle and close to an accessible exit, if possible. Students with impaired hearing should have lab stations that afford an unobstructed view of the instructor.

- ▶ Students, including those with impaired vision or poor manual co-ordination, are strongly urged to wear rubber gloves when working with harsh chemicals or those readily absorbed by the skin.
- ▶ Accessible and usable eyewashes should be located near the disabled student's workstation.
- ▶ When a student who is deaf or hard of hearing is working in a lab, it is helpful to have available equipment with lights or other visual means of indicating on and off status, although most equipment can be monitored easily by touch. Alarm systems should also be visual with flashing lights. Expensive changes to equipment are seldom needed for deaf students. For example, they can feel when a timer sounds if they hold it in their hands.
- ▶ Lightweight fire extinguishers should be provided for mobility-impaired students, but all students should be instructed in the use and limitations of fire extinguishers and in fire drill procedures. Lightweight dry chemical fire extinguishers are often the only kind a mobility-impaired student can handle and are preferred as almost all dry chemical fire extinguishers have a greater effective range and extinguishing capacity than the carbon dioxide extinguishers usually provided in laboratories.²⁵
- ▶ Good general laboratory practice greatly enhances accessibility, such as leaving aisles clear of obstacles, ensuring shelves are easily reachable by all users, and ensuring the appropriate protective clothing is worn at all times by all users.

Laboratory practices orientated towards students with disabilities

Case study: Ed

"When I commenced my human science degree I was obviously very apprehensive about my visual impairment. However, I had previously met with the academic tutor regarding my disability and we discussed how my school had made provision for me in the laboratory. He didn't feel that this was a problem at the university. The laboratory had a microscope that was capable of magnification for my needs and labels were printed off in a larger text. Lecture outlines were put up on the Intranet in advance so that I could print them off in large text."

This is an example of good practice and appropriate 'reasonable adjustments'.

For useful case studies of people with disabilities working in science and technology laboratories, see the book *Able Scientist, Technologist; Disabled Person* (1998) or the video 'Disabled Students in Chemistry' both by C. Hopkins and Professor A.V. Jones, available for £15 each from Eslek Publications, 36 West End, Long Whatton, Leics LE12 5DW, e-mail: Ironsideuk@aol.com.

Section 6:

Work Placements and Field Trips

How Do I Organise Accessible Work Placements and Field Trips?

In line with DDA (1995)² all staff responsible for organising work placements and field trips must be aware of the importance of creating an inclusive curriculum in order for all students to have the same learning experience. Institutions should ensure that academic and vocational placements and field trips are accessible wherever possible, selecting settings and locations with this in mind. Providing alternative experiences or comparable opportunities may be deemed to be a reasonable adjustment but this is not necessarily the case. Providing support for all students before, during and after placements is good practice. The QAA¹ Code of Practice on Students with Disabilities supports this approach.

“Institutions should ensure that, wherever possible, disabled students have access to academic and vocational placements including field trips and study abroad.

Where placements, including international placements, are a formal requirement or standard component of the programme, institutions should consider ways of ensuring that specified learning opportunities are available to disabled students by:

- ▶ Seeking placements in accessible contexts.
- ▶ Providing specialist guidance on international placements.
- ▶ Re-locating field trips to alternative sites or providing alternative experiences or comparable opportunities which satisfy the learning outcomes.
- ▶ Working with placement providers to ensure accessibility.
- ▶ Providing support before, during and after placements that takes account of the needs of any disabled students, including transport needs.”

GENERAL

It is crucial to provide the student with support before, during and after the placement so that all their needs are met – including transport needs. Support before the student attends the placement should involve confirmation that the placement has an Equal Opportunities policy, staff development in this area, and protocols and procedures in place to ensure that the policy is implemented for able-bodied students. This should be the norm for all students. The implementation of the DDA Part 4 in September 2002 strengthens this requirement.

Under the DDA (1995) students on placement may be protected by different parts of the Act.

For example:

A disabled student is studying for an undergraduate degree in engineering. As part of the course, she has to undertake a sandwich placement in an engineering firm. She works in the engineering firm for a year and has a contract of employment with them. Whilst she is on the placement, the engineering firm has responsibilities under Part 2 of the Act (employment) and the Institution where she is studying for her degree has responsibilities towards her under Part 4 of the Act.³

The institution has a duty under the Act to work with the student and the business to set up the necessary support and to monitor the placement and step in should things go wrong. However, any treatment that the student receives on the placement is not the responsibility of the institution because it is not made by or on behalf of the institution. If (and only if) the student has a contract with the placement provider then they are protected under Part 2 of the Act (as in the example above) and their employer will also have duties towards them. A useful DfES guide is available on this topic, entitled 'Providing Work Placements for Disabled Students: A Good Practice Guide for Further and Higher Education Institutions (Jan 2002).

Disclosure

If students are agreeable to disclosing²⁰ their disability to the potential employer it is in their best interest. Ill-prepared placement providers can often lead to poor experiences for all (and could possibly jeopardise the future availability of placements). Prepared placement providers who are fully informed of the needs of their students often encourage staff awareness and will be more likely to make adjustments.

NOTE: Institutions could face legal action by the prospective employer at a later date if the employer deems that they have lost business as a result of the student's undisclosed disability.²³

CHECKLIST

It is good practice to:

- Encourage the student to disclose his or her disability.
- Forge strong links between institutions and placement providers.

Example: students with dyslexia

It is important to be aware that if you are placing a student with dyslexia in a work environment, they may encounter tasks such as organisational skills, written notes, short-term memory tasks, checking of work, as well as spelling and maths. Depending on the degree of dyslexia, some students may have difficulty with some of these tasks. If the placement provider is not aware of the student's learning difficulty, then they will not be in a position to make reasonable adjustments.

²⁰ see also Introduction

Good Practice: students with physical difficulties

For students with physical difficulties, the following should be taken into consideration:

- ▶ Seeking placements in accessible contexts.
- ▶ Mobility/transport to and from the place of work and around the premises.
- ▶ Ensure all essential facilities are accessible or adapted for the student e.g. washrooms.
- ▶ If the student is in receipt of a Disabled Students Allowance they may be eligible for financial support to meet the costs of the placement, if it is regarded as integral to the course itself and part of the ongoing educational experience.
- ▶ If the employer pays the student, they may be able to claim transport costs through the 'Access to Work' programme. The student will need to liaise with a Disability Employment Advisor (DEA) at their job centre.
- ▶ Working with placement providers to ensure they are well versed on the specific issues relating to the student's disability, which may include: type of equipment required, software and hardware required, access to information, signage, in particular height above floor level.
- ▶ Providing support before/during/after placement (i.e. a disability mentor).

Case study: student with speech or language difficulty

Julie had a speech impairment. She had no experience in the workplace prior to commencing studies and as a consequence lacked confidence. Her project tutor liaised with the placement provider to ensure that the company was aware of the specific issues relating to Julie's speech difficulties. For example, the tutor discussed with the provider that Julie would have difficulties with:

- ▶ Confidence through her disability.
- ▶ Use of the telephone. Julie may need to use an alternative method of communication.
- ▶ Communicating with the line manager and work colleagues.

Work placements abroad

Placement abroad should operate under the same conditions as placements in the UK. The following case study highlights the need for good liaison with third parties in organising placements abroad.

Case study: Mark

"The organisation responsible for my work placement in Munich was not particularly happy that I had a motor disability and found it difficult to walk great distances. However, I had the opportunity of talking with another student who had carried out the same placement the previous year. Apparently the living accommodation was in the same building as lectures so I wouldn't have to walk too far. In fact I could almost fall out of bed! Why wasn't this information recognised as an accessible feature of the placement by the organisation?"

If students with disabilities are offered placements away from home, it is good practice to offer a longer settling in period in order to locate medical centres, student welfare and other local facilities that they will need to access.²³

Checklist

- Provide specialist guidance on international placements.¹

Case study: Judith

Judith applied to college to commence a language degree course that required her to spend a year abroad. The course tutor discussed with Judith the course requirement. Following a thorough read through the Programme Specification (Braille copy), Judith, who is registered blind, came to the decision that it would not be feasible to complete the course that she had originally planned. After further discussion with the course tutor, it was agreed that Judith commence an alternative language degree that does not require her to spend a year abroad.³

Field trips

When arranging field trips, the organiser needs to consider a variety of issues for all students - from health and safety through to organising transport and cost implications. These issues are critical. The field trip may need to be adjusted or alternative arrangements made (reasonable adjustments) in order to make the trip inclusive for all students, such that all students will have an equal learning experience.

Open University example

The Open University attempts to provide field experience in geology during its summer schools for any student who wishes to benefit from it, subject to safety considerations. Most students travel by coach, but some may use their own adapted transport. Some localities are wheelchair-accessible, others require additional helpers or the use of crutches, for example. Access is to some extent governed not just by absolute accessibility, but also by safety considerations, especially when sites are, for example, operating quarries, where some operators are reluctant to allow disabled access.

Following consultation between the Open University and the student whereby a specific location is deemed inaccessible, alternative learning experiences will be provided e.g.:

- ▶ Videos.
- ▶ Slides and overheads.
- ▶ Projector transparencies of localities.
- ▶ Samples of rocks and fossils.

NOTE: These alternative learning experiences can be used for ALL STUDENTS.

The Geology School at the Open University is also developing a virtual field trip on CD-ROM.²¹

A field trip organiser should be aware of what to do in the case of a medical emergency for all students. When organising field trips for students with disabilities/learning difficulties the same procedures should be adhered to as would be for all students, i.e. an inclusive approach.

The organiser should be aware of accessibility issues relevant to the specific student in advance of the trip so that with awareness, they should be able to find a solution to get around any perceived barriers. A very useful reference on Learning Support for Disabled Students Undertaking Fieldwork and Related Activities can be found at <http://www.chelt.ac.uk/el/philg/gdn/disabil.htm>. Useful disability-specific references in the field of Geography, Earth and Environmental Sciences can be found at <http://www.chelt.ac.uk/el/philg/gdn/disabil/bibliog.htm>

What do I need to do when organising field trips?

- ▶ Plan early.
- ▶ Ensure that there is discussion/negotiation with all students about any mobility/fitness problems that they may have which might have an effect on the likely course challenges and requirements.
- ▶ In these discussions consider both the formal curricula of the field course and the more informal learning and social 'events' - e.g. which local pubs are accessible?
- ▶ Seek mutually acceptable ways of ensuring participation, e.g. student may need to use their own adapted transportation.
- ▶ Ensure effective liaison with the Disability Department. Ensure discussions consider the potential need for specific equipment, the organising of technological or personal assistance, the resources required and how these will be managed.
- ▶ Link with local authorities and organisations to ensure access.²⁶

Case Study: Rita

Rita is a mature student with chronic back injury caused through lifting patients when nursing, before becoming a student. She is allowed to make her way to field sites in her own vehicle. When on residential courses, Rita provides her own bed support. She carries out fieldwork within her physical capabilities. Alternative activities may be provided where necessary.²⁶

Assessments of field trips

For students with mobility difficulties, a School might consider the possibility of low/easy terrain routes being arranged as an alternative. If students have to miss field trips as a result of their disability, assessments could be amended to miss out questions on these trips.²⁸

Case study: Why exclude people with disabilities from field trips?²⁷

"I have been aware for some time that there was a sector within the geoscience undergraduate cohort that was being disadvantaged by their inability to participate in fieldwork. I was also aware that the pattern of employment in the geoscience sector was changing and that many of our graduates were finding vocational employment that actually involved no fieldwork and was often computer based. Therefore why exclude people with disabilities?

In rewriting our definitive course documents, I decided that our 'flexible pathway' - Earth Sciences (which involves a lot of student choice) could be restructured to include those students who could not participate fully or even at all in fieldwork. I included the phrase 'Students will normally be expected to study XXX (the unit with fieldwork) unless there are extenuating circumstances such as a medical condition or other compelling reason'. This prevents students opting out of fieldwork because they say they do not like it.

In practice, it is always evaluated on an individual basis. The student comes to us with a known condition. We have a very good disability unit here and they are very supportive. If we have a student who can do no fieldwork at all then this is no problem. They just go onto the Earth Science pathway and select options that do not include fieldwork. The problems arise when the disability is such that they can (and want to) do some fieldwork but are not capable of undertaking all of it. All fieldwork is subject to a Health and Safety Appraisal and this consideration overrides any other. I then sit down with the student concerned and the Undergraduate Tutor and we go through the field course and decide what components the student can or can't do. We then assess whether it is feasible for the student to attend, if it is financially viable and if the student will be doing enough for us to make a meaningful assessment at the end. We certainly do not have sufficient funds or staff to allow the luxury of additional helpers on a field course just to aid one individual.* Where alternative transport can be sensibly arranged we will do so. Certain medical conditions need to be monitored and all field course leaders have a manifest that details medical conditions and if necessary appraises staff of what to do if emergencies arise.

All students must do an independent 4 week field based project in the long vacation between their 2nd & 3rd years. Clearly we monitor that very carefully."²⁷

Whether the cost of making a particular adjustment is 'reasonable' or not needs to be considered in relation to the importance of the support, the level of disadvantage which the student will experience without the support, and the overall financial resources of the individual institution. If the student is eligible for DSA, this may pay for a helper for such a trip.

The legislation sets out an example of 'reasonable adjustment' during a field trip:

As part of an Earth Science course, students are required to undertake a field trip involving an overnight stay in a mountain hut. A student who needs regular dialysis cannot stay overnight in the hut because the hut is not an appropriate environment for her to set up her dialysis equipment. A likely reasonable adjustment would be for the tutor to arrange for her to take part during the days but for someone to return with her to a nearby village at night where she has set up her equipment.

Section 7:

Assistive Technology and Equipment

What is Assistive Technology?

Assistive technology includes both equipment and software that are used to maintain or improve the functional capabilities of a person with a disability. Many high-tech and low-tech devices are now available to assist people with disabilities in the educational setting.

Types of user and assistive software

Here are some examples:

Type of user	Software Requirements
Dyslexia	Assistance with spelling, thesaurus and word prediction. Scanning text. Mind-mapping. Speech-to text (user dictation). Text-to-speech (screen reader).
Visual impairment	Text-to-speech (screen reader). Braille embosser.
Low Vision	Magnifying text. Scanning text. Text-to-speech (screen reader).
Physical difficulties	Speech-to-text (user dictation). Text-to-speech (screen reader). Mouse equivalents.

Types of equipment for students with disabilities

Here is an outline of the types of equipment that will be required in order for students with disabilities to have the same learning experience as their peers:

- ▶ Large computer monitors (21") with refresh rate capability of 85 Hz.
- ▶ Higher specification computers.
- ▶ CCTVs (for magnification).
- ▶ A3 Scanners and printers.
- ▶ Ergonomic chairs and desks.
- ▶ Footrests.
- ▶ Back rests.
- ▶ Arm rests.
- ▶ Key guards.

- ▶ Gel wrist rests.
- ▶ Split keyboards.
- ▶ Copy holders.
- ▶ Glare filters.
- ▶ Cordless Mouse.

A study at Deakin University, Victoria, Australia²⁹ on students' use of assistive technology found:

- ▶ That students felt empowered by the use of assistive technology.
- ▶ It provided additional control over learning.
- ▶ It increased their independence.
- ▶ It enhanced their self-esteem and increased motivation.

'Non-traditional' learners, (specifically learners with disabilities and learning difficulties) have been able to communicate and learn on an equal playing field since the advancement of assistive technology. There is a wide range of assistive technology available and what the student uses will depend on their specific disability. (For example, for access to the WWW and Virtual Learning Environments some students with visual impairment will utilise screen reading software that will read the text out to them).

Below is a brief outline of how assistive software aids students in the learning experience:

Magnifying software

Individuals with low vision primarily use magnifying software. Normal sighted users will usually use a 12-point font size. A number of low vision users will need 18 or 20 pt. or even higher. Magnifying software has revolutionised the use of computers for individuals with low vision.

However, images, complex drawings, popup windows etc., can cause problems for the user because:

- ▶ Graphics can become 'pixelated' – that is, when they are highly magnified they can look distorted.
- ▶ Complex tables are confusing when users have to keep scrolling up and down and left and right on the screen.
- ▶ Pop-up windows showing the ALT tag (this is a description of a graphic or image) magnify much larger than the magnified area and are confusing to the user.
- ▶ Some designers use images of text and these become distorted when highly magnified.
(see page 58)

Word prediction software

Students with impaired manual dexterity problems and/or dyslexia often find word prediction software very useful. It will have a thesaurus with dictionary definitions and homophone checking. Word prediction software is not often used by people with visual impairments as screen reading programmes do not cope well with it.

Scanning software and equipment

Blind students and students with visual impairments or dyslexia who have difficulties in reading books and articles may use a scanner with a text-to-speech system. This can be a laborious task for students, particularly if the basic scanner can only scan single sheets and does not take books. Further errors may creep in that blind students may not be aware of. However, sheet feeders will speed up scanning with OCR software (optical character recognition software used with scanning equipment) for multi-sheet documents, provided they are not inappropriately bound. Students find saving scanned documents to disc particularly useful because they can access this information in a way that is beneficial to them, e.g. enlarge text size or use text-to-speech software to read it aloud.

Mind-mapping (concept formation) software

Students with dyslexia and other specific learning difficulties often prefer to think in pictures rather than words. They have the opportunity to use mind-mapping software in order to build a visual map of ideas using pictures, colours, shapes and relationships. They will use the technique for note taking, for remembering things and for organising ideas for written work. Many products are available, such as MindManager.

Speech-to-text software

A variety of users may find speech-to-text software very useful. Individuals with dyslexia, manual dexterity difficulties and mobility impairments may use this software to assist them in their learning. This software requires continuous speech dictation into a microphone. A lot of practice is required to build up accuracy in translation from speech to text. The software is also able to read back text and will re-play sections of dictated speech, although dictating academic material may not be suitable.

Example: Kurzweil 3000

'Kurzweil 3000' is a combination of scanning and text-to-voice software and will save pages as they are scanned. The software provides both visual and auditory feedback. 'Kurzweil 3000' will highlight text in context with pictures and will scan images and displays in colour. It will also read text aloud to the user at their own pace. Blind students and students with visual impairments and dyslexia find this software and Kurzweil 1000 particularly useful.

Screen reader software

Screen reader software is able to convert screen information into speech by the use of a speech synthesiser or the computer's sound card. Generally the user will control the computer using the keyboard rather than the mouse. Many of the keyboard commands used are the same as a sighted person would use, e.g. open your file menu by pressing Alt-F and close the file menu by pressing the Alt key again. Visually impaired users also use special keyboard commands created by the screen reader, e.g. a keystroke to read information in the title bar or the status menu.

This powerful software has opened up a world of opportunity for blind and visually impaired individuals. It is also very useful for individuals with reading difficulties or individuals whose preferred method of learning is to listen rather than to read words on the computer screen, although they are rarely used for this purpose as they are often considered too troublesome. Screen reader software enables the user to work with a wide variety of popular applications from word-processing software to spreadsheets. Up-to-the-minute screen reader software is very sophisticated and is able to read complex forms, frames and graphics (if written descriptions [ALT tags in the case of Web pages] are inserted).

Screen readers have no way of discriminating what is important within a document or Web page, and it is fundamental to ensure good design and a logical navigation structure with descriptions for any non-text elements. Screen readers process text linearly from left to right, moving down the screen one line at a time. An outline of the page structure at the beginning may aid users of screen reading software. Screen readers cannot describe images unless an alternative text description is included.⁸ It is also good practice to test Web pages on several different (old and new versions) browsers to ensure the information is displayed properly.

Demonstrations

Screen reader Demonstration

If you are likely to be posting modules online or putting up a Web site, it will be invaluable for you to have a go at a screen reader demonstration in order to gain an understanding of how it works. WebAIM (Web Accessibility In Mind - <http://www.Webaim.org>) have designed a demonstration that is based on a mock site for a fictional university.

Go to: <http://www.Webaim.org/tutorials/simulations/screenreader>

In order to access the simulation you will require the Shockwave plug-in.

To download the plug-in go to: <http://sdc.shockwave.com/shockwave/download/frameset.fhtml>

Low-vision demonstration

In order to get an understanding of what it is like to read a Web page as a student with low vision, it would be very useful to try a simulation such as the one provided by WebAim. It will enable you to gain an understanding of the difficulties faced by students using highly magnified software, e.g. 'pixelated' images and unrecognisable art text.

Go to: <http://www.Webaim.org/tutorials/simulations/lowvis.html>

Useful Resources

TechDis Accessibility Database: <http://www.techdis.ac.uk>

The National Federation of Access Centres: <http://www.nfac.org.uk>

Section 8:

Assessment and Examinations

Why is it important for equality in assessment and examinations?

Introduction

The need to record and assess academic achievement is an integral part of the higher education experience for all students. For disabled students it is essential that they are assessed in such a way as not to disadvantage them, and equally, in a way that does not give them an advantage over other students. It is also essential that adjustments are made only after discussion with the particular students about what choices there are for them. According to the QAA Code of Practice¹ on Students with Disabilities:

“Assessment and examination policies, practices and procedures should provide disabled students with the same opportunity as their peers to demonstrate the achievement of learning outcomes.

Institutions should consider implementing procedures for agreeing alternative assessment and examination arrangements when necessary that:

- ▶ Are widely published and easy for students to follow.
- ▶ Operate with minimum delay.
- ▶ Allow flexibility in the conduct of the assessment.
- ▶ Protect the rigour and comparability of the assessment.
- ▶ Are applied consistently across the institution.
- ▶ Are not dependent on students' individual funding arrangements.”

The QAA guidelines further suggest that institutions may also wish to consider the use of computers, amanuenses, readers, availability of examination in alternative formats etc.

According to the DDA Part 4 (2001), institutions must make reasonable adjustments for students in examinations. These reasonable adjustments are closely linked to the suggested adjustments in the QAA Code of Practice¹ on Students with Disabilities.

A lot of information is available on the theory, practice and validity of different methods of assessment, following a move from traditional methods such as unseen essay and examinations, to a variety of assessment methods and continuous assessment. It is important to remember that it is not appropriate to assume that groups of students with similar impairments will require similar adjustments, since much depends on the individual's coping strategies and experiences of their disabilities. Further, it is easy to make assumptions about what an individual is capable of when an adjustment is used to facilitate the assessment, for example.

For students who are deaf or hard of hearing: These students should not be excused from delivering oral presentations if there is a possibility of using a BSL interpreter, but equally an interpreter should not be used unless they are given time to familiarise themselves with the presentation and technical terminology.

When awarding marks, the circumstances of the student's disability and its impact (if any) on the assessment process should be considered.

All students should be made aware at the outset of the course that the institution has a policy for requesting modifications to assessment and examinations, and how they could go about making such requests.

Very often some official requests are dealt with centrally and students receive modifications to their examinations. However, it is important to remember that if class tests form the basis of continuous assessment, that the modifications are also put in place by individual tutors so as not to disadvantage the student.

SOLUTION: Putting in place procedures to ensure that all relevant staff receive such information is vital.

Planning and Information

Planning the assessment process in advance and informing students what is to be expected of them provides an ideal opportunity for students with disabilities to identify any areas in which they may require adjustments to be made.

Providing to students at the beginning of the module a course outline including a description of the assessment processes and their importance relative to each other and to the total course marks is good practice. Where possible a choice of adjustments should be offered where the disabled student cannot perform the assessment for a course as easily as the other students. For example, when assigned an essay task, a lecturer might expect all students to have read/referenced at least 10 books and journal articles. Blind students may have difficulty in being able to access and/or work their way through a large amount of books/journal articles. Accepting that the student has read 3 or 4 good quality references might be a 'reasonable adjustment' under the new legislation. Alternatively, the lecturer may offer key sources relevant to the assignment for these students.

Physical Environment

There are many considerations to be made when placing disabled students in an examination setting. The legislation requires that reasonable adjustments be made, e.g. students who are deaf or hard of hearing may need to lip-read and should not be placed where there may be strong light behind the person speaking. Students who use wheelchairs may need to be allowed into the exam room prior to other students to give them time to prepare themselves.

Case Study

An institution insists that all potential students sit a basic English test before being admitted onto a particular programme. The test lasts an hour. A disabled person applies for the course. She has severe back pain when sitting still for long periods and needs to be able to get up and move around. The institution arranges for her to sit the test in a separate room so that she can do this. This is likely to be viewed as a reasonable adjustment for the college to make.³

Alternative Formats

Certain students may be unable to perform the form of assessment selected by the lecturer, and adjustments will need to be made. Lecturers should consider whether there might be several modes of assessment which achieve the testing of the course objectives.

For students who are deaf or hard of hearing: Deaf or hard of hearing students who use BSL, which has a different construction to English, may have difficulty understanding written questions and may wish to have their questions and responses translated by an interpreter.

For visually impaired students: These students may need to deliver their responses to exam questions orally, or using screen-reading software, which would need to be in a different location to the other students being assessed, to avoid disturbing them. If using an alternative location, it will be necessary to arrange for extra invigilators, preferably with some experience of the alternative technology being used (if any) and some degree of ability in general technical support.

Alternative Timing

Some students may not be able to manage the timing of exams. Certain students may be unable to sit for long periods, others may be unable to arrive and prepare for an exam by 9 a.m. Rest breaks, toilet breaks and alternative timings may need to be considered. For example, certain impairments may affect writing or typing speed, others stamina and others the speed with which the student can focus, read and re-read questions and formulate their responses.

Example: extra time in examinations

An institution gives a disabled student a poor mark for his examination. The student experiences fatigue and cannot concentrate for long periods. The institution is aware of this. The reason why the student has performed badly in his examination is related to his disability and so he has been treated less favourably. The institution tries to justify treating the student less favourably by arguing that this is necessary for maintaining academic standards. However, the institution failed to make a reasonable adjustment for the student by allowing him short rest breaks.

Practical Assessment

Most issues relating to practical assessment should be resolved at an early stage, when practical classes take place. For example, as part of their practical course work, students of sports-related subjects may have to undertake some coaching.

A reasonable adjustment for a deaf student who is a radio aid user would be to use a BSL interpreter when carrying out the coaching tasks. See also the section on Laboratory Practicals (Section 5).

Marking

If any students undertake an assessment in a form different to the majority of the class, their work should be marked around half-way through the other responses, to ensure the assessor has a feel for the general range of responses before they encounter the different-format response.

Computer Aided Assessment

Computer Aided Assessment (CAA) is being implemented in higher education for a number of reasons. When considering this form of assessment, institutions should develop policies and procedures, which offer uniformity of provision but are sufficiently flexible to accommodate the needs of particular students.

CHECKLIST

- Consult with your institutional Staff Development section for training on assessment via computers.
- Gain understanding of more common assistive technologies (see Section 7 Assistive Technologies).

If a student/group of students are to perform examinations using computers, invigilators must ensure that the Documents menu is clear prior to the examination. Invigilators should check again afterwards to ensure the only document open is the examination file. They should continue to check screens to ensure no other windows are opened during the examination.

By allowing the use of assistive technologies, CAA can enable some students with disabilities to be assessed in the same manner as their peers, which can help to reduce any feelings of special treatment they may experience.

This section is a very brief introduction to the area of Assessment and Examinations. Readers are strongly advised to source more detailed information in the Useful Resources section below.

Useful Resources

- ▶ Australian National University (2002), Managing Oral Examinations for Students with Disabilities, <http://www.anu.edu.au/disabilities/moeswd.html>
- ▶ Cowork Project <http://www.cowork.ac.uk/development/materials/assessment/coventry.htm>
- ▶ Earle, S., Adams, M. and French, D. (1999) A National Survey of Assessment Practices in Higher Education: Special Provisions for Students with Disabilities.
- ▶ McCarthy, D., and Hurst, A. (2001) A Briefing on Assessing Disabled Students, LTSN Generic Centre Assessment Series No. 8 <http://www.ltsn.ac.uk/genericcentre/projects/assessment/>
- ▶ SHEFC (2000) Teachability: Creating an Accessible Curriculum for Students with Disabilities, Disability Services, University of Strathclyde, Glasgow G1 1QE. Teachability Project <http://www.ispn.gcal.ac.uk/teachability/resources/assessments.html>

Section 9:

Web Accessibility

Can You Make Your Web Page and Online Coursework Accessible?

9.1: Background to disability access to the Web

There are many students who have some sort of disability that makes it difficult, if not impossible, to use much of the Web. Many pages contain features that restrict them from accessing some or all of the content within it. Disabilities that restrict students from being able to access content include blindness, colour blindness, dyslexia and lack of fine motor control. Whatever the reason, it is fundamentally important to ensure that those with a disability are able to access the materials that are placed on the Web.

New legislation such as Part 4 of the DDA dictates that nobody should be discriminated against in any aspect of their education on the grounds of their disability. The same laws that require UK universities to provide access to assistive technologies such as Braille readers and speech encoders require that material placed on the Web is accessible. It is possible to design an online or electronic learning resource that is both aesthetically pleasing and accessible to enabling technology. However, inaccessible Web pages continue to arise primarily due to a lack of Web designers knowledgeable of the techniques to combine accessibility with aesthetic appeal. Some resources are listed in the Resources section at the end of this chapter.

The legislation outlined earlier could, potentially, have far-reaching implications on institutions with regard to computer based learning materials. It is essential that teachers and support staff do not discriminate against students with disabilities by their use of IT to support learning and teaching.

The QAA's¹ Code of Practice states:

“Institutions should consider implementing IT and computer arrangements which maximise disabled students’ access to learning, including:

- ▶ Ensuring that any coursework and electronic learning materials are fully accessible to disabled students using, if necessary, alternative hardware and software.”¹

Universal design and Web accessibility

Accessible Web design does not require special techniques or separate resources for disabled students. In the vast majority of cases, designing accessible resources results in resources which are more usable for all people, regardless of disability or browsing environment. This is frequently referred to as Inclusive Design or Universal Design.

In order to develop resources which are optimally usable and accessible, principles of usable and accessible design should be followed. Accessible design guidelines such as the Web Content Accessibility Guidelines provide recommendations for ensuring that information can be accessed by as many people as possible. Usable design techniques, such as those promoted by Jakob Nielsen

(see references below), should be followed to ensure that resources are usable by as many people as possible. Clearly, in some cases, due to current limitations of technology or other factors, it may not be possible, despite best efforts, to ensure that certain Web features, particularly those which utilise highly graphical or time-dependent multimedia applications, are accessible to every user. In such cases, accessible alternatives to these features must be provided – features which provide the same information in text format and which are keyboard accessible. This is certainly preferable to a scenario whereby removing features which may be inaccessible to a small number of students detracts from the learning experience for the majority.

- ▶ Nielsen's Web site <http://www.useit.com> has many articles on Web usability
- ▶ Nielsen, J. (2000) *Designing Web Usability*. New Riders

Web Content Accessibility Guidelines (W3C)

The Web Content Accessibility Guidelines 1.0 are a W3C (World Wide Web Consortium) specification providing guidance on accessibility of Web sites for people with disabilities. They have been developed by the W3C's Web Accessibility Initiative (WAI) offering specifications containing fourteen guidelines (general principles [priorities] of accessible design). Each guideline is associated with one or more checkpoints describing how to apply that guideline to particular features of Web pages. These guidelines have the benefit of making Web pages accessible to all users.

Each checkpoint is assigned one of three 'priority' levels.

What are the 'priorities'?

Priority one: This is for checkpoints that a Web site must satisfy, otherwise some groups of people will be unable to access information on the site. Conformance to Priority one checkpoints is a basic requirement for accessibility.

Priority two: This is for checkpoints that a Web site should satisfy or else it will be very difficult to access information for some people.

Priority three: If Priority three checkpoints are not satisfied, some people will find it difficult to access information.

What are the conformance levels?

The specification defines three 'conformance levels':

- ▶ 'Single-A' includes priority one checkpoints.
- ▶ 'Double-A' includes priority one and two.
- ▶ 'Triple-A' includes priority one, two and three.

It is strongly recommended that all Web sites strive to conform to Double-A standard.

World Wide Web compliance

For more in-depth knowledge of Web compliance read through the World Accessibility Initiative (WAI) checklist - <http://www.w3.org/TR/WD-WAI-PAGEAUTH/full-checklist.html>

Checking whether your site is accessible

There are growing numbers of validation checkers (pieces of software that will check your work for accessibility errors) and these can be very useful tools, although using them on their own is not sufficient. Some good checkers include 'Aprompt' (<http://aprompt.snow.utoronto.ca>), 'The Wave' (http://www.temple.edu/inst_disabilities/piat/wave/) and the TechDis Web Accessibility and Usability Evaluation Resource (<http://www.techdis.ac.uk>). To check for browser compatibility try <http://www.anybrowser.com/> or <http://www.delorie.com/Web/lynxview.html>

To check whether individuals who only use the keyboard or whose browser does not read graphics can view your site you need to check compatibility by unplugging your mouse and switching off the graphics capability in your browser. You need to check whether you can then still access, navigate and understand your Web page, VLE module etc. If you already have your own Web page or have designed a VLE module you should carry out an audit to ascertain whether it is fully accessible to all students.

Taking an inventory

Before you can edit your site and make it optimally accessible you should make a full inventory of the contents.

You need to be certain about the content of the page. Decisions you make regarding the content may well have direct relevance to decisions you make regarding the presentation of elements (images, media, audio clips etc.), navigation systems and the organisation of your data.

Use the tables below to assist you with compiling an inventory. This will assist you in making any necessary changes. The type of inventory you will need to make will depend on content, e.g. images, media, audio clips etc.

File Name	How many occurrences throughout site?	Is it informative or decorative?	Can image be retained or should it be converted to text?
Welsh.jpg	15	informative	retained

Those images that are retained will require a meaningful text alternative. Decorative images can be used sparingly if they are suitably labelled with ALT tags (such as 'border pattern').

The Royal National Institute for the Blind has produced some excellent materials on Web accessibility. Please go to: <http://www.rnib.org.uk/access/welcome.htm>

Bad Web design

It would be very useful for you to have a look 'out there', i.e. on the Web, to see some examples of bad Web design. Take a look at the following Web pages:

- <http://www.hgu.mrc.ac.uk/Bad/frameset.htm>
- <http://www.hgu.mrc.ac.uk/Bad/splash.htm>
- <http://trfn.clpgh.org/About/bad/badexample2.html>
- <http://scholar.coe.uwf.edu/wbi2000/students/aleake/goodbad/bad.htm>

It's a good idea to provide on your pages an indication of the accessibility of these pages – for example a link to a page with an accessibility statement indicating accessibility level (WAI compliance where appropriate).

Section 9: Web Accessibility

9.2: Basic design

When designing your course materials or personal Web page remember – accessible pages need not be boring. As long as they are well designed with accessibility principles in mind, they can be attractive and interactive. Set out below are the accessibility issues that you need to consider and workarounds to make your site accessible:

Tip: Do not get seduced by technology

Individuals may be accessing your coursework in a number of different ways and from a number of different sources. Some individuals will be using specialist software and hardware to access your coursework. Others may be using old browsers, have slow Internet dial-up connections; they may be using palm top computers or old laptops with black and white screens. Think about the pedagogical reasons for inserting graphics, media and other non-textural information online. If you feel that it is necessary to include any of them there are ways that you can make them accessible to everyone, however, do check that your HTML is valid.

Tip: Organise materials in simple and logical order

Individuals with various disabilities may have difficulty in navigating complex pages or elements. Set out your page so that there is orientation information and information about the relationship between elements. This will allow for individuals with dyslexia, perceptual problems and those using screen reader software to navigate in a more logical way. It is important to set out your information in a consistent manner. Use structural HTML elements such as headings and lists to present information logically. Further information can be found at:
<http://www.Webaim.org/tutorials/context>

Tip: Present overview at beginning of module

It is beneficial to include a site map or table of contents. This forms the basis of good practice. A textual format is easier to maintain and means that you do not have to offer the textual alternative. Presenting an overview enables students to gain an understanding of the subject area prior to going through the online material in more depth. Individuals with cognitive difficulties and visual impairments should find this incredibly useful, particularly as a navigational aid.

Tip: Periodically put the current topic into wider context

Again, this is the basis of good practice for all students. Further, it will allow all students with learning difficulties, e.g. dyslexia, visual perceptual problems etc. to contextualise with the subject area. If working in a frames environment divide large blocks of information into more manageable chunks where natural, intuitive and appropriate.

There is a vast amount of information on the WWW on creating accessible Web pages. Outlined in the next section are some of the basic issues that you need to be aware of when putting up a Web page, a module on an Intranet or a module within a VLE. For more detailed information on Web accessibility refer to the referenced URLs.

Section 9:

Web Accessibility

9.3: Accessibility Problems and Solutions

Individuals who use old screen readers and/or non-graphic browsers will not be able to access images on the Web page. If you have not inserted a description of your image, a screen reader may skip over the image or read out the image's filename. This can be very frustrating and confusing to the visually impaired user for they will not know how relevant the image is to the page, particularly if that image also serves as a link. Users of magnifying software may have difficulty in understanding the image if they have to magnify page areas to a high degree.

Providing a textual representation of the image for people accessing the page in a non-graphic way (e.g. text only, speech or Braille) is therefore one of the most important issues when considering accessibility of your work. In HTML, the 'ALT' attribute for the image allows page designers to insert in text form a description of the image or the information that the image conveys (for example if the image is a link). If a long description of the content is required you can either:

- ▶ Place the letter 'd' next to the image to symbolise a long description (this is done with the Web authoring tool's accessibility features by acting as a link to a separate page).
- ▶ Link the image to a separate page that contains the detailed description.
- ▶ If using a Web authoring tool such as FrontPage, use the LONGDESC attribute.

Avoid using image maps – providing textual alternatives for the whole image and ensuring that keyboard-only users can make sense of them and access them, together with the problems encountered by screen magnifiers, make them an accessibility nightmare to create for all but the most expert page designers.

- ▶ Animations such as Macromedia Flash, or video or audio inclusions can render Web pages inaccessible if not set up properly. Individuals using screen readers may not be able to access animations or videos, and those with specific learning difficulties such as dyslexia may find complex animations difficult to follow. If you still wish to use animations, as a minimum for accessibility you should:
 - ▶ Use alternative text to describe the function of each visual or provide a page link that contains a detailed description.
 - ▶ Add an audio description or commentary.
 - ▶ For complex visual animations, especially those with time-dependent actions, always allow the user an option to access the information provided by the animation in a textual form.
 - ▶ For further information on accessibility and Macromedia Flash go to:
<http://www.macromedia.com/software/flash/productinfo/accessibility/>

- ▶ For videos provide closed captioning – text captions of the soundtrack, including spoken dialogue, other important audio cues and a description of what action is occurring 'on screen'.
- ▶ For audio files provide a written transcript of the audio file, or provide the same information as provided by the audio in an alternative accessible form.

Avoid where possible using images of text instead of text. Images of text cannot be altered by users wishing to change text characteristics to make it more readable. Enlarged images of text can become 'pixelated' when enlarged, which effectively blurs them and can make them illegible. Also avoid designing pages which rely unnecessarily on extensive use of images. A heavily graphics-based interface will slow down the download of information and make it difficult to use magnifying software.



Avoid allowing objects to overlap each other when font size is increased. It will make it difficult for individuals who need to use magnifying software to understand objects when magnified.

Some students may not be able to differentiate some colours and screen readers will not be able to 'read' the colour, therefore do not use colour alone to convey meaning. Ensure there is sufficient contrast between background and foreground colour because visually impaired individuals and individuals with specific learning difficulties such as dyslexia may not be able to identify colour contrast (for checking colour accessibility please refer to: <http://www.vischeck.com>).

A number of students with visual or perceptual difficulties may not be able to read (or their assistive software may not be able to read) scrolling, animated or blinking text, 'rainbow' style or italic text, or large passages in upper case, and so all of these should be avoided.

It is advisable to only underline text for links on your Web page because most Web users associate underlining with Web links.

It can be disorientating for all students if a page is jam-packed with many links. The page becomes very 'noisy' and can become confusing for the user of assistive software such as screen readers or students with dyslexia. An ideal amount would be no more than 20 hyperlinks per page.

When using hyperlinks ensure that they are meaningful when read out of context. The following are three examples for the same link:

- ▶ Play Sound File of Water Music By Handel!: this is concise, meaningful when read out of context and a good model that you should follow.
- ▶ Click Here to play Water Music by Handel: the hypertext has no meaning outside of the context and does not tell the user where the link will take them or what kind of file they will encounter.

- ▶ [Click here to play the music of Handel's Water Music as a sound file from the Napster Collection](#): the entire sentence is selected as hyperlink text but is too long and may confuse users if the link wraps on the screen

Scripts, applets and plug-ins

Not everyone has the capability or desire to download and install plug-ins and many people use browsers which do not support scripts or plug-ins. Further, applets (which are Java programs designed to be executed or launched from within a Web page) can create a barrier to accessibility when the capability of running an applet is not supported by the browser or by the assistive technology being used. Even when the browser and assistive technology combination supports running applets, the content and programming might be inaccessible to the user.

If it is not possible to make the page usable without client-side scripts, provide a text equivalent with the NOSCRIPT element, or provide the information provided by the script in an alternative accessible form. Students should also be made aware of any plug-ins available on the campus intranet.

Acrobat and PDF

Adobe Acrobat is used to create documents in Portable Document Format (PDF). PDF documents preserve appearance regardless of computing platform, and so are useful for documents intended for hard-copy printing. To access a PDF file the free Acrobat Reader plug-in is required. Not all students accessing course materials from home may have access to Adobe Acrobat Reader on their computer, besides which any PDFs are created in such a way as to be inaccessible to screen readers. Only provide PDF files where documents are intended for hard-copy printing. Offer the PDF format in HTML and plain text (TXT) so that all users will have the choice of which format they wish to access. If PDFs must be used, ensure they are made optimally accessible by:

- ▶ Using Acrobat Version 5, or
- ▶ Ensuring they are accessible via the Adobe Access plug-in

For more information on accessibility, Acrobat and PDF, see <http://access.adobe.com>

Useful Resources

- ▶ W3C Web Content Accessibility Guidelines (WCAG):
<http://www.w3.org/TR/WAI-WEBCONTENT/>
- ▶ The W3C's Web Accessibility Initiative (<http://www.w3.org/WAI>) has many useful resources, including
Techniques for implementing the Web Content Accessibility Guidelines:
<http://www.w3.org/TR/WAI-WEBCONTENT-TECHS/>
- ▶ Accessible Design:
WebAIM (Web Accessibility in Mind): <http://www.webaim.org>
AWARE Center, HTML Writers' Guild: <http://aware.hwg.org>
Royal National Institute for the Blind (RNIB): <http://www.rnib.org.uk/>
Frontend.com (Usability and accessibility advice): <http://frontend.com>
Jim Thatcher (advice on accessible design): <http://jimthatcher.com>
- ▶ Useful site evaluation resources:
W3C HTML Validator: <http://validator.w3.org>
A-Prompt: <http://aprompt.snow.utoronto.ca/>
Echoecho.com - for useful online testing tools: <http://www.echoecho.com>
Download Lynx text browser from the UK Mirror site:
<http://www.mirror.ac.uk/search/?query=lynx>
(or Lynx viewer: <http://www.delorie.com/web/lynxview.html>)
- ▶ Books on Accessible Web Design
Paciello, M. (2000) Web Accessibility for People with Disabilities. CMP Books.
Clark, J. (2002) Building Accessible Web Sites. New Riders.
- ▶ Software manufacturers' approaches to accessibility
IBM Special Needs Home Page – <http://www-3.ibm.com/able/accessWeb.html>
Microsoft's Accessibility Home Page – <http://www.microsoft.com/enable/>
Sun Microsystems Accessibility Page – <http://trace.wisc.edu/world/java/java.htm>

Section 10: Case Study: UWIC's Library and Information Services – Library Division

How Can the Library Help with Curriculum Accessibility?

The Library Division at UWIC has been proactive in its approach to disability issues. Several staff members are able to use sign language and another staff member, himself disabled, is acting as the access point for students with disabilities to discuss specific issues relating to library services. In the forthcoming academic year (2001-02) staff will be taken through staff development on disability issues and will work closely with the Disability Services team.

Future plans for the Library Division at UWIC include raising the profile of its accommodation for students with disabilities. By doing this, UWIC will endeavour to attract students who may not have previously considered accessing higher education.

The QAA Code of Practice on Students with Disabilities¹ states that "Academic support services and guidance should be accessible and appropriate to the needs of disabled students. In developing academic support and guidance structure and procedures institutions should consider implementing arrangements that ensure that: The academic facilities and support available to non-disabled students including library . . . are fully accessible and appropriate to disabled students."

Systems currently in place

Students with disabilities are currently able to have longer loan periods and gain assistance with searching for required materials.

How to make your service accessible to all

By assisting students to find and use library materials

CHECKLIST

- Offer assistance to facilitate the use of finding aids (online and physical).
- Extend reserves or loan periods or modify other lending rules on an individual basis where possible.
- Accept telephone, email or fax requests to check your library catalogue system to find out the status of an item.
- On an individual basis (depending on the disability) check to see if an item is on the shelf. It will be reasonable for the student to have to wait a little while for this facility or to make an appointment for assistance.
- Assist with photocopying of a (limited) number of pages from book or journals. It will be reasonable for the student to have to wait a little while for this service.

- ✓ Ensure that there is access to computers and other pieces of information technology with assistive equipment.
- ✓ Contact other libraries and RNIB about the availability of books and periodicals.
- ✓ Provide colour coding, good signage, good extra lighting, adjustable tables for wheelchairs, plug sockets for laptops, accessible toilets.

By assisting students to obtain references

CHECKLIST

- ✓ Advice about access to specialised online information sources.
- ✓ Explanation and description of sources of specialised information.
- ✓ Help with numerous bibliographic citations.
- ✓ Instructions on how to use available assistive technologies located in library workstations.

By use of a borrower's card

A number of students may not be able to attend the library themselves (e.g. a single parent whose child is ill, a student has an illness, a physical disability which prevents a student from accessing all/part of the library system, etc). Further, there may be students in another part of the country or abroad on a work placement. For these reasons, it may be prudent to allow another individual to access the library service on their behalf. This can be achieved by:

- ▶ Allowing the student to give written authorisation for an individual to use the library on their behalf.
- ▶ Enabling an individual* to receive a proxy borrower's card in order to borrow library materials on the student's behalf. Proxy cards for non-student/staff could be determined on a case-by-case basis depending on the applicant's particular circumstances.

*This individual could be an educational support worker, a friend, fellow student or family member.

Blind or visually impaired students: Good practice within the library service will enable blind and visually impaired students the same access to learning materials as their peers.

Provision will need to be in place for the following:

- ▶ Specialist equipment and software, e.g. CCTV, screen readers, etc.
- ▶ Private study area in the library (for screenreader software on computer) or a service for students to borrow or purchase headphones.
- ▶ Enabling student's access to the library by allowing guide dogs within the environment.

APPENDIX A

A Short Guide to Special Educational Needs and Disability Act (2001)² for Higher Education

This Act is an amendment to the existing Disability Discrimination Act (1995) and thereby protects people who are defined as disabled according to that legislation.

What will the Act cover?

The new law will affect all education and training provided by HEIs, admissions to courses . . . and the provision of other students services, e.g.

- ▶ Libraries, careers, welfare etc.
- ▶ Services already covered by Part 3 of the DDA (1995). These services will transfer from Part 3 of the DDA (1995) to the new provisions as they come into force.

How is it being progressed?

The Act received Royal Assent in May 2001. It will be phased legislation:

- 01 September 2002: Most provisions implemented
- 01 September 2003: Provision of auxiliary aids and services
- 01 September 2005: Physical adjustments to buildings

What will education providers have to do?

Education providers **must not treat a disabled person less favourably** than they treat or would treat others for a reason that relates to the person's disability.

If a disabled student is at a substantial disadvantage the education provider is required to take such steps as are reasonable, i.e. **make reasonable adjustments**.

The following factors may be relevant in determining whether adjustments are 'reasonable'

- ▶ The need to maintain academic standards
- ▶ Cost, and the institution's financial resources
- ▶ Other support available to the student, including DSA
- ▶ Practicality
- ▶ Health and safety requirements
- ▶ The relevant interests of other people and students

Disability Rights Commission

- ▶ Conciliation
- ▶ Details from the County Court in England and Wales, the Sheriff Court in Scotland

APPENDIX B

Disability Discrimination Act (1995)⁵

This extensive legislation has been a phased implementation and covers the following:

Part 1: Definition of disability

A person has a disability if they have a physical or mental impairment which has a substantial and long-term adverse effect on their ability to carry out normal day-to-day activities.

Part 2: Employment

The employment provisions of the DDA came into force in December 1996. This makes it unlawful to discriminate against disabled employees, including part time, temporary and contract workers. Employers have a duty to make reasonable adjustments for their employees where they are placed at a substantial disadvantage. The legislation covers all aspects of recruitment, promotion and dismissal, as well as the terms of employment, the working environment and any employee benefits. Disputes under this section of the Act are taken to Employment or Industrial Tribunals.

Part 3: Goods, facilities and services

Providers of goods, facilities and services have been required not to discriminate against disabled people since 1996. This duty has included the requirement to make 'reasonable adjustments' in certain circumstances. Service providers have had additional duties to make adjustments which include the provision of 'auxiliary aids and services' since 1999, and will also be required to make adjustments to premises from 2004. These sections of the Act cover all services made available to the public or a section of the public, including services for which no charge is made. There are particular arrangements which relate to leasehold premises. There is a conciliation service available to help settle disputes, but otherwise cases are taken through the County or Sheriff Court.

Part 4: Education

Education was initially exempt from the DDA but has been brought into the Act through the Special Educational Needs and Disability Act 2001 (SENDA). The education provisions are being phased in between September 2002 and September 2005.

Part 5: Transport

The DDA (1995) has allowed the Government to set minimum standards to assist disabled people to use public transport easily. The dates of these duties vary according to the type of vehicle, e.g. all new single-decker buses should be accessible by 01 January 2002 and all new rail vehicles that have come into service after 31 December 1998 must comply with the regulations.

APPENDIX C

The Human Rights Act (1998)⁸

The Human Rights Act has brought some of the Rights from the European Convention on Human Rights into UK law. These rights are binding on public bodies and have implications for post-16 education providers.

Several areas of the Act cover education but with regard to higher education these are:

- ▶ Individuals have the right not to be denied access to education.
- ▶ Individuals cannot be discriminated against on any grounds in their enjoyment of any conventional rights (such as the right to education).

APPENDIX D

What is the Disability Rights Commission

The Disability Rights Commission (DRC) was set up by the Government in 1996. It has several statutory duties:

- ▶ To work to eliminate discrimination against disabled people.
- ▶ To promote equal opportunities for disabled people.
- ▶ To encourage good practice in the treatment of disabled people.
- ▶ To advise the Government on the working of disability legislation.
- ▶ To fulfil its duties the DRC:
 - ▶ Provides assistance to disabled people to secure their rights, including, where appropriate arranging legal advice.
 - ▶ Provides information and advice about rights and duties under the DDA.
 - ▶ Produces codes of practice offering practical guidance to those with duties under the DDA.
 - ▶ Provides an independent conciliation service to help settle disputes over access to goods and services, and (from September 2002) access to education
 - ▶ Undertakes formal investigations of particular organisations or sectors.
 - ▶ Carries out research.

APPENDIX E

QAA Code of Practice - An Overview

The QAA Code of Practice on Students with Disabilities¹

Offer general information

It will be useful for students to have general course information set out clearly for them in order to make an informed choice. However, it is important that information about courses should not preclude the possibility of a reasonable adjustment being made. For example, a course may currently be delivered in an inaccessible building. To state this in the course information may deter some applicants with mobility difficulties. This might be interpreted as discriminatory as it apparently rules out the possibility of either adapting the building or moving the course elsewhere in response to an individual's needs.

Within the Programme Specification, an outline of common skills that students will be required to achieve will be set out for all students.

For students with disabilities: The Programme Specification should clearly state that provision for students with disabilities could be made. A student with dyslexia who is thinking of attending the Institution for a specific programme of study will be reassured that they will get the necessary study skills support that they may need.

Example 1

In the Programme Specification a French degree scheme requires individuals to spend a year abroad, unless there are extenuating circumstances.

The course tutor and applicant will make an informed decision of whether the student can either:

- ▶ Spend the year abroad.
- ▶ Make a 'reasonable adjustment' to the course, which doesn't require a year abroad.
- ▶ Access an alternative language degree.*

* If it is deemed impossible for the student to do the original course but they are offered an alternative language degree course that does not require them to spend a year abroad, this may be a reasonable adjustment under the DDA.

APPENDIX F1

Case Study Example: UWIC's Learning and Teaching Strategy 2000-2003

The under-mentioned are taken from The Learning and Teaching Strategy for 2000– 2003:

The purpose

To improve the efficiency, effectiveness, quality and standards of student learning through the development of measures to address diverse learner needs.

Key aim of the Strategy

To support the commitment to widening access and participation, particularly for under-represented groups, and to contribute to the achievement of a more inclusive learning environment.

Implications for learning

In order to maximise accessibility to and use of learning resources, it will be necessary to re-examine and review the ways and contexts in which UWIC provides opportunities for learning, a large part of which occurs outside formal contact time and off campus.

Implications for the curricula

In order to maintain and enhance our position as a large and diverse HEI with a vocational mission, it will be necessary for UWIC to react flexibly to new areas and to review the course portfolio in relation to the rapidly changing external environment, the needs of industry and employers and the diverse background of learners. Areas of potential include the further promotion of part-time provision and the recruitment of students from underrepresented groups.

APPENDIX F2

Case Study Example: UWIC's Widening Access Strategy 2001-2003

UWIC's 2001-2003 Widening Access Strategy intends to attract increasing numbers of students in line with the Dearing Report, the Government's Lifelong Learning Initiative and the Welsh National Assembly recommendations. UWIC has defined its priority targets as:

- ▶ Young people from socio-economic groups IIIM, IIIN, IV and V.
- ▶ Under-qualified people in the local and regional workforce or those seeking to re-enter the workforce.
- ▶ Mature entrants (aged 21+).
- ▶ Those from ethnic minority groups.
- ▶ Individuals with disabilities and special needs.

UWIC is aware that disability continues to remain an obstacle to accessing higher education and as a consequence, it intends to increase numbers year-on-year.

The Widening Access Strategy will underpin Aim 3.6 of the UWIC Learning and Teaching Strategy:

"To support the commitment to widening access and participation, particularly for under-represented groups and to contribute to the achievement of a more inclusive learning environment."

Further, the aims relevant to students with disabilities are:

"To offer wider accessibility and flexibility in relation to the delivery of existing programmes and the development of new programmes and to continue to develop flexible learning and teaching methodologies, designed to address the needs of a more diverse student population."

AND

"To provide an improved service and educational experience to students with disabilities and other groups of students with particular needs and to reflect good practice in relation to equal opportunities."

APPENDIX G

Disabled Students Allowance

The Disabled Students Allowance is a scheme of payments from the UK Government to people with disabilities incurring any costs or expenses relating to their life as a student that arise because of their disability. These are not intended to pay for study costs that any student may have or any disability-related costs that they would have whether or not they were studying. The allowance comes in three parts:

- ▶ Specialist equipment allowance
- ▶ Non-medical helpers allowance (e.g. note taker)
- ▶ General disabled students allowance (for disks, paper etc).

Students may also obtain assistance with travel costs, such as for work placements. If the LEA has written evidence that a student has been accepted onto a course, it will pay for equipment allowances prior to commencement of the course. Training for specialist equipment or software can be paid for using the DSA. The DSA does not, however, cover extra academic tuition. Some institutions employ freelance Educational Psychologists, from whom a report is sometimes necessary to satisfy the LEA that a student meets the Allowance criteria (for example if they are dyslexic). Disability Officers can often arrange for different types of assessment to take place to ensure a student obtains the correct support.

APPENDIX H

Useful Web Addresses

All Web addresses in this document were correct at the time of printing, March 2002.

Assistive Technology

Students and professionals and the use of assistive technology – <http://www.rit.edu/~easi/>

Trace Centre – <http://trace.wisc.edu>

On-line resource of information about products that are available to assist those with disabilities – <http://www.techdis.ac.uk>

DMAG – Digital Media Access Group – consultancy and advice in accessible and usable design of digital media. <http://www.dmag.org.uk>

Browser Validation

Check browser compatibility – <http://www.anybrowser.com/>
– <http://www.anybrowser.com/siteviewer.html>

Try out your Web page in Lynx – <http://www.delorie.com/Web/lynxview.html>

General Software and Accessibility

IBM Accessibility Centre – <http://www-3.ibm.com/able/accessWeb.html>

Microsoft accessibility – <http://www.microsoft.com/enable/>

Blackboard and accessibility – <http://resources.blackboard.com/scholar/general/pages/iccontent/accessibility.html>

National Centre for Accessible Media – <http://ncam.wgbh.org/>

PowerPoint and accessibility – <http://www.tsbvi.edu/technology/powerpoint.htm>

Flash animation and accessibility – <http://www.macromedia.com/software/flash/productinfo/accessibility/>

Audio files and accessibility – <http://www.nadn.navy.mil/Masters/Section508/rule-a8.htm>

Sun Microsoft [JAVA] and Accessibility – <http://trace.wisc.edu/world/java/java.htm>

JISC Forums

Forum on disabilities and technology – <http://www.jiscmail.ac.uk/lists/tech-dis.html>

Discussion list for disabled students and their support staff – <http://www.jiscmail.ac.uk/lists/dis-forum.html>

Legislation

UK Government on disability – <http://www.disability.gov.uk>

American legislation on disability – <http://www.section508.gov/>

Online Support

Adobe Acrobat: converts Acrobat documents to HTML or plain text – <http://access.adobe.com/>

BBC facility to create an automatic text-only version of your Web site –
<http://www.bbc.co.uk/education/betsie/>

IBM and accessibility [JAVA] – <http://www-3.ibm.com/able/accessjava.html>

Test colour accessibility of Web site – <http://www.vischeck.com>

– <http://www.colorfield.com/insight.html>

– http://msdn.microsoft.com/library/default.asp?URL=/library/enus/dn_voices_hess/html/hess10092000.asp

World Accessibility Initiative on accessibility issues – <http://www.w3.org/WAI/>

Web Access Symbol – <http://www.boston.com/wgbh/pages/ncam/symbolwinner/html>

Universal Design Principles

Universal design Guru Jakob Nielsen's site – <http://www.useit.com/>

Usable Web – <http://usableweb.com/>

Useful References

AWARE – Web Author's Guild (HTML) – <http://aware.hwg.org/>

The Dearing Report – <http://www.leeds.ac.uk/educol/ncihe/>

National Disability Team – <http://www.natdisteam.ac.uk/>

Lifelong Learning – <http://www.lifelonglearning.co.uk/front.htm>

Royal National Institute for the Blind - why make information accessible? –
<http://www.nib.org.uk/seeitright/whyaccess.htm>

Strathclyde University - Teachability Project – <http://www.ispn.gcal.ac.uk/teachability/>

Websites that work video – <http://www.nib.org.uk/digital/wtw.htm>

Web Accessibility: 500 Million and Growing –
http://www.Webreview.com/2001/03_16/Webauthors/index04.shtml

Royal National Institute for the Deaf – <http://www.rnid.org.uk/index.htm>

Royal National Institute for the Deaf – campaign for subtitles etc. –
http://www.rnid.org.uk/html/support_us_campaigns_dcms2.htm

Web accessibility project at Bath University –
<http://www.bath.ac.uk/Students/learning-support/Webb/hurst.htm>

Accessible curriculum – <http://www.knowbility.org/curriculum/>

Dyslexia – http://www.brad.ac.uk/admin/disab/graphics_site/Services_for_staff_/Staff_working_with_students/Staff_working_with_students.html

Open University and disabilities
– <http://www.globaldistancelearning.com/Teaching/Support/dis-01.html>

National Bureau for Students with Disabilities – <http://www.skill.org.uk/>

British Dyslexia Association – <http://www.bda-dyslexia.org.uk>

American Dyslexic Association – <http://www.dyslexic.com>

PRS-LTSN website <http://www.prs-ltsn.ac.uk/access/discussions/index.html>

SHEFC Teachability project www.ispn.gcal.ac.uk/teachability/

Validation Sites to Check Web Accessibility

A-Prompt checks for accessibility problems based on the WAI Page Authoring Guidelines –
<http://aprompt.snow.utoronto.ca>.

Web Design

Example of poor Web design – <http://www.hgu.mrc.ac.uk/Bad/frameset.htm>
– <http://www.knowbility.org/curriculum/>

Top 10 Mistakes that amateur Web designers make
– http://www.Webdevelopersjournal.com/columns/abc_mistakes.html

Olympic Failure: A Case for Making the Web Accessible
– <http://www.tomw.net.au/2001/bat2001.html>

Increasing access to WWW for blind users
– <http://www.utoronto.ca/atrc/rd/library/papers/accesswww.html>

References

1. The Quality Assurance Agency Code Of Practice: Quality And Standards in HE (2000).
<URL: <http://www.qaa.ac.uk/public/cop/copswd/contents.htm>>
2. The Special Educational Needs And Disability Act (2001), The Stationery Office.
<URL: <http://www.hmso.gov.uk/acts/acts2001/20010010.htm>>
3. The Draft Code Of Practice – Disability Discrimination Act 1995 (as amended by SENDA 2001) (2001), The Disability Rights Commission.
<URL: <http://www.drc-gb.org/drc/documents/post16cop.doc>>
4. Teachability Project: Strathclyde University (1998), Scottish Higher Education Funding Council.
<URL: <http://www.ispn.gcal.ac.uk/teachability/>>
5. The Disability Discrimination Act (1995), The Stationery Office.
<URL: <http://www.disability.gov.uk/dda/finalcode.doc>>
6. Blunkett, D. (2001) Meeting Special Education Needs: A Programme of Action, speech by Secretary of State for Education and Employment at Greenwich University.
<URL: <http://www.dfes.gov.uk/senap/index.htm>>
7. From Exclusion to Inclusion (1999), Disability Rights Task Force.
<URL: <http://www.disability.gov.uk/drtf/index2.html>>
8. The Human Rights Act (1998), The Stationery Office.
<URL: <http://www.hmso.gov.uk/acts/acts1998/19980042.htm>>
10. Tate, P.F. (1999) Labour Force Survey Two – Quarter Longitudinal Dataset, Office for National Statistics Labour Market Division.
<URL: <http://www.data-archive.ac.uk/findingData/snDescription.asp?sn=4273>>
11. Taken from an NOP Poll, 1999, commissioned by Leonard Cheshire.
12. First Year UK Domiciled HE Students by Level of Study, Mode of Study, Gender and Disability in HEIs (1999/2000), HESA. <URL: <http://www.hesa.ac.uk/>>
13. Universal Design For Learning, Centre for Applied Special Technology.
<URL: <http://www.cast.org/>>
14. Hurst, A., Developing high quality support for students with disabilities and learning difficulties in universities in the third millennium – a perspective from England. Department of Education, University of Central Lancashire.
<URL: <http://www.bath.ac.uk/learning-support/webb/hurst.htm>>
15. Newell, A.F. and Cairns, A. (1987) Designing for extra-ordinary users. Ergonomics in Design October 1987, pp10-16.
16. Dyslexia friendly text (2001), British Dyslexia Association.
<URL: <http://www.bda-dyslexia.org.uk/d07xtra/x09frend.htm>>
17. Students First: The Experiences of Disabled Students in Higher Education, Skill.
<URL: <http://www.scre.ac.uk/resreport/rr85/ch11.html>>
18. Hopkins, C., and Jones, A.V., Able Scientist, Technologist: Disabled Person, Eslek Publications.
19. Resources Directory of Handicapped Scientists, American Association for the Advancement of Science. <URL: <http://www.empowermentzone.com/careers.txt>>

20. Smith, D., Teaching aids for visually handicapped students in introductory chemistry courses, *J. Chem. Ed.* 58, pp 226-227.
21. Tudor, G., The Study Problems of Disabled Students in the Open University, *Teaching At A Distance* 9, pp 43-49.
22. The effects of students with disabilities of greater use of C&IT in the teaching and learning process: A case study of the experience of students at the University of Wales, Bangor.
23. Placements and students with additional learning needs (2000) Bournemouth University. <URL: <http://www.disinhe.ac.uk/library/article.asp?id=43>>
24. Coons, M. and Milner, M. (eds) (1978), *Creating an accessible campus*. Association of Physical Plant Administrators of Universities and Colleges.
25. Kucera, J. (1993) *Teaching Chemistry to students with disabilities*, American Chemical Society.
26. Howell, R. *Issues in Providing Learning Support for Disabled Students Undertaking Fieldwork and Related Activities: The Geography Discipline Network*, Bolton Institute.
27. Hall, T., Harrison, M., Healey (M). *The Experience of Academic Departments and Disability Support Units in Providing Learning Support for Students Undertaking Fieldwork and Related Activities: Report on Surveys*. Geography & Environmental Management, Cheltenham & Gloucester College of Higher Education.
28. *A Faculty guide to accommodating students with disabilities* (1995), University of Virginia.
29. Leung, P. et al. (1999) *Effective use of assistive technology for students with disabilities in Higher Education*, Deakin University, Australia.
30. *A Guide for Faculty and Staff*, University of Texas at Arlington, USA.
31. Stern, V.W., Lifton, D., Malcolm, S.M. (1987) *Resource Directory of Handicapped Scientists*, American Association for the Advancement of Science.
32. Sutherland, A, and Padden, V. *Videoconferencing for the Deaf*, Gateshead College, Tyne and Wear. <URL: <http://www.shef.ac.uk/uni/projects/csnl/4abs.html#anchor7>>

Printed copies of Accessible Curricula are available from UWIC Press priced £25.00.

Orders may be sent by post, phone, fax or e-mail to:

Neil Jones, UWIC Press, Room B1.13, Cyncoed Campus, Cyncoed Road, Cardiff CF23 6XD.

Tel/Fax 02920 416 515 e-mail: najones@uwic.ac.uk.

If you require staff training or support please contact:

Karen Robson, Disability Service Manager

Tel 02920 416 170 e-mail: krobson@uwic.ac.uk

or Carol Doyle, Accessible Curriculum Development Advisor

Tel 02920 416 170 e-mail: cdoyle@uwic.ac.uk



UNIVERSITY OF WALES INSTITUTE, CARDIFF
UWIC
ATHROFA PRIFYSGOL CYMRU, CAERDYDD



TechDis