A contextualised model of accessible e-learning practice in higher education institutions

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In the accessible e-learning community there are very few original metaphors, theories and models that have been developed to try and describe, explain and develop 'best' practice. This paper will explore the extent to which existing accessibility models can help to develop our conceptualisations of accessible e-learning practice, and outline a proposal for a new contextualised model of accessible e-learning practice. The key components of this model are accessibility stakeholders, accessibility drivers, accessibility mediators and stakeholder responses. The value of this model in helping to develop accessible e-learning practice in higher education is that it challenges researchers and practitioners to recognise that focusing solely on the drivers of accessibility (accessibility legislation, guidelines and standards) is not an effective strategy for developing and changing practice. If practice is to develop and e-learning be made optimally accessible we need to understand how stakeholders' responses to accessibility are influenced by the context in which they are operating, a context in which both accessibility drivers and mediators operate.

Introduction

Broadly speaking, accessibility in relation to e-learning (eg. virtual learning environments, digital repositories, multimedia, web portals, discussion boards) is understood as ensuring that learners are not prevented from accessing technologies or the content and experience offered by technologies on the grounds of their disability. Several powerful drivers for making e-learning accessible in higher education have emerged over the last five years including disability discrimination legislation, accessibility guidelines and accessibility standards. Despite these drivers, it is still possible to read a report that condemns the perceived 'inaccessibility' of e-learning experiences that we are offering our students with disabilities (Lamshed, Berry & Armstrong, 2003; Alexander, 2004; Witt & McDermott, 2004; Spindler, 2004). A prime reason for this is that whilst practitioners know that they should be making e-learning accessible to students with

disabilities, they do not know *how* to make e-learning accessible. Seale (2006) argues that there are two main reasons for this. Firstly, the research and practice literature has predominantly recorded arguments about why e-learning should be made accessible and failed to record detailed, rich descriptions of how practitioners have interpreted and implemented accessibility legislation, guidelines, standards and tools in order to develop an accessible e-learning practice. Secondly, linked to this, the practitioner community within higher education has not developed its own conceptualisations of what best practice is and what factors influence that practice.

Conceptualisations of best practice often emerge through the use of metaphors, theories and models to analyse and reflect on current practice. In the accessible e-learning community there are very few original metaphors, theories and models that have been developed to try and describe, explain and develop practice. This paper will explore the extent to which existing accessibility models can help to develop our conceptualisations of accessible e-learning practice, and outline a proposal for a new model of accessibility practice.

Current accessibility models

Three accessibility models that have been proposed are the *web accessibility integration model* (Lazar, Dudley-Sponaugle & Greenidge, 2004), the *composite practice model* (Leung *et al.* 1999) and the *holistic model* (Kelly et al. 2005). All of these models are limited in that they do not incorporate the whole of a higher education institute's activities or all the potentially relevant stakeholders within an institution.

The scope of the web accessibility integration model is very limited in that it focuses only upon the various influences on the development of an accessible web site. In doing so the focus is narrowed to just the web site developer and their client. It does however place their interaction within a societal context of policies, laws and guidelines. Leung et al. (1999) developed the composite practice model to describe and explain current practice in regard to assistive technology service delivery in post-secondary educational settings across Australia. Whilst the focus of this model is as narrow as the web accessibility integration model, what it does do effectively is highlight the contribution of a range of stakeholders, including: administrators, student services, lecturers, librarians, IT services and assistive technology specialists. Kelly et al. (2005) propose a holistic model for e-learning accessibility, which laudably places the learner at the centre of the development process. This model focuses predominantly on the context in which accessible e-learning is developed, arguing that local cultural, political and social factors need to be taken into account. In doing

so however, it ignores the perspectives of stakeholders other than the student and perhaps the lecturer.

Whilst these three models focus on different stakeholders (eg. developer, AT specialist, student) what they all have in common is that they include the context in which the stakeholders are operating.

A new accessibility model

A new contextualised model of accessible e-learning practice in higher education is proposed that takes into account:

- All the stakeholders of accessibility within a higher education institution;
- The context in which these stakeholders have to operate: drivers and mediators;
- How the relationship between the stakeholders and the context influences the responses they make and the accessible e-learning practices that develop (see Figure 1).

The extent to which e-learning material and resources are accessible will be influenced by how all the stakeholders within a higher education institution respond to external drivers for accessibility such as legislation, guidelines and standards. This response will be mediated by stakeholders views and understandings of a range of issues including: disability, accessibility and inclusion; the extent to which they view themselves to have a duty and responsibility to respond; the extent to which they feel their personal autonomy is threatened and the extent to which they feel it is necessary or beneficial to respond as a community or team. The accessible e-learning practices that develop out of these responses will vary depending on the stakeholders and the context in which they are operating but essentially centres on taking ownership and control as well as developing personal meaning.

The theoretical position that underpins this model is that the development of accessible e-learning is a practice or activity that can and will be mediated. This position has been developed by Seale (2004, 2006) and draws heavily upon the theories of communities of practice (Wenger, 1998) and activity theory (Engeström, 1987). Seale (2006) argues that both theories prompt us to think about how rules mediate accessibility practice (drivers) and what the subjects of an activity system or members of a community (stakeholders) need to do in order to respond to those rules. For example, activity theory prompts us to think about 'division of labour' and how different roles and responsibilities for accessible e-learning are

Drivers		
Legislation	Universal guidelines	Universal standards

HEI stakeholders	Stakeholder responses	
Student	Develop shared goals	
Lecturer	Develop polices and strategies	
Learning technologist	Re-organise services	
Support worker	Identify brokers	Partiallly or optimally accessible e-learning
Staff developer	Develop strategic partnerships	
Senior manager	Define and agree best practice	
	Develop and use own tools	

Outcome

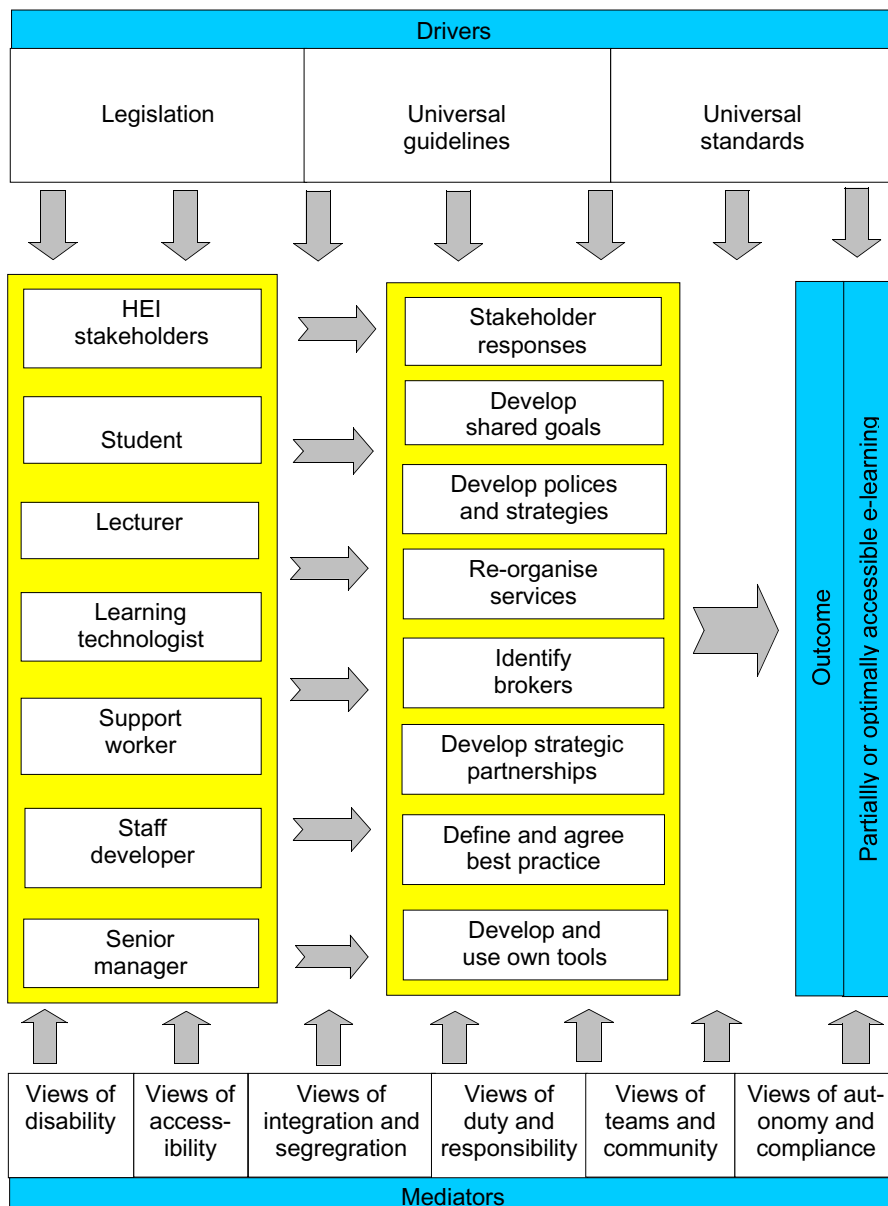| Views of disability	Views of access-ibility	Views of integration and segregration	Views of duty and responsibility	Views of teams and community	Views of aut-onomy and compliance
Mediators					

Figure 1: A contextualised model of accessible
e-learning practice in higher education

decided, while the communities of practice theory prompts us to think about whether accessible e-learning practice is located in several different communities that need to be brought together in order for a fuller and more successful practice to develop. Both theories also prompt us to consider the extent to which different stakeholders develop their own 'personal and collective meanings' through their interpretation of such things as rules, tools, approaches and procedures.

What the contextualised model of accessible e-learning practice stresses is that there is no direct causal relationship or connection between drivers for accessibility and accessible e-learning material and resources. The gap between drivers and outcome needs to be filled by accessible e-learning practices and the stakeholders within a higher education institution help to bridge that gap. Each element of the model: stakeholders, drivers, mediators and stakeholder responses will be explored in more detail.

The stakeholders of accessibility

Within higher education, there is growing recognition that responsibility for accessibility needs to be shared between all relevant stakeholders. The IMS Global Consortium (2004a) for example, identifies stakeholders that are both external and internal to a higher education institution including courseware and software vendors; educational publishers; authoring tool developers and vendors; authors and content developers; educational institutions (including administrators); educators and instructors; administrative staff and students. Opinions have varied however, as to which stakeholder should take the brunt of the responsibility for ensuring accessibility and what the different roles of the stakeholders might be. For example, some people consider that accessibility is the sole responsibility of specialists such as disability service providers and assistive technology specialists (Burgstahler & Cook, 2005; Anderson, 2004) and that part of their role is to develop strategic partnerships with those who make technology and planning purchase decisions and those who provide services to students such as libraries, counseling and registration.

Seale (2006) argues that accessible e-learning practice will not develop through the actions of individual practitioners or stakeholders alone. Accessible e-learning practice will develop and progress when all the different stakeholders join to work together. She identifies the key stakeholders in the development of accessible e-learning within a higher education institution as: disabled students, lecturers, learning technologists, student support services, staff developers and senior managers. These stakeholders are incorporated into the contextualised model of accessible e-learning practice.

The drivers of accessibility

The proposed contextualised model of e-learning accessibility identifies three main drivers: guidelines, standards and legislation. These will be considered in turn.

Accessibility guidelines

The most well known and perhaps influential accessibility guidelines are the Web Content Accessibility Guidelines (WCAG) developed by the Web Accessibility Initiative (WAI) of the World Wide Web Consortium (W3C). The most influential of these guidelines has been the WCAG-1, which consist of fourteen guidelines underpinned by two central themes (Chisholm, Vanderheiden & Jacobs, 1999): ensuring graceful transformation (guidelines 1-11), and making content understandable and navigable (guidelines 12-14). A list of checkpoints is provided that explains how the guidelines apply to typical content development scenarios. Each checkpoint also has a priority level assigned based on the checkpoint's impact on accessibility. The guidelines also define three "levels of conformance" where at Conformance Level "Triple-A" all Priority 1, 2 and 3 checkpoints are satisfied.

The WCAG-1 have had a huge impact on design process, particularly in relation to setting the benchmarks or perceived standards that designers should aspire to. However, a major criticism of the WCAG-1 is that they are too generic (particularly in relation to technologies). Therefore, despite the impact of the WCAG-1 and the development of a second version, which is attempting to incorporate feedback from WCAG-1 (Caldwell et al. 2004), other more specific guidelines have been developed:

- *Organisation or company specific guidelines:* Examples include guidelines produced by Australian Capital Territory (Chief Ministers Department, 2004); and BBC New Media (Hassell, 2005);
- *Service specific guidelines:* Different educational sectors have felt it necessary to produce their own guidelines including the Australian Vice Chancellor's Committee (2004) and the IMS Global Learning Consortium (IMS, 2004);
- *Disability specific guidelines:* The most common disability specific guidelines to be developed are those for dyslexia (Rainger, 2003; Powell et al. 2004);
- *Technology specific guidelines:* Examples include guidelines produced for WebCT (Pearson & Koppi, 2001) and guidelines to facilitate access to web pages for users of alternative and augmentative communication aids (Poulson & Nicolle, 2004).

Despite the supposed specificity of these guidelines, many refer explicitly to the WCAG-1. Some even include a guideline that states that designers must use the WCAG-1.

Accessibility standards

Two prominent accessibility standards that are specific to e-learning and education are the IMS Global Learning Consortium Standards and The Learning Federation Accessibility Specification for Content Development. The IMS Global Learning Consortium (2004b) has two accessibility related specifications: IMS ACCMD (Access For All Metadata) and IMS ACCLIP (Accessibility for Learner Information Package). The ACCMD specification is intended to make it possible to identify resources that match a user's stated preferences or needs. These preferences or needs would be declared using the ACCLIP specification. The needs and preferences addressed include the need or preference for alternative presentations of resources, alternative methods of controlling resources, alternative equivalents to the resources themselves and enhancements or supports required by the user. In mid-2005 these specifications were put forward to the International Standards Organization (ISO) and a first public draft of the standard: 'Individualized Adaptability and Accessibility in E-Learning Education and Training', which builds on these IMS specifications was made available for comment.

The Learning Federation (2003) Accessibility Specification for Content Development describes accessibility principles, requirements and guidelines for creating accessible online curriculum content for The Learning Federation (an initiative of State and Federal governments of Australia and New Zealand). The specification will be used to assess whether online curriculum content conforms to the principles of legislative compliance; appropriate learning object design; access device independence; flexibility of operation and presentation; communication of accessibility information with content and equitable user system requirements. The Learning Federation has also defined four high level accessibility user profiles for vision impairment; hearing impairment; physical impairment and cognitive impairment. that can be used within content design and development to guide appropriate learning object design.

Accessibility related legislation

Legislation in a number of countries has influenced the accessibility design practices of both education and non-education organisations. In the United States, perhaps the most influential legislation has been the 1998 amendment to the Rehabilitation Act (US Department of Labor, 1973),

called Section 508, which includes guidance for determining the accessibility of information technology as well as enforcement procedures. Section 508 requires federal agencies to purchase electronic and information technology that is accessible to employees with disabilities, and to the extent that those agencies provide information technology to the public, it too has to be accessible by persons with disabilities. Johnson et al. (2003) note that Section 508 does not apply to post-secondary institutions. However, Johnson & Ruppert (2002) note that some institutions of higher education believe they must comply with Section 508 (eg. University of Wisconsin, Madison).

In Australia, Section 24 of the Disability Discrimination Act (DDA) makes it unlawful for those providing goods or services to discriminate against another person on the grounds of their disability (Australian Government Attorney-General Department 1992). The Act empowers the Australian Human Rights and Equal Opportunity Commission (HREOC) to issue advisory notes or guidelines. Whilst the Act does not specifically mention online services or websites, HREOC (2002) stress that the provision of information and online services through the web is a service covered by the DDA. The Ministerial Council on Education, Employment, Training and Youth Affairs has also been working since the mid-1990s towards Disability Standards for Education to interpret the DDA for the education sector. The effect of the standards, which were tabled in March 2005, will be to give students with disabilities the same right to education and training opportunities as students without disabilities. No specific mention is made however of standards for the provision of online learning.

The main piece of legislation in the UK that can be applied to accessible e-learning is the 2001 amendment to the 1995 Disability Discrimination Act, called the Special Educational Needs and Disability Act (HMSO 1995, 2001). The Special Educational Needs and Disability Act (SENDA) made it an offence for educational institutions in the UK to discriminate against a disabled person by treating him or her less favourably than others for a reason relating to their disability. Discrimination will be considered to have occurred if a disabled person is treated less favourably for a reason relating to their disability than a non-disabled person to whom that reason does not apply or if there is a failure to make "reasonable adjustments without which the disabled person is placed at a substantial disadvantage". Whilst SENDA does not make any explicit reference to e-learning or web accessibility, the associated code of practice (Disability Rights Commission, 2002) lists services covered by the Act as including: distance learning; independent learning opportunities such as e-learning; learning equipment and materials such as laboratory equipment, computer facilities, class handouts, etc; libraries, learning centres and information centres and their

resources and information and communication technology and resources as services covered by the Act.

The impact of drivers on accessibility practice

The impact of these drivers on current accessibility practice has been limited due to concerns over the validity of guidelines, confusion over commonality of standards, and a lack of legislative clarity.

Guideline validity

Whilst there are a plethora of guidelines, some are more influential than others. Therefore, some practitioners are calling on the community to come to a consensus and converge on one all-encompassing set of guidelines that are both commonsense and based on definitive research (Rowland, 2004).

Given the impact and influence of guidelines such as WCAG-1, some have questioned how the guidelines have been derived and what their evidence base is. The WC3 does have a well-defined process for building consensus and obtaining comments from a range of stakeholders regarding the appropriateness and workability of their guidelines. However, there are some who consider that this process is not as formal (and perhaps by inference, rigorous) as those used by standards agencies such as the International Standards Organisation (Reed, Gardner-Bonneau & Isensee, 2004). Akoumianakis and Stephanidis (1999) argue that accessibility guidelines are not experimentally valid and that there is a need for the development and maintenance of 'experienced-based accessibility guidelines as an organizational repository of evolutionary design wisdom'. The organisation, service, disability, media and technology specific guidelines described in this paper could perhaps be viewed as examples of more 'experienced-based' guidelines.

To add to the debate and confusion over which guidelines should be used and whether they have any validity, many are interpreting the WCAG as standards that are somehow enforceable (Sampson-Wild & Burmeister, 2001).

Standards confusion

In addition to the plethora of guidelines that exist, there is a plethora of standards. Again, the resulting confusion has led many to conclude that commonality and convergence is required. Whilst there are slow moving but determined efforts to deliver a common standard, the influence and impact of such efforts will be affected in part by how individuals and nations choose to interpret standards and guidelines. As Russell (2003) notes:

In order to create true accessibility across the Internet a common standard needs to be employed. The WCAG are the nearest approximation of such a standard but individual nations have added to or manipulated these guidelines with the result of modifying the definition of 'accessibility'.

Lack of legislative clarity

Some of the legislation relating to accessibility has felt it necessary to establish associated accessibility standards (internal benchmarks), while others have been content to refer to accessibility standards that exist outside of the legislation (external benchmarks). Both approaches can lead to confusion and a lack of clarity.

Section 508 in the US is the most prominent legislation to create its own standards, or benchmarks. However, eleven of the sixteen 508 Standards are drawn directly from the Web Content Accessibility Guidelines (WCAG-1). Five of the 508 standards do not appear in the WCAG-1 checkpoints and require a higher level of access or give more specific requirements. Paolucci (2004) argues that the emergence of this new standard, while welcome in one sense, also establishes a potentially confusing alternative. Certainly, the W3C has found it necessary to produce of a document that maps the relationship between the two evolving 'standards'.

Neither the UK legislation nor the DRC code of practice actually define what an accessible web site is or give guidance on creating one at the moment. This means that practitioners have to look to external benchmarks. McCarthy (2001), Wilder (2002) and others are therefore pointing to the WCAG-1 as a suitable benchmark, but as yet this has not been tested in the UK courts.

The Australian DDA also does not specify standards for web accessibility. HREOC's advisory note concerning Section 24 of the DDA endorses the W3C's WCAG as the standard for web accessibility in Australia (HREOC 2002). Arch and Burmeister (2003) comment on how the international guidelines and standards have taken precedence over the national guidelines, and contrast this to Section 508 in the US.

Whilst the impact of accessibility drivers on accessibility practice might be influenced to some extent by confusion and inconsistency, there is also a need to consider the extent to which practitioners' responses to accessibility drivers might also be influenced by other factors. The contextualised model prompts us to consider these other factors, by incorporating 'mediators' of accessibility as a component of the model. For example, practitioners' views and concerns regarding how their professional autonomy might be compromised by having to comply with guidelines and standards could

motivate them to question the validity of guidelines, the consistency of standards or the clarity of legislation.

The mediators of accessibility

The contextualised model offers six examples of mediators: views of disability; views of accessibility; views of integration and segregation; views of duty and responsibility; views of teams and community, and views of autonomy and compliance. Recognising there is some overlap or commonality between many of these mediators, views of disability and accessibility will be explored in some depth in order to illustrate the influence of mediators on stakeholder responses.

Views of disability

For many, disability is understood through the models that are operated in educational, health and social welfare settings. Individualistic models of disability are built on the assumption that the problems and difficulties that disabled people experience are a direct result of their individual physical, sensory or intellectual impairments. One key example of this kind of model is the medical model, which views disability in terms of disease processes, abnormality and personal tragedy. With the medical model of disability, need arises directly from impairment and the major task of the professional to adjust the individual to the particular disabling condition.

Administrative models of disability usually relate to specific areas of life such as education or employment and are used to assess whether or not people are eligible for certain benefits or compensation. The associated definitions of disability are written into legislation with legal implications and are viewed by many to be rigid and dichotomous. The definitions almost always relate to people's impairments rather than their physical or social environments. Health and welfare professions are often required to work within the framework of administrative definitions, but critics of this model argue that disabled people rarely fit into the neat boxes that administrators provide.

The social model of disability, put forward by disability activists, was a move against viewing disabled people as dependent and in need of care (Oliver, 1990). Disability was viewed as stemming from failure of the social and physical environment to take account of disabled peoples needs. The problems of disabled people were therefore not seen as within the individual person, but within society. According to the social model, it is not the individual with a disability who needs to be changed, but society.

In the early years of the social model, impairment as a concept or experience was rejected for fear of weakening the argument that altering the environment would solve the difficulties that disabled people faced. There is now, however, a growing acceptance by disability activists and those working in related fields such as assistive technology, that acknowledging impairment does not necessarily undermine the social model:

> When we think of a disability as a personal attribute, it is the person who must be changed. If we put it in a functional context, we have the choice of altering either the person or some feature in the environment. Our choices have been dramatically increased (Coombs, 2000)

Views of accessibility

A frequently quoted definition of accessibility is that given by Tim Berners-Lee, W3C Director and inventor of the world wide web:

> The power of the Web is in its universality. Access by everyone regardless of disability is an essential aspect.

Whilst the definition is in one sense quite vague, at the heart of the definition is a crucial concept: access by everyone regardless of their disability. By focusing on access for all, this definition encourages practitioners not to focus exclusively on disability (and hence reflect a medical model approach) but to focus on all users and their needs.

Other definitions of accessibility are more specific about what they mean by access and include additional criteria such as:

• Access by any technology, eg. computer system, browser or specialised technology (Caldwell et al. 2004; Pearson & Koppi, 2001);
• Access in any environment or location (Chisholm, Vanderheiden & Jacobs, 1999; HREOC, 2002).

Some definitions also emphasise the positive consequences of designing for accessibility, including inclusion and removal of barriers:

> Accessible e-learning means courseware and content that is designed to be accessible to the widest possible variety of computer operating systems and specialized applications removing needless barriers for students with disabilities and providing a level playing field to let them work and learn like everyone else. (EASI, n.d)

Different views and definitions of accessibility therefore tend to reflect the principles of a social model of disability, in that they highlight the need to remove barriers to participation and engagement in the online experiences,

and the degree to which someone should be able to access an online resource regardless of their disability, technology or environment.

Potential impact of mediators on accessibility practice

Views of disability and accessibility have the potential to impact on accessibility practice in different ways. Different views or models of disability give rise to different models of service provision in terms of how student support services within an institution may be organised. Different views of accessibility give rise to different design approaches that learning technologists may adopt.

Impact of views of disability on the organisation of student support services

Generally speaking, services based on the administrative model of disability are argued to reflect the view that disabled people cannot solve their problems on their own and that they need to be helped, through the provision of specialist services. A social model of disability on the other hand is thought to lead to service approaches that focus on barrier removal and which emphasise individual and collective responsibility as opposed to professional help and responsibility (Finkelstein, 1993). This raises some interesting questions regarding how student support services within a higher education institution attempt to meet the e-learning needs of students with disabilities.

A common approach to supporting the e-learning needs of students with disabilities is to set up specialist services such as assistive technology centres. The rationale for setting up such services is linked to the fact that many students with disabilities can only access e-learning through the use of assistive technologies such as screen magnification software or screen readers (Banes & Seale, 2002). The importance of providing specialist equipment for students with disabilities is generally accepted (Owens et al. 1999). There is some evidence to suggest however that the way the provision of assistive technologies is organised varies from institution to institution (Leung et al. 1999; Fichten et al. 2003). Some institutions place this equipment in separate rooms or areas that only disabled students can access, and others place this equipment in general areas that all students have access to.

Jones and Tedd (2003) provide a case study of how three Welsh universities have attempted to cater for the needs of visually impaired students. All three provide specialist areas, but operate them in different ways. For the University of Wales, Aberystwyth, Jones and Tedd report on how in three of the libraries a 'Green card Area' has been set up, where suitable

equipment for those with special needs is housed, and students have to access it by the use of 'swipe cards'. At Cardiff University, Jones and Tedd report that specialist equipment has been made available in the Arts and Social Studies Library as part of a large cluster of PCs that is used by all students. When the large monitor workstations are not required by visually impaired students they are available for use by any student. In the central library on the University of Wales, Swansea campus, Jones and Tedd note that there is a lockable 'Special Resources Room' for the visually impaired, which is looked after by the member of the library staff with special responsibility for disabled students.

The examples provided by Jones and Tedd raise interesting issues about whether students with disabilities feel that the way specialist technology is provided and managed unnecessarily 'labels' them as different to other students. Different solutions to the issue of enabling students with disabilities access to specialised equipment do exist. One possible solution, which may become more prominent as universities develop their IT structures and systems, is the provision of wireless local area networks. Marshall & Cunneen (2001) outline the rationale for setting up a wireless LAN at the Eastern Institute of Technology in New Zealand, which focuses on the observation that students often have their own very customised personal computers (usually laptops) set up with this specialised software and equipment, and therefore rather than setting up specialist networked computers on campus which duplicate all these expensive and sometimes restrictive software, it would be easier to allow students to use their own laptops to access the campus network. Such an approach is attractive because it has the potential to benefit all students, not just those with disabilities. It may however require students as one stakeholder group, to argue strongly that other stakeholders need to think differently about disability.

Impact of views of accessibility on the design of e-learning

Views or definitions of accessibility that focus on 'access by everyone regardless of disability' may influence e-learning designers and developers to adopt a universal design approach. The underpinning principle of universal design is that in designing with disability in mind, a better product will be developed that also better serves the needs of all users, (including those who are not disabled) operating within the widest range of situations (Vanderheiden, 1996). Thompson (2005) offers a number of examples that illustrate how universal web design can benefit a range of users. For example, text alternatives for visual content (eg. providing ALT tags for images) benefits anyone who doesn't have immediate access to graphics. While this group includes people with blindness, it also includes those sighted computer users who surf the web using text based browsers,

users with slow Internet connections who may have disabled the display of graphics, users of handheld computing devices, and users of voice web and web portal systems including car based systems.

The majority of proponents, however, agree that designing for the majority of people is a more realistic approach than trying to design for everyone (Witt & McDermott, 2004; Bohman, 2003). For example, Vanderheiden (1996) argues that it is not possible to create a product, which is usable by everyone or under all circumstances. Despite this, there are some who feel uncomfortable with the principles of universal design, because they appear to relieve educators of the responsibility of addressing individual student needs. For example Kelly, Phipps and Swift (2004) argue that since accessibility is primarily about people and not about technologies it is inappropriate to seek a universal solution, and that rather than aiming to provide an e-learning resource which is accessible to everyone, there can be advantages in providing resources which are tailored for the student's particular needs. In this instance one stakeholders' (learning technologists) response to accessibility is not only mediated by views of disability and accessibility but also views about the extent to which higher education should be student or learner centred. The extent to which learning technologists and other stakeholders can be truly student centred in their design approaches will be influenced by the extent to which they recognise disabled students as legitmate stakeholders in accessibility practice and genuinely take their views on board.

Stakeholder responses to the drivers and mediators of accessibility

The contextualised model offers seven examples of stakeholder responses to both the drivers and mediators of accessibility: identify brokers; develop strategic partnerships; define and agree best practice; develop shared goals; develop policies and strategies; re-organise services and develop and use own tools. Accessibility drivers and mediators can influence these responses in many different ways. For example:

- Concern over guideline validity and standards confusion may cause stakeholders to respond by developing their own tools (eg. in house guidelines or standards);
- Concern over how disability and accessibility is viewed and operationalised may cause stakeholders to respond by re-organising their services (eg. setting up a wireless LAN instead of a specialist resource area);

- Concern over whose duty and responsibility it is to respond to the imperatives of disability discrimination legislation may cause stakeholders to develop strategic partnerships.

Developing strategic partnerships: An illustration of a stakeholder response

In many higher education institutions the responsibility for 'changing practice' across the institution falls in some part on centralised staff development units. In order to act as 'agents of change' with respect to promoting accessible e-learning, staff developers may need to 'broker' or develop strategic partnerships with other key stakeholders. For example Phipps (2002:6) argues that in order to engage with the process of systemic change, 'developers must act in a brokerage role with all the staff providing perspectives that can inform strategic policy and decisions'. Staff developers may therefore broker different kinds of strategic partnerships with disability services, disability advocates or academic staff. Phipps (2002) also argues that staff and educational developers should also give serious consideration to using non-traditional facilitators such as disability officers for workshops in this field. Evidence from a survey by Parker (2001) would certainly suggest that staff developers would benefit from the specialist knowledge that disability officers have. Middling and Bostock (2002) describe how part of the response to the SENDA legislation at Keele University has been to develop programs jointly between disability services, staff development teams and departments themselves. They argue that working with disability services (and departments) has enabled them to develop their approach to inclusion with support, advice and guidance. Developing strategic partnerships with disability support staff is certainly a powerful strategy, but the roles of both staff developers and disability support staff will need to be considered carefully so as to avoid a 'them and us' culture whereby central services are seen as enforcing managerialist policies (Wray, 2002).

The Disability Rights Commission (2003) recommend that disability equality training be delivered by a disabled person in order to 'help to challenge entrenched attitudes'. The involvement of disabled people in staff development programs would certainly help to deliver less general and more specific awareness raising activities, which is something that a number of staff have indicated that they would value (Keats, 2003). Disabled students, as a key stakeholder in the development of accessibility practice may wish to consider the extent to which they would wish to be involved in designing and delivering accessibility related staff development opportunities.

The Disability Rights Commission (2003) also recommends that staff developers work with academic staff by involving examples or facilitators from the relevant academic discipline, so that it is more relevant and credible and involving staff in audits of provision or expertise, and they become more aware of their own development needs. There is certainly merit in adopting a staff centred model of staff development. Herrington (2000), for example, proposes an organic model of staff development that involves working with staff to determine the change agenda, shape and make decisions and create ongoing paths of development. Herrington argues that the organic model of staff development provides a mechanism through which groups of staff can identify their own required levels of awareness. The extent to which staff developers adopt organic staff development models such as that proposed by Herrington (2000) may be influenced by how much autonomy key stakeholders such as disabled students and senior managers wish other stakeholders, such as lecturers and learning technologists, to have regarding accessibility and disability related issues.

Conclusions

The value of the proposed contextualised model of accessible e-learning practice is that it challenges researchers and practitioners to recognise that focusing solely on the drivers of accessibility (accessibility legislation, guidelines and standards) is not an effective strategy for developing and changing practice:

- Legislation will not on its own change accessible e-learning practice within a higher education institution because the stakeholders have to translate legislation into policies and strategies that are meaningful to them in the context in which they are working.
- Universal accessibility guidelines on their own will not change accessible e-learning practice within a higher education institution because the stakeholders have to adapt and develop the guidelines into guidelines (and tools) that are meaningful to them in the context in which they are working.
- Universal accessibility standards on their own will not change accessible e-learning practice within a higher education institution because the stakeholders have to define and agree what the benchmarks of best practice might be in the context in which they are working.

If practice is to develop and e-learning be made optimally accessible, we need to understand how stakeholders' responses to accessibility are influenced by the context in which they are operating, a context in which

both accessibility drivers and mediators operate. Future work with all the identified stakeholders is required in order to explore whether the model can be used effectively to develop or improve practice. For example, the model has offered examples of what might drive or mediate accessibility practice, but this needs to be tested in practice in order to explore whether other drivers and mediators need to be added or considered.

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