

The Click and Go Decision Tool: Towards Inclusive and Accessible Visual Literacies

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ABSTRACT

The increasing development of digital rich resources promises and exciting opportunity to transform video and audio media into mainstream networked learning. The use of visual and audio literacies can inspire us to express ideas not readily available in written form, and in this way, it can enable different ways of representation and access to a wider and more dispersed student population. This paper will describe the concept of 'visual literacy' and the notion of 'inclusive' technology. Visually rich resources might perhaps bring more access, control and choice to networked learning events. However this apparently inclusive technology might be perceived as a barrier to ensure accessibility for users who have sensory disabilities. The JISC Click and Go: Access for All project (2003) has explored, through the use of inquiry groups and questionnaires, practitioners' perceptions, understandings and experiences around the area of accessible digital video and audio. This paper explores current practice and introduces a decision tool intended to provide a practical route to clarify intentions and requirements through the use of questions and possible answers.

Keywords

Video and audio, visual literacy, accessibility, multimedia

INTRODUCTION

The use of digital video and audio to support web-based learning resources is becoming an attractive option for many educators. Although the pedagogic use of film and video has a long history, its widespread use has always been limited by production costs and delivery difficulties. In recent years the costs of developing video and audio materials has fallen with the emergence of high-quality, easy-to-use cameras and digital video editing software aimed at the domestic market. In parallel, the internet has fundamentally transformed our capacity to deliver resources, including digital video and audio, to students both on and off campus. An indicator of this changing environment is the growth of national moving image collections and projects under the JISC 5/99 umbrella that have sought to bring the use of digital media into mainstream teaching practice in UK higher and further education.

The increasing ubiquity of these resources and approaches promises an exciting opportunity to enrich networked learning. The vision is clear: to move away from the static text-dominated content currently prevalent on the web towards a media-enhanced environment. However this does not mean the simple assimilation of video and audio in the linear narrative format we are familiar with from cinema and television. The seamless combination of digital video with other elements of the online pedagogical environment such as group discussion and assessment offers the prospect to move beyond the current understanding of video and audio as a simple presentational format towards the use of 'rich media' as a powerful and engaging focus for discussion and collaborative work.

The increasing use of visual images is undoubtedly challenging for both teachers and students. Sims et al (2002) argue that "manipulating these elements is parallel to manipulating words in order to compose a desired message, and that the competencies required for composing and interpreting messages using images efficiently and effectively, that is, where they add value to meaning or provide additional clues, are vital to effective visual communication and the basis of visual literacy". In their attempt to derive a consensus definition of visual literacy from among 'scholars and practitioners' of the subject, Brill et al (2000) describe a visually literate person as being able to "(a) discriminate, and make sense of visible objects as part of a visual acuity, (b) create

static and dynamic visible objects effectively in a defined space, (c) comprehend and appreciate the visual testaments of others, and (d) conjure objects in the mind's eye."

Recognising the value and understanding the role of visual literacy for education is one of the core challenges for the new generation of network technologies (Asensio and Young 2002). The application of visual and audio literacy can inspire us to express ideas not readily available in written form. The use of visual media in learning can reach a wider variety of learning styles. This in turn may open up scholarship to wider, more dispersed and very different students that we have experienced before (Moss, 1983).

Any notion of 'access' as applied to media technologies is, however, troublesome. Visually rich resources might perhaps bring more access, richness and choice to networked learning events. However this apparently inclusive technology might be perceived as a barrier to ensure accessibility for users who have sensory disability. Increasing awareness and understanding of the different requirements, tools and concepts to enable access; seem to us of paramount importance if we truly want video and audio media to be an 'inclusive' technology for networked learning.

The JISC Click and Go: Access for All project (2003) has explored, through the use of inquiry groups and questionnaires: practitioners' perceptions, understandings and experiences of the value of accessible digital video and audio. This paper explores current practice, which includes in this case the commitment, frustrations, concerns, requirements and hopes towards accessible and inclusive visual literacies. We will introduce an 'accessibility enhanced' version of the Click and Go Video Decision Tool (Thornhill, Asensio, Young and Strom, 2002). This tool was designed to help and guide practitioners towards achieving educationally meaningful video and audio resources. The second version of the Decision Tool is intended to provide a useful and practical guideline for the practitioner that wishes to design accessible learning events through the use of video and audio media. The Decision Tool is based on the Three 'I's Framework (Young and Asensio, 2002), and is intended to provide a practical route to clarify intentions and requirements through the use of questions and possible answers.

THE THREE I'S FRAMEWORK

Sims et al (2002) suggests that visual media are used efficiently and effectively where they "add value to meaning or provide additional clues". Within the context of visual literacy, the question arises what is the real 'added value' of the moving image for any pedagogical setting. Broad descriptions such as 'giving access and depth to real events' and 'making an emotional appeal' are not really detailed enough to inform design decisions. For example, what specific elements of the video give depth or appeal to the emotions? Essentially we are trying to explore the interface between pedagogical value and the practical utility of the technology to deliver those values. It is particularly important to understand the 'added value' of using media when dealing with issues of accessibility, so the Three I framework (Young and Asensio 2002) will be described in some detail. The framework's rationale began with a list of technologies used to deliver moving images from a historical perspective. Something that film, television, videotapes, videodisks, digital desktop video, multimedia, CD-ROM and web media all clearly have in common is the focus on the moving image itself. However from the late 80's to the mid 90s the selling point for videotapes, videodisks, digital desktop video, multimedia, CD-ROM was actually the promise of 'interactive video'. The image was still important, but was overlaid with the idea that the user could have easier and more controllable access to the resource. In the mid 90's the web reinforced further accessibility and interactivity, but added a new element, 'integration'. This meant interlinking with other web materials and of course communication and collaborative tools. This is partly a case of new technical opportunity, but also the influence of prevalent pedagogical theory interpreting the tools in new ways and seeing opportunities in them for curriculum reform.

We believe these elements, image, interactivity and integration provide a useful framework to interpret the 'added value' of the media in an educational context.

Value of video: Image and Sound

As the most established and indeed the underpinning 'value', the role of image is clear: to complement and add visual richness learning resources. Referring specifically to video, Goodyear and Steeples (1998) note that video can provide vivid descriptions to articulate tacit information and knowledge difficult to articulate through text and verbally. It would be wrong to consider only the visible educational messages of video, however. Undoubtedly it also carries hidden or semi-hidden messages such as narrative, emotion, authority, authenticity and symbolism. These may be more important than the explicit visual message.

Value of video: Interaction

Although conventional film and broadcast television are far superior in visual quality they have a major drawback in education. As Rosenberg puts it "...the main reason why television did not become everyone's teacher was because it lacked the very essential quality of teaching: the ability to interact with the learner..."(2001:22). Thus the advent of interactive video in the eighties was met with some enthusiasm. "The potential applications of interactive video technology in educational and training fields are virtually unlimited." Thus concluded a contemporary report sponsored by UK Department of Industry (Duke, 1983:104). The key to interactivity was the linking of computers to video technology (initially VCRs and videodisks), allowing control over the pace and direction of the video programme. This control enabled self-paced learning leading, according to Palmer (1987), not only to time saving and standardised results, but also distributed learning to a large numbers of learners. 'Interactivity' in the original sense was not confined to computer-human transactions but included

- Access – availability of the material asynchronously and independent of location
- Choice – a library of materials to view 'on demand'
- Control – ability to start, stop and review material

It was not until the early nineties that the combination of desktop digital video and CD-ROM enabled the high levels of control and integration with other computer-based learning materials we are familiar with today. The rise of the web in the late nineties promised even greater access and choice but brought problems of video quality. The video streaming compromise between image quality and access is particularly acute in terms of interactivity. One of the principle justifications of streaming media is its use in asynchronous, distance modes, yet ironically the nature of the web as a distribution medium is also digital video's main limiting factor.

Value of video: Integration

Although video can be used on its own, more frequently on the web it is interlinked with slides, supporting texts, discussion boards, chat, resource links, self assessment quizzes and so on to form or as part of a VLE. This brings the possibility of designing novel learning experiences and ways of interacting with the media. The assumption is that adding an additional channel of communication to transmit a message will increase the quality of communication itself. This notion is based on two theories that support the use of several communication channels.

Multi-channel communication supporters claim that learning is effective when cues presented across channels are related or 'redundant' (not in the negative sense but complimentary or parallel). Thus Severin (1967) argued that multiple-channel communication is effective when the cues have meaning. Interestingly redundant information presented across channels increases the dimensionality of the information and the stimuli for one channel provides reinforcement for the other, which improves the quality of communication (Hsia 1971). The dual code theory also supports the effectiveness of multiple-channel communication. Paivio (1971, 1991) argues that information that is supported by both aural and visual cues should increase recall and retention. Studies by Mayer and Anderson (1991) have also shown that visual information helps to process and remember verbal information and vice versa. With the opportunity of combining video with other interactive elements such as communication and assessment tools, learning environments nowadays can now be far richer than the multiple channel theorists could imagine 30 years ago. The impact of these new combinations of video and networked applications has still to be explored and evaluated.

BECOMING VISUALLY LITERATE

Armed with the 3 'I's framework we can see that the definition of Brill et al (2000) only partially addresses the pedagogic repertoire now available to teachers. This is not simply about learning to read and compose the symbols of visual media but using that language to engage in a rich multiple-medium 'conversation', blending where necessary other technical and live modes of educational engagement such as online discussion. The added dimension of ensuring that all members of the student community, irrespective of disability, can fully participate in this conversation brings another layer of complexity.

This may seem a formidable challenge to educators but we believe, and this is supported by our research work, that practitioners often have very sophisticated ideas for educational use of rich media technologies. However they often lack the language (ie. the literacy) to express these ideas in a way that helps to create meaningful learning events for their students and develop their own understanding and expertise. The lack of a shared

language also hampers the sharing of practice on how to make learning and teaching more visually appealing, more fun and more interactive.

The Click and Go Video Pedagogic workshop in June 2002 provided an opportunity to explore the theme of visual literacy in education. Through exploring the meanings of visual literacy, the idea emerged that visual literacy is about making sense of what is not text; it is about deconstructing visual narratives and about consuming visuals. It was argued that although we are already visual people, this does not mean that we are necessarily 'literate'. There seemed to be some agreement on the 'overtaxation' of the teaching in Western cultures. The critical question was therefore how we could as a community, become more visually literate and how we could make our teaching disciplines when appropriate more visually literate. The point was raised that some disciplines might already be more intrinsically visual than others. However some agreed that this should not be a limiting factor, rather it might be seen as a creative process by sharing existing good ideas to making our disciplines more visually rich and engaging.

The critical point is that once the educator starts valuing the use of visual media as a form of sharing, delivering and creating non-text knowledge, it follows that the educator will want to implement visual literacy within teaching. The path to visual literacy is to experiment with the use of visual media and the same time to become more reflective and critical of how still and moving images are utilised by the students and the educators themselves. A final question raised at the event was the implications for media-rich approaches of the UK's Special Educational Needs and Disability Act 2001 and new sections of the Disability Discrimination Act, which came into force only few a months after the workshop.

INCLUSIVE AND ACCESSIBLE TECHNOLOGY

Moss (1983) argued over two decades ago that video and audio may be a key tool in opening scholarship to a wider audience. It should enable learning to be more fun, engaging and relevant and address a wider range of learning styles than current text-heavy approaches. Nevertheless increased use of 'added value' media might equally be perceived as excluding students who have visual or auditory disability. Thus visual information that is not otherwise communicated through audio is inaccessible to individuals with visual impairments and the audio portions of these media are inaccessible to individuals with hearing impairments. On the other hand, media-rich environments may be beneficial to dyslexic students. There is some evidence that students with this very common disability currently tend to orientate towards visually-rich subjects such as arts and design subjects to 'language based' course. In order to investigate this complexity, the JISC Click and Go Video Access for All project organised a series of inquiry groups to bring together experts and practitioners in the fields of educational media and web-based accessibility.

The first clear message was that accessibility was not seen solely in terms of technology for the sensory impaired. Accessibility was understood in the following contexts:

- **Technical** Accessibility is about friendly universal design (ie. design for all). In universal design terms, including accessibility features when the resource is being developed, is much easier than trying to accommodate students with sensory impairments later once they have enrolled in a course. It is about design that links accessibility to usability. Examples of good practice from the experts were when consumer evaluation is conducted at formative stages of development, and when captions of the audio content and audio descriptions of visual content are provided. To make video content accessible to those who are deaf, a sign language interpreter or text captioning can appear on the screen. Captioning is more common because not all individuals who are deaf know sign language. People who are blind or partially sighted cannot access the visual content of a video production unless the content is available in audio format as well.
- **Institutional** Accessibility is still often a marginal issue that requires institutional embedding. It requires local and institutional commitment to create a culture of awareness.
- **Political** Accessibility needs to be on the agenda across the sector, as it concerns changing fundamental attitudes. It is more than ensuring standards compliance. Who, for example, is responsible for producing accessible material?
- **Economic** Accessibility means extra work in terms of budget, knowledge and time.
- **Educational** The aim to focus on the learning experience as a whole and the meaning of content. This requires a focus on the education of educators but could break the common limiting associations between accessibility and 'boring material' and 'extra work'.

- **Ethical/Moral** A strong driver among the inquiry groups, concerned with enabling choice and opportunity. Again this was partly about people with sensory disabilities but also wider access for social groups (elderly, unemployed, ethnic groups).

Two themes emerged from this research, firstly that 'accessibility' was universally considered in wider terms than the technical standards compliance terms in which it is often discussed and secondly that a clear focus on educational purpose of resources was the key to making them accessible.

TOWARDS ACCESSIBLE TECHNOLOGY

The *Skills for Access* project funded by HEFCE (2003/5) carried out a UK-wide survey over 200 people of staff involved in developing e-learning resources. The aim of the survey was to understand the specific issues and needs of the community with respect to developing optimally accessible e-learning resources. The survey results showed information about attitudes towards, and knowledge of, inclusive design of e-learning, and highlighted some of the problems facing staff in creating accessible contents. It appears that 42% of respondents cited a lack of time as the primary barrier preventing them from creating accessible e-learning, ahead of difficulties in developing a prioritised management plan for redesign (10%) and a lack of knowledge of the needs of disabled people (10%).

These findings correlate with the survey undertaken by the JISC Click and Go: Access for All project. As part of the research study we wanted to map out current practice, knowledge of resources and support in the area of accessibility, requirements and future plans among practitioners using digital video and sound. As lack of time is often the primary barrier to any type of development, we wanted to focus on the possible information sources and support mechanism that could be in place to support development and to some extent reduce time resources.

The intention of the survey was to explore what practitioners already know on accessibility and what would support their work being more accessible. A short questionnaire was distributed among relevant mailing lists. A total of 13 practitioners working in the area of video and audio streaming contributed to the survey.

The community gained information from local sources: '*organised Web Accessibility Workshop internally*' and '*employed an Accessibility Officer*'. The majority of the respondents were familiar with accessible technologies such as the Bobby website, and knew about national initiative such as TechDis and RNIB and the web (the W3C web site for guidelines and advice on accessibility and accessibility.com). However the majority of respondents were not sure of what was required exactly: '*[I am] aware of the SENDA legislation but not in detail*', '*[I am] not fully aware of the legislation or help available*'.

There was a plea from the community for further support in this area, '*some kind of overview of the responsibilities that we have and solutions to any problems that these responsibilities bring*'. More precisely,

'as with other aspects of creating and using video technologies for teaching and learning, it is necessary to identify ruthlessly those areas for which academics input is required (i.e. content and pedagogical approach) and those which are not the concerns of academics (technical production, legislative issues), and provide support in the latter areas, to free the academics to do what they are employed and uniquely qualified to do'.

The type of support envisaged was '*actual tutorials on how to implement the guidelines*', '*guidance on legal and ethical issues*' e.g. of using videos of patients, '*an advisory service on producing accessible multimedia*', '*sharing of good practice, solutions to common problems*' and '*more localised training, less expensive and preferably free*'.

Some responses reflected the wider view of accessibility observed which correlates with the findings from the inquiry groups. In this case accessibility is about access to different learning styles.

'The mere fact of doing it makes the material accessible in an alternative way, compared to the live lecture, and this was found valuable by students and served their different learning styles'

Despite the obvious barriers there remained an enthusiasm for audio and video as a pedagogic approach.

'I would [like to] continue to try to employ video to create effective and, equally importantly, varied learning experiences, so as to cater to a wider range of needs than traditional lecturing captures....Merely to do so will benefit the sensory impaired, as well as a wide range of students with other, equally valid but less specifically identifiable personal issues, circumstances and challenges' and 'depending on institutional commitment, [I would like to] implement as many changes as possible'.

It is evident that there is a steep learning curve for practitioners to ensure that their video and audio designs are inclusive. This deserves full discussion and Seale (2003) has already made an attempt to explore how learning

technologists are developing practices to produce accessible materials which might involve adopting concepts such as the Communities of Practice framework. Our attempt here is to introduce a tool that can serve as a guideline on video and audio design decisions and increase awareness on what is required in relation to accessibility.

THE CLICK AND GO DECISION TOOL

The JISC/DNER Click and Go Video project developed a Decision Tool (Thornhill, Asensio, Young, and Strom 2002) to help and guide practitioners create educationally meaningful video and audio resources. The Decision Tool is based on the Three 'I's framework of Image, Interactivity and Integration (Young and Asensio 2002). The framework offers a means of unravelling the often complex ideas practitioners have for using video and audio and provides a route to clarify their intentions through understanding the primary focus of what they wish to achieve. The primary foci identified are:

- Image and sound – the quality of the video and audio for instructional purpose
- Interaction – user control and access
- Integration – links to communication and other software tools

How the Decision Tool Works

The development of streaming media resources is undoubtedly rewarding. However, it is essential to have a clear pedagogic rationale for what is trying to be achieved. In addition, technical, implementation and accessibility issues should be considered at an early stage. As the various aspects of streaming media are sometimes confusing, the tool helps practitioners make some key decisions that will ensure that the production of streaming media is as risk-free and enjoyable as possible. *The Decision Tool* has several stages.

- In *Stage 1*, the practitioner makes a clear educational proposal. Not only is this vital to an efficient development and design process but it helps communication with colleagues and technical/audiovisual staff.
- In *Stage 2*, a quiz prompts the developer to think about learning and teaching purpose in more depth. This helps to identify the Three 'I's educational focus.
- In *Stage 3*, there is a checklist to assist with some of the most frequent technical, implementation issues and accessibility requirements.
- *Stage 4* compares technical issues (usually barriers) with the Three 'I's educational focus.
- Finally in *Stage 5*, the original educational proposal can be adjusted to take into account the issues raised from the previous stages.

The tool is designed to provide a sound pedagogic, technical, infrastructural and accessible foundation for the development of video resources. Practitioners are advised to answer the questions in all Stages. Recognising that some of the technical questions may be difficult for an individual to answer, an Appendix was developed to attain responses from the host institution, before the practitioner starts substantial development work. To download a copy visit <http://elisu.gcal.ac.uk/click/tool.pdf>

CONCLUSION

Although the use of moving images and sound in tertiary education has a long pedigree, the delivery of rich media over the web is still in its infancy. The streaming technologies of the web enable wider use of digital media in its traditional, linear narrative format. This in itself offers an exciting prospect of moving away from the dominance of text, but the mode of delivery itself and improved editing tools means educators can do much more with media than the original pioneers of film and videotape could envisage. Non-linear presentation, segmenting, indexing and searching, hyper linking to related and supplementary information are all possible as is its integration with other networked learning approaches such as online discussion. The effective use of this new repertoire requires high levels of 'visual literacy' from students and educators, and as an educational community we need to consider what visual literacy really means in these interlinked, media-rich contexts. The growing awareness of accessibility perspectives has risen in parallel, and demands an 'accessibility literacy' alongside visual literacy. There is a risk that these will cancel each other out. As one respondent from the questionnaire survey indicated:

'I am broadly aware that there is scope to trip up by not providing for all contingencies in this area. I am even more acutely aware that the barriers to creating this sort of material are so large, and the incentives and resources so few, that to rise even more barriers is likely to kill the efforts of the few enthusiasts completely'

Accessibility concerns (or at least accessibility concerns for certain groups of students) could inhibit creativity in the development of rich media learning environments. We believe that this is not inevitable. Accessibility literacy and visual literacy should rather exist as a creative tension, focusing more deeply on the educational value of the resources we develop (what learning experience we want to achieve exactly) and by applying principles such as universal design, can bridge the gap between innovation and requirement. This does not mean 'universal accessibility', an impossible goal, rather we strive to ensure as many students as possible benefit from the transformative educational potential of accessible rich media.

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