A CHECKLIST FOR INCLUSIVE ASSESSMENT: GETTING STARTED WITH ACCESSIBILITY

Dr Simon Ball

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Dr Simon Ball, TechDis Co-ordinator, TechDis, The Higher Education Academy, Innovation Way, York Science Park, York, YO10 5BR simon@techdis.ac.uk

Abstract

This paper is aimed both at teaching staff directly involved in creating assessments and those working with either the front end or back end of computer-assisted assessment software packages. It sets out the rationale for making computer-assisted assessments more inclusive and provides a 25-point checklist as a 'getting started' guide towards achieving this.

Introduction

Much is made of 'accessibility' these days. Be it wheelchair users touring shops to find which are ripe for taking to court due to steps, narrow doorways or cluttered aisles, or surveys telling us that a large proportion of corporate websites are inaccessible to a wide range of users, the topic is hot, and rarely out of the media spotlight. In the education arena, progress towards making learning and teaching more inclusive has been, on average, steady, with some institutions making dramatic adaptations to their syllabus or teaching methods, and others still trying desperately to bury their heads in the sand. However, much more progress can still be made with relatively little effort, if individual teaching staff, course directors, and senior managers are provided with the right tools and a framework for the task in hand. This is also true, of course, of assessment, and the computer-assisted assessment sub-sector. This paper will provide individual staff involved in assessment with some quick tips towards making assessments more accessible in the short term. Course directors and senior managers will subsequently need to develop from these basic day-to-day techniques a proto-framework for beginning a wholesale overhaul of computer-assisted assessment within a module, course, or even department.

Definitions

Before beginning to address accessibility, it is necessary to define exactly what we are aiming to do. The Special Educational Needs and Disability Act (2001) [1] in the UK amended the Disability Discrimination Act (1995) [2] in that it repealed the exemption of education from the Act. Hence education institutions are now obliged by law not to treat a disabled person 'less favourably' in terms of admissions, assessment, in fact any service which it

provides 'wholly or mainly for students'. Institutions, therefore, have to make 'reasonable adjustments' if a disabled person would otherwise be placed at a 'substantial disadvantage' when compared with their non-disabled peers.

In discussing this topic, it is important to note the subtle differences between the terms that are commonly used. Whereas 'accessibility' as a term tends to be used when describing adjustments made specifically for disabled users (one definition from the web defines accessibility as 'the degree to which a site allows access to people with disabilities'), it is probably more inclusive to all users to consider 'usability' (which can be defined as the effectiveness, efficiency, and satisfaction with which all users can achieve tasks). Whereas we may describe an 'accessible' website as one that can be understood and used by disabled people, if we adopt a 'design-for-all' approach we may have a more 'usable' website that can be understood and used by everyone. This paper is aimed at improving inclusion by increasing the usability of computer-assisted assessments, rather than at increasing 'accessibility' as such.

It is vital to note that design-for-all (and accessibility) must not involve any lowering of academic standards or contravention of health and safety regulations. This is written into the legislation. But with the application of design-for-all and pedagogic principles it is usually possible to provide an assessment experience in which all students can undergo a test of equivalent rigour and interest.

Assistive Technologies

Before addressing our own practices, we need to know what the learners themselves can bring to the table (this is not to say that they will necessarily be able to afford them without the institution's assistance, merely to highlight the existence of the technologies). Many learners have, or could be provided with, assistive technologies. These are many and varied (see the TechDis Technology Database [3] for a wide range of examples).

Some of the more common technologies that teaching staff would be likely to encounter include arm rests or other arm or wrist support aids, screen readers (which read aloud the contents of text or web documents for people with little or no vision, as well as commands and links lists for example), screen magnifiers, text and spelling assistance software (including text-to-speech software, often confused with screen readers but oriented to users with some vision, and, often, dyslexia), electronic organisers (to assist with time management, often a problem for people with dyslexia for instance), and input devices (such as on-screen keyboards, tracker ball mice, switches or head wands).

All of the technologies potentially available need to be borne in mind when addressing issues of inclusion in computer-assisted assessment. After all, one wouldn't plan a meal without knowing which items of food were available. So in terms of making a computer-assisted assessment strategy or an individual assessment more accessible, that is the first task, to see what kinds of

technologies are available to assist students. A good overview is provided by the TechDis Technology Database [3] and Technology Topics Overview [4].

One must not be allowed, however, to rely on the presence of technologies to necessarily solve all of the issues inclusion can raise. In a study by Evans and Sutherland (2003) [5] it was shown that although users of screen magnifying software spent a similar proportion of their time 'Doing' the task in hand (as opposed to 'Using' the technology and 'Accessing' the information necessary to complete the task) as those students using no assistive technology (70-80% of time spent 'Doing'), the students using screen reading software in fact spent only 30-40% of their time 'Doing'. This highlights the fact that whereas technology can greatly enhance our repertoire of potential adjustments to our computer-assisted assessments, it does not necessarily level the playing field completely.

Where to start

Once one has a grounding in the technologies available to assist students, the next task is to determine to what degree our computer-assisted assessments are currently excluding students (or potential students, as the legislation requires institutions to address these issues 'in anticipation' of any potential need arising). This is effectively a determination of need – but rather than adopting the 'accessibility' approach of finding areas where specific groups of disabled students are currently excluded, we should instead try to take the 'inclusion' approach and review the entire assessment for pitfalls and difficulties experienced by all students, disabled and non-disabled. We are all aware that there is a large group of students for whom a three-hour hand-written exam is not the most accurate reflection of ability, and the same logic should certainly apply to computer-assisted assessments.

To aid staff in examining their computer-assisted assessments for inclusion issues, a 'checklist' has been produced to cover the most immediate issues. For a more comprehensive overhaul of assessment strategies a higher level framework would need to be developed (see the Teachability Project Leaflet covering Accessible Assessments and Examinations [6]), whereas this checklist is intended purely as a 'Getting Started' or 'Covering The Basics' guide for teaching staff, to begin the much larger process of moving towards a fully inclusive curriculum. This checklist should also not be seen as a dogmatic instruction of 'things you must do' for each assessment. Rather it should be treated as 'things you must look into / be aware of' – in some cases you may find that you need to make adjustments to an assessment, in some cases you may prefer to create an alternative. In rare cases you may not be able to see a way through at all, in which case you may need to seek advice from an organisation such as TechDis [7] or a specialist disability group such as RNIB [8], RNID[9], BDA [10] or MIND [11], for instance.

1. FOREWARNING: are ALL students forewarned of expected activities? When admissions are taken for a course, the mode and general content of the assessment should already have been determined. At enrolment or

admission, all students should be informed as to the kind of tasks they will be expected to undertake as part of the course, and as part of the assessment. This gives them the most possible time to raise any issues, and for staff to subsequently modify the assessment for that particular student, adjust the assessment for all students, or create an alternative. You may not think it necessary to tell students whether an assessment is to be marked by computer, for example, but it can be (see point 8).

2. EQUIVALENCE: is the process of enrolment / disclosure of need as simple as it could be? Are your students given ample opportunity to address any issues they may have with the assessment process. Do students who have particular needs have to go through significantly more onerous processes than those who don't?

3. ALTERNATIVES: have you considered an alternative should the original assessment prove to be problematic for a particular student? Although it is not necessarily essential (or feasible) to create alternatives for every assessment, some thought would be valuable as to how an alternative may be produced should the need arise. If a student cannot undertake the original assessment because of a specific access issue, will they be able to access the alternative or will that pose a similar barrier?

4. CLARITY: are all instructions clear and intuitive? Are students with dyslexia, or for whom English is not their first language (for example British Sign Language users), unnecessarily disadvantaged due to the use of overly complex language? This is not to say that one should not use the appropriate terminology or jargon in the 'content' of the assessment, but the instructions should be clear and simple.

5. LANGUAGE: is the content of the assessment worded using plain English? The use of shorter sentences and avoidance of ambiguous terminology can greatly aid understanding for students with dyslexia or for whom English is not their first language.

6. GUIDELINES: are you aware of 'accessibility' guidelines that one can adapt for usage in computer-assisted assessment? Although not intended for this purpose, it is not difficult to bring the concepts of the WAI Web Content Accessibility Guidelines [12] into this area with a little judicious adaptation (see the TechDis Website Accessibility Evaluation Tool [13] for more explanation of how to apply the guidelines to your work).

7. NAVIGATION: can your assessment be completed with limited dexterity? Is it necessary to be able to use a mouse to navigate and complete your assessment? Try getting through it using only the keyboard to 'tab' through. Perhaps some elements need to be redesigned, or layout altered, to make the progression smooth and logical. The converse should also be true, that someone utilising an alternative input device such as a switch, can 'tab' through and select options successfully in order to complete the assessment.

8. CHECKBOXES: can check boxes be checked / unchecked without the use of a mouse? If a paper is completed by hand but then computer-marked, what allowance can be made for a candidate whose motor control is not fine, and who makes marks that only approximately fit the boxes?

9. DEXTERITY: are simultaneous keystrokes required? Does a student with limited dexterity need assistance logging in at the CTRL-ALT-DEL stage? Does a student need to be able to manipulate a mouse (for example, can drag-and-drop exercises be completed using the keyboard)?

10. ERROR TOLERANCE: can a student backtrack through the assessment to correct mistakes? If they have moved on through an accidental click is there a valid reason why they should be prevented from going back to the page they accidentally skipped? If a student wants to alter an answer from earlier in the test, can they go back to do so without 'losing' all of the rest of the information they have entered?

11. AUDIO: do audio / spoken materials have an alternative text transcription or can they be interpreted by a BSL interpreter? (Bear in mind an interpreter needs to receive materials in advance if they are to adequately interpret jargon or terminology in a fluent manner that does not disadvantage the student they are working for, this may pose an issue if randomised question sets are to be used).

12. PIXELATION: have you checked that graphics (especially images containing text) do not pixelate when magnified? Windows XP contains a Magnifier that will magnify up to nine times. Some software will magnify 16 times – check that images are still sufficiently crisp as to be meaningful at this kind of magnification.

13. SCREEN-READER: have you checked that your materials read sensibly with screen-reading software? Often, particularly if 'tables' have been used for layout in a HTML-based software, the logical order of progression you see visually on-screen may not be the same as the 'tabbing' order that the screen reader uses. Hence you may find a question number being read out after the question itself, or worse still, instructions being read out after a question.

14. LINKS: do your web and navigation links make sense out of context? Some screen readers pick out links to enable rapid movement through the material. If a student listens to a long set of instructions for example, they may then wish to jump straight to the first question at the end rather than listening to the whole piece again in order to 'jump' when the link to the first question comes around. They can only do this if the link to the first question is something sensible. If one assumes the underlined part of the following examples to be the link, one can instantly see the problem (hint: example a is ideal as the link is relevant and the context is also set by the preceding words, examples b and c are also acceptable, example d is poor design):

a. Next you need to click on the link to <u>Question One</u>.
b. <u>Question One</u> can be found here
c. <u>Begin the assessment</u>
d. <u>Link</u> to Question One

15. LAYOUT: does the assessment make sense when experienced through a screen reader rather than visually? For example, do check boxes come after each answer option or before? Imagine hearing 'What is the capital of France? A. [check box] Berlin, B. [check box] Paris' – assuming you knew that Paris was the correct answer you would then have to backtrack to check the checkbox, whereas if the checkbox came after each answer option, one could simply check the box on hearing the correct answer and immediately move on.

16. TABLES: do tables make sense when read linearly? Again, think of the software that reads out tables row-by-row. A question asking 'What is the average score of the students over 30 in this class of ten students?' would then be followed by a table of students with their ages and test scores. If the table was laid out horizontally, one would hear 'Anne, Brian, Charles, Doug……….25 years, 42 years, 19 years, 24 years……….72%, 96%, 80%, 96%.......'. It would be almost impossible to work out whose score related to whom. If the table were laid out vertically, however, one would hear 'Anne, 25 years, 72%, Brian 42 years, 96%......' and so on – making the question much easier to complete, and not much more difficult than it would be to complete visually.

17. IMAGES: do images have full text descriptions for those that cannot see the image? If the question is to describe an image, providing a text description may defeat the object, and so an alternative assessment may need to be created for those that cannot see the image.

18. COLOUR: have you avoided using colour alone to convey meaning? Does the software you are using show completed question numbers as green, and unattempted questions red? A red/green colourblind student would be disadvantaged by this. If the different symbols were a green tick and red cross, then one is not using the colour alone to convey the meaning and therefore this would be acceptable in this context.

19. TEXT: can the user select text attributes? One can avoid many inclusion issues by allowing users to apply their own style sheets or choose their preferred settings. Does the software you are using allow you to give students the option of enlarging text, changing the style and colour of the font, changing the background colour, and so on? If not, could you allow the student to overlay their preferences by working with your network technicians to allow a 'roving profile'?

20. TEXT: is your default font and text size accessible? Although every student will have their own preferences, and the ideal situation is to allow them to apply those preferences to your assessment, it is also good practice to choose as default text fonts and sizes that are popular with a large number

of students. Text should be a minimum of 12 point, a clear font face should be adopted (sans serif is the preferred option of a majority of computer users, but this is by no means universal), and lines should be at least 1.5-spaced.

21. CONFUSION: have you avoided the use of 'trick' questions? Is it really one of your learning outcomes that a student should be able to tell the difference between the words 'conservation' and 'conversation' in a question about management of the countryside? Or are you unfairly disadvantaging dyslexic students?

22. TOLERANCE: are your gap-fill responses error-tolerant? It should be made clear to students in advance of the assessment (and that does not mean in the instructions they encounter when sitting the assessment itself) whether they will be penalised for incorrect spelling. With automatic marking it can be difficult to avoid this, as dyslexic spelling can often vary significantly from the true spelling.

23. USER-TESTING: have you trialled your materials with user groups taken from all sections of your likely audience? Try not to just grab the 'obviously disabled' students – the wheelchair user, the student with the assistance dog, as they may find it offensive, and they may feel obliged to assist even though twenty other staff have made similar requests since breakfast. In the same way that you would build a user group of students for whom English is not their first language by contacting specialist agencies, the same should be true when building an 'inclusion' user group. Use your student support office and NUS representative for advice and your alumni association to ask recent graduates for any input or advice they have to offer.

24. POLICY: does your institution have an assessment policy? Does your department or college have an assessment policy? Do you have to fit in with the frameworks provided by awarding bodies, professional associations etc? Does your institution have an accessibility or inclusion policy? Does your department or college? How many 'Brownie points' would you get by submitting your inclusive assessment framework as a first draft of a departmental inclusion policy? Make sure you know the rules you are working under, and if they constrain you, find out how one might go about challenging them. Inclusion is everyone's responsibility – it must be somebody's job to look into the issues you raise. The fact that you have read this paper may mean that it is down to you to highlight this in your department or college. On a separate theme, do you know who is responsible for purchasing the CAA software available to you? Are they well versed in inclusion issues and accessible design or would they benefit from inclusion training?

25. ADVICE: do you know where to find further advice on inclusion in computer-assisted assessment?

Conclusion

The last three points on the checklist are perhaps the most vital, the hardest to undertake, and the most likely to be out of your hands. Master these three and you will be well on the way to achieving a more inclusive computer-assisted assessment process. It is not always an easy process, and certainly one that needs to have time and resources devoted to it, but simply throwing up one's hands and saying 'I have no time or resources so forget it' is no longer an option, given the requirements of the legislation. Everyone can and should do something, and hopefully this checklist has provided staff with a few of the 'somethings' they can do with a minimum of effort for maximum effect.

References

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[6] Teachability project leaflet on Accessible Assessments and Examinations. <http://www.teachability.strath.ac.uk/chapter_8/tableofcontents8.html>

[7] TechDis, advice for the post-16 education sector on accessibility and inclusion through technology. <www.techdis.ac.uk>

[8] RNIB, Royal National Institute for the Blind. <www.rnib.org.uk>

[9] RNID, Royal National Institute for Deaf people. <www.rnid.org.uk>

[10] BDA, British Dyslexia Association. <www.bda-dyslexia.org.uk>

[11] MIND, the mental health charity. <www.mind.org.uk>

[12] Web Accessibility Initiative Web Content Accessibility Guidelines <http://www.w3.org/TR/WCAG20/>

[13] TechDis Website Accessibility Self-Evaluation Tool <http://www.techdis.ac.uk/getwebaccesstool>