

Does accessible **e-learning** have to be boring? *

Introduction

This paper looks at some of the visual, audio and textual elements found in e-learning instruction. It asks what the pedagogical rationale is for including these elements and looks at the implications of including these elements, for students with disabilities. It concludes that the inclusion of these elements can be beneficial to many students. It argues that accessibility is best achieved by applying an understanding of pedagogy and accessibility issues to create complex solutions, rather than producing very simple text-based e-learning in an attempt to make e-learning materials accessible.

Elements/techniques used in e-learning materials

With advances in technology, instructional designers are able to create e-learning web sites that utilize dynamic, media-rich elements. As instructors we are concerned that the use of these elements enhances the instruction. Some commonly used elements in e-learning include:

- Video
- Animations
- Diagrams
- animated diagrams
- audio narrative
- Web pages
- photos
- annotated diagrams

Implications for learning

There are strong pedagogical arguments for using many of these elements.

- Visual elements appeal to 'visual learners'
- Visual and audio elements used together allow different 'channels' in the learner's short term or working memory to take in new information. Clark and Meyer would argue that the combination of visual and audio elements should be carefully constructed in order to avoid 'cognitive overload'
- Animation can help to gain the learner's attention
- An animated or illustrated 'character', to guide the learner through the material can aid learning.

According to Schank: 'well-written, memorable characters draw an emotional response from users that ensures they will remember the lessons that interactions with those characters impart.' (p132 Schank 2002). An example of such a character is shown below.

Screenshot 1 – Screenshot showing 'Angie', a character in the 'Banking on Our Future' e-learning course for teenagers.



Implications for accessibility

The use of these elements can have implications for students with different disabilities such as: hearing, sight or cognitive impairments.

- The use of diagrams, video, photography etc could mean that parts of the instruction don't make sense to blind students who rely heavily on the textual elements of the instruction.
- The use of audio could mean that part of the instruction doesn't make sense to a deaf student
- The use of text which is simultaneously displayed on screen and read out, whilst contravening Clark and Meyer's redundancy principle may be helpful to students with cognitive impairments.

Adaptations for accessibility

Simplify the material

One option is to simplify the e-learning material for example by making it very text based, to avoid some of the accessibility problems associated with multimedia sites.

Amending the elements

A second option is to amend some of the multimedia elements, to make them more accessible. Examples of these amendments include:

Video – video description can be added that describes any elements on the screen that are necessary to understanding the material, but don't have a spoken equivalent. For example a piece of instruction on drama which featured a clip of a character creeping silently up behind another character in order to hit them over the head, would have this action described for the benefit of a blind student.

Audio – If audio is used either, as part of a video, or on its own, it is possible to have a text alternative or transcript. This means deaf students are able to have all the material hearing students have. With the development of voice recognition software, it should soon be possible to create these transcripts directly from the audio file.

Text – text may be presented in an 'image' format for example in Flash animation or PDF. This may cause problems for students using screen reader software. Instructional designers can consider using a combination of Flash and HTML, with the text elements in HTML, which makes them readable by screen reader software. For the PDF example, it is possible to provide an alternative text version of a document in rtf or Word format.

Some of these solutions are also beneficial to other students as they incorporate elements of 'Universal Design'. For example if there are students who speak English as a second language they would benefit from a transcript of a video being provided.

Conclusion

There are many ways of presenting materials on websites. As technology advances so the ways of presenting materials become greater and more complex. Some techniques or elements that are used on commercial sites may be useful for e-learning, others may be gratuitous, or even harmful to learning.

Instructional designers need to think about the pedagogical implications for using different elements and techniques for creating e-learning materials

A further issue to consider is accessibility. To make a piece of e-learning more accessible, it is possible to simplify the piece of instruction, to minimize the risk of there being accessibility problems. However this approach could well mean that 'accessible e-learning has to be boring'!

The alternative position, advocated in this paper, is that there are many opportunities for Instructional Designers to be very creative when designing a

piece of instruction. It is advisable for Instructional Designers to develop a good understanding of the elements that they can use, and the implications of using these, for both pedagogy and accessibility. Armed with this knowledge, it is possible for Instructional Designers to create e-learning that is effective, interesting, attractive **and** accessible.

Footnote

* The title of this paper title was inspired by the article 'Do accessible websites have to be boring?'

References

Schank, R. (2002) Designing World-Class E-learning, McGraw Hill

Clark,R and Mayer,R (2003) E-learning and the Science of Instruction, Pfeiffer

Do accessible websites have to be boring?
<http://www.webaim.org/techniques/articles/boring>

Universal design in education
http://www.udeducation.org/teach/teaching_techniques/bowe.asp

Banking on Our Future – 6th to 8th Grade
http://www.bankingonourfuture.org/teen/stage_2.htm