

References

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Inclusive Learning and Teaching: ILT for Disabled Learners

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Technology-Based Assessment

Under the Special Educational Needs and Disability Act (SENDA)* 2001, disabled learners must not be disadvantaged in education and it is important to ensure that learners are not unfairly treated in assessment situations. Colleges have an obligation to anticipate the needs of learners and to make reasonable adjustments to ensure that disabled learners can demonstrate their skills and abilities equally with their non-disabled peers. This obligation extends to online, distance and blended learning.

Disabled learners can encounter barriers when undertaking online learning and when using Information Learning Technology. The **Learning Platforms** leaflet in this series explains how learning materials and electronic learning environments can be made accessible.

In many cases, assessments can be undertaken using technology to assist learners. However, the needs of disabled learners also should be considered when the assessment is technology based, for example, multiple choice quizzes in a Virtual Learning Environment (VLE). For more information on making alternative adjustments in offline assessments, see the **Alternative Assessment** leaflet of this series.

*More information on the legislation can be seen in the **Introduction to SENDA** leaflet in this series.

ILT and assessment

Increasingly, tutors are requesting assignments and essays to be submitted electronically, by email. This has several advantages: the tutor can monitor deadlines for submission, neither the learner nor the tutor needs to be at a particular location to receive the assignment, and plagiarism can be detected more easily. The Joint Information Systems Committee (JISC) provides a plagiarism advisory service,

which also operates a detection service. Having an electronic version of assignments makes using this service easier.

The increased use of Information Learning Technology has meant that online and electronic assessment is now more commonplace. Much commercial online learning content includes online quizzes and formative assessments, in the form of multiple choice questions, image matching, gap fill, etc. With many new content creation packages and the availability of VLEs, this sort of testing is easy to set up and can offer the following benefits:

- Tests can be carried out at a specified time and date. Alternatively, learners can choose when to undertake them so as to monitor their own progress,
- Tests can last for a set length of time, or the learner can take as much time as necessary,
- Learners can be allowed a certain number of attempts,
- The test can be set up to be automatically marked,
- When used within a VLE, the results of the test can be used to point learners to additional learning content or change their pathway through the content.

Learners can also be assessed through measuring their contribution to online discussions - for example, the tutor might begin a discussion topic around a particular part of the course and expect learners to make a certain number of contributions to that topic.

In September 2002, Tynemouth College used a VLE to administer its Essential Skills (Key and Basic Skills) diagnostic test for first year learners - from Level 1 to 3. The Essential Skills Co-ordinator, Nancy Wall, devised the online assessment and all first year learners (470 in total) sat the test over two days at the start of term, in batches of 60 at a time. This was a highly successful way of administering this test in many ways:

- All questions were marked automatically online, with no marking for tutors and immediate turnaround of results,
- Essential Skills team analysed results using the VLE's in-built statistics tool,

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- Tutors could see all individual learners' results and identify strengths and weaknesses and then recommend follow-up and support materials, also available via the VLE,
- The technology behaved perfectly and all learners could use the software without any training. In other words, they already had sufficient IT skills to navigate, scroll and interact with the environment.

The success of this project has encouraged many tutors throughout the college to use the assessment tools that are part of the VLE.

Disabled learners and online assessment

There are particular issues surrounding disabled learners and electronic assessment. The most important step when thinking about electronic assessment is to check that the environment in which the assessment is going to be delivered is accessible to the learner. More information on making online learning accessible can be found in the **Learning Platforms** and **The Learning Experience** leaflets of this series.

Online assessment can bring great benefits for disabled learners. For example:

- Learners with a cognitive disability or a lack of confidence may benefit from an assessed online discussion or online group work, as the speed of response is slower and the pressure of contributing to a face-to-face discussion is removed,
- Drag-and-drop, gap fill and multiple choice questions completed online can be easier for a person with mobility or visual impairment than trying to write by hand in a small given space,
- Submitting assignments through email can be helpful for learners who have problems with mobility.

However, using technology in assessment procedures, while removing barriers for some learners, can potentially create barriers if some learners are not experienced or confident in using the technology. The level of ability in IT should be assessed at an early stage so adjustments can be made for

those with insufficient capability, or so that training can be provided. A very large proportion of today's learners are now familiar with basic IT techniques. However, despite this, disabled learners can still experience a degree of difficulty when using unfamiliar or poorly designed software packages.

In their study, Evans and Sutherland (2002) found that when a variety of users performed standard tasks within a VLE, the blind learners, despite being IT literate and competent in using a computer with their required assistive technology, nonetheless experienced severe difficulties when performing some of the given tasks. With this in mind, careful and thoughtful design of technology-based assessments, adhering to the principles of Design-For-All <<http://www.design-for-all.org>>, also known as Universal Design, should help to make the assessment accessible to almost everyone. The idea behind Design-For-All is simply that if something is designed to be accessible to as many people as possible in the first instance, then special cases for disabled people become much rarer, which benefits everyone.

Assistive Technologies

One obvious feature of well-designed assessments is that they can cope with any assistive technologies that learners may need to use. However, it should be remembered that assistive technologies do not, on their own, provide a complete solution to many of the barriers faced by disabled learners. Evans and Sutherland (2002) observed a group of disabled learners performing a variety of set tasks within a VLE, including completing an

online quiz. Those using assistive technology were extremely competent in its use, and all of the learners in the study were IT literate. It was found that the learners using screen readers spent only one third of their time actually performing the given task (e.g. the quiz) and the remainder of the time accessing and navigating the VLE. The learners using screen magnifiers or no assistive technology spent around three quarters of the time actually 'doing' the given tasks. So the learners using screen readers were still clearly disadvantaged despite the increased access provided by their chosen assistive technology.

In **Access All Areas** (2002), Phipps and Sutherland state that it can take six times longer for a disabled learner to navigate a website than a non-disabled learner. It is important that learners should not be doubly disadvantaged by having to cope with using an inaccessible learning platform as well as having to take extra time to undertake the assessment. Where this is the case, learners should be given additional time or support in undertaking the test or quiz.

Software packages

Many tutors utilise one or more off-the-shelf assessment software packages, such as Hot Potatoes <<http://www.halfbakedsoftware.com>>, Question Mark <<http://www.questionmark.com>>, Quandary <<http://www.halfbakedsoftware.com/quandary>> or Quia <<http://www.quia.com>> for instance. These packages all have differing degrees of accessibility and compatibility with assistive technologies, so it is important to investigate whether a package meets accessibility standards and learner needs, and if not, to consider providing an equivalent alternative form of assessment, possibly one that does not involve technology.

If you are concerned that a commercially available content creation package is not accessible then you should check with the vendor to see what they are doing about accessibility. The vendor should be making a clear and unequivocal commitment to ensuring their product complies with the principles of either SENDA or Section 508 of the American Rehabilitation Act <<http://www.section508.gov>>.

The responsibility for compliance with SENDA legislation is at the point of delivery, not production, so if a software supplier does nothing about accessibility then the college should seek out alternatives.

When deciding upon the appropriateness of using a particular assessment, practitioners should think about their learners' needs. In cases where there are no disabled learners, there may be no need to make specific adjustments, but because of the anticipatory nature of SENDA it is advisable to evaluate assessment tools with respect to accessibility in any case.

Checking the accessibility of an online assessment software package can be done by using a graphical user interface (GUI) browser (e.g. Netscape, Internet Explorer or Opera) and trying to undertake the following tasks:

1. Change the browser setting to turn off images and make sure that the quiz can still be undertaken. Usually ALT text should be provided for images, but this may not be practical as it may give away the answer to the learner. Without graphics or ALT text, can the exercise still be done?
2. Turn off the sound, or unplug your speakers. Then make sure that any audio content is also available through text equivalents.
3. Change the font size (larger and smaller) in the browser, and see whether the page is still readable.

4. Using only the keyboard, try to complete the test. See if you can access all elements. For example, in many crossword and gap fill tests the answer fields can be accessed through the keyboard, but the 'submit' and 'enter' buttons cannot. Do elements need to be moved manually using the mouse (e.g. drag and drop of images)?

5. If possible, use a screen reader (e.g. Jaws or IBM Home Page Reader) or a text-only browser (such as Lynx) to examine whether the information presented makes sense and that the site can be easily navigated.

Having carried out these simple tests, you should have a good idea of the accessibility of the assessment.

Some assessments will never be accessible to some disabled learners and if, for example, a blind learner is in a class, 'drag and drop' exercises will be nearly impossible for them to undertake. In this case an alternative should be offered. Usually this can be done by producing the same text in a Word document and asking the learner to choose the correct answer from a selection provided.

Many software packages that are generally accessible can be rendered inaccessible by a lack of understanding of the needs of disabled learners. For example, learners with cognitive disabilities tend to achieve higher scores in multiple choice quizzes (relative to other learners) than in quizzes featuring open-ended questions, whereas learners using a screen-reader may find the multiple choice quizzes more difficult to access if the quiz software has not been configured to be fully compatible. Staff training is therefore vital if assessment options are to be made accessible to as wide a range of learners as possible. For more information on staff awareness and development, please see the leaflet of the same name in this series.