Journal of Academic Language & Learning
Vol. 5, No. 2, 2011, A23-A34. ISSN 1835-5196

Association for Academic Language and Learning

Strategies for developing effective ALL websites

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(Received 7 July 2011; Published online 28 November 2011)

Websites, used for learning, administration and marketing, are now part of most Academic Language and Learning (ALL) Centres. Centres are spending increasing time, effort and funds on redeveloping and maintaining these websites. The changing nature of the technology, and the different expectations of users, mean that we are thinking about our websites and their potential in new ways. However, these new directions also pose significant challenges in terms of technical skills, resources, priorities, and pedagogy.

This study surveyed ALL practitioners from universities across Australia about the purposes of their websites, the processes used to develop them, future directions for their sites, and the challenges this may involve. Practitioners aim to develop widely accessible, interactive sites that encourage active learning; however, due to challenges in funding, prioritisation, time availability, and expertise, Centres reported frustration in meeting these goals. Based on a review of the educational and IT development literature, this paper argues that a reconsideration of our websites' audience and purpose and the processes through which we design sites and allocate resources based on priorities may assist ALL Centres in reconsidering and meeting their web design goals.

Key Words: website development and management, online learning sites.

1. Introduction

Over the past decade, Academic Language and Learning (ALL) Centres have developed websites advertising their services and providing information for students and staff. From sometimes humble beginnings, these websites have become increasingly central to the Centres' core business. The initial justification and purpose for creating the sites was often as an efficient way to disseminate Centre details and an alternative means of providing existing print resources. Over time, as the sites have diversified, so have the purposes for them. Centre websites now commonly serve a wide variety of purposes simultaneously, including functioning as resource repositories, being "sites" of online teaching, streamlining administrative functions such as making appointments and submitting draft work for comment, and marketing the Centre to the wider university community. The underlying aim behind this expansion in functions has been to enable Centres to provide a greater range of services in a more timely fashion to the benefit of students.

As the push to have an ever-larger online presence grows, Centres are spending increasing time, effort and funds on redeveloping and maintaining these websites. The changing nature of the technology (such as advances in software and the development of web 2.0 possibilities), and the different expectations of users, mean that we are thinking about our websites and their potential in new ways. However, these new directions also pose significant challenges not only in terms of pedagogy, but also in relation to technical skills, resources, and priorities.

It is common knowledge that the higher education context has undergone a number of significant shifts in the past few decades, with students now coming from a wide variety of cultural and socio-economic backgrounds, returning to study after significant absences, increasingly studying part-time and at a distance, spending less time on campus, and increasing the number of hours per week spent in paid employment (James, Krause, & Jennings, 2010). Correspondingly, the sector has recognised the need for flexibility in learning options and modes of information delivery, which has gone hand in hand with technological developments. Thus a significant body of literature is available that deals with the principles and pedagogical concerns of online learning in the higher education context (Jonassen, 2005; Kennedy, Judd, Churchward, Gray, & Krause, 2008).

Given this emphasis on flexible, student-centred learning, educators have embraced the opportunity to use online teaching and learning tools such as blogs (Williamson & Jacobs, 2004; Farmer, Yue, & Brooks, 2008)**,** wikis (Elgort, Smith, & Toland, 2008), podcasts (Scutter, Stupans, Sawyer, & King, 2010) and social media (Hamid, Waycott, Kurnia, & Chang, 2010) to provide students with new learning opportunities. However, it has long been acknowledged that simply uploading existing print materials or transferring face-to-face activities to a digital format without contemplation and redesign do not produce satisfactory online learning experiences (Alexander, 1995; Jamieson, 1999), and that facilitating online learning means designing for the online context (Dixon, Dixon, & Axmann, 2008) and its pedagogical purpose (Jonassen, 2005; Carr-Chellman & Duchastel, 2000).

However, the vast majority of studies concerned with online teaching and learning conceive of websites with a singular purpose: online learning. Moreover, studies in the higher education context usually presume an in-course context for the websites, frequently within virtual learning environments (such as Blackboard, WebCT or Moodle). These are sites of learning dedicated to specific academic courses. The audience of these sites is captive; students are required to access the site to complete the course successfully. The context of ALL websites is quite different in that we are aiming for our sites to serve multiple, at times vastly different purposes simultaneously, of which online learning may only be one component, and the audiences for our sites can be very diverse, with students and staff from a variety of areas and academic levels all accessing the site for different reasons. Our audience is not captive; if our sites are not readily helpful they will not use them. This means that ALL sites will often have a more complex context and broader scope than is the case for a course-based online learning site.

This inherent complexity in ALL sites requires that our practice is guided not only by the educational research in relation to the design of online learning, but also by the more technical research into important aspects of website design and development such as the planning and design process itself, and good website management practices. Research on these aspects of website development is more commonly found in literature concerned with web development processes rather than in education research specifically. Just as good pedagogical practice stresses the importance of student-centred learning (Jonassen, 1991; Wenger, 1998; Laurillard, 1993), modern website design stresses including users throughout all the stages of website development in order to create a site that meets users' needs (Lynch & Horton, 2008; Krug, 2006; Shneiderman, 1997; Shneiderman, Plaisant, Cohen, & Jacobs, 2010). User-centred design (UCD) is described by usability expert, Donald Norman (2002), as "a philosophy based on the needs and interests of the user, with an emphasis on making products usable and understandable" (p. 188). In this context, usability refers to "the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use" (International Standards Organisation [ISO], 1999). UCD dovetails well with ALL sites that have to consider both the Centre's objectives and the student's needs, limitations, and preferences in their designs.

This paper adopts the underlying UCD philosophy and investigates which design, development and management practices are most likely to result in the production of effective ALL sites. ALL practitioners frequently have little experience in these areas compared with their expertise in the underlining pedagogy and content of academic skills. However, ignoring these factors when developing a site is likely to seriously undermine the success of the final site. Pedagogy

and content are undoubtedly critical to any learning website; however, this paper argues that alone they may not produce an effective ALL site.

With this underpinning philosophy in mind, this study begins addressing the lack of ALL-website-specific research. Firstly it considers ALL websites as distinct from solely online learning sites contextualised within academic courses. Secondly, as there have as yet been no studies of Australian ALL websites and the ways in which ALL practitioners engage with them, we surveyed practitioners to determine how they conceive of the purposes of their websites, the processes they used to develop them, the future directions for their sites, and the challenges they have faced in the past, or are currently experiencing, in developing their sites in new directions. An anonymous online survey that included both fixed choice and open-ended questions was sent to ALL practitioners via the Association's mailing list. In total, 51 practitioners from at least 21 universities responded. While the sample was not random, as respondents elected to complete the survey, the number of responses should be large enough to capture an overview of the area. While acknowledging the diversity in Centres in terms of audiences, institutional contexts, and resources, this study then identified some of the key challenges and conducted a review of instructional design and IT development literature concerned with UCD in order to suggest a variety of options and issues to consider when working through these challenges to identify ways in which research in that field could potentially inform our practice.

Our findings indicate that a deliberate and systematic focus on the intended audience and purpose of our websites from the design stage, along with well-defined processes for website development that inform design decisions, may assist in the development of fit-for-purpose student-centred ALL websites. However, it is also important to recognise that while our mandates may be broad, on the web as in practice we cannot be, and should not aim to be "all things to all people". Decisions need to be made based on institutional contexts, realistic funding and staffing models, available training resources and solid data about users so that we can focus our resources and energies in ways that can have the greatest impact.

2. Audience

In the web context, two key aspects feed into any analysis of a site's audience: who the users of the site actually are and their typical web behaviour. In order to elicit information regarding ALL advisors' understanding of the audiences for their websites, we designed questions concerning who the users are, how often they use the site, and how advisors actually gather data concerning their audience.

2.1. Who are our 'users' and how do we know?

When asked to estimate which categories of students used their sites, 70% of respondents stated that undergraduate students used their sites often or very often, compared with 60% for graduate coursework students, 50% for external students and 45% for research students. However, when asked how these impressions of who the users are were gathered, only about a third of the advisors responded that their institution had actually investigated who uses the website and how and why they use it. For the others it was really a best guess.

For those whose institutions had investigated user data, over half reported that their institution tracked web traffic through tools such as Google Analytics (which tracks the number of visits, users, page hits etc.), about a third used web/email surveys, and one respondent indicated the use of a one-off focus group. This would suggest that the analysis, when it is conducted, is fairly broad in terms of the types of data collected. Further analysing the data obtained is not easy, a problem recognised by at least one respondent who commented: "We have stats – we are good at gathering info, but not at analysing it. We haven't made clear determinations from our gathered stats" (respondent 25). Limited analysis of the audience data is not particularly surprising given the time and resources that would actually be needed for a comprehensive review.

Monitoring web traffic, the most popular method, is problematic when used in isolation from other methods. Web metrics provide information on the number of visitors, what technology

they used and the most popular pages, but do not indicate who visited, their motivation or how successful their visit was. Metrics alone are not particularly helpful in defining the audience of a website, "as many things about their hopes, motivation, and expectations will remain a mystery" (Lynch & Horton, 2008, Universal usability in the design process section, para. 3). The audience is invisible and diverse, so feedback on poor design is hard to obtain (Schneiderman, 1997). A range of methods, including those that specifically examine the user experience and motivation, are needed.

An important user research tool is usability testing, which provides insights into users' motivations and responses to a site. Usability tests typically involve observing users completing tasks on the site and using this information to improve the site's functioning and design. Usability expert Krug (2010) asserts that an hour of usability testing is more effective than extensive analytics for finding and fixing usability problems in a site. A range of other popular tools may also be of use: creating personas or fictional characters representing typical users; creating scenarios of common user tasks; undertaking user surveys; analysing how users approach tasks; forming focus groups; undertaking contextual interviews; and systematically analysing feedback received from users via interviews (Schneiderman et al., 2010).

While understanding who our users are is crucial to the development process, it is also important to understand how they behave in the online context so we can design our sites accordingly.

2.2. What are the behaviours of our users?

A crucial aspect of developing a website is ensuring that it attracts the users it is targeting by designing it with their behaviours in mind. This means not only providing the content they are seeking, but also ensuring they are able to locate it in the first place, and this necessitates an understanding of the ways in which web users seek out information.

Analysing web traffic does provide us with some useful data on users' behaviour. Using Google Analytics for the Australian National University's Academic Skills and Learning Centre (ASLC) as a sample, we can see that only 14% of users found the ASLC website by direct traffic (typing in the address or via a bookmark), whereas 30% of users accessed the site via referring sites (for example by following a link, mostly from the ANU homepage or other ANU websites), and 56% used a search engine (Google, Yahoo etc).

As most users found the ASLC site via a search engine, not surprisingly the location of most users was outside Canberra: 32% accessed the site from outside Australia, 32% accessed from a part of Australia excluding Canberra, and 36% accessed the site from Canberra itself. Thus nearly two thirds of the visitors to the ASLC site are unlikely to be ANU students (especially as the university has few external programs). Further, since Canberra has a number of tertiary institutions, the percentage of users who are actually ANU students could be significantly lower. This behaviour is not unusual on the web. Noted information architect Dan Brown (2010) has developed, "The Principle of Front Doors", which is to assume at least half of a website's visitors will come through some page other than the home page. He argues that this principle is now common knowledge on the web.

This behaviour has design implications. If we are relying on students to come directly to us, and designing our sites in such a way that the broader context is only clear if the user navigates from the homepage, we may be creating a situation where the "resource" that the user "lands" on is decontextualised from the broader learning context we may have had in mind. Page designs need to cater for this behaviour and further help users understand what else the site has to offer (Brown, 2010). This of course assumes users can even find our sites. In the design phase we can increase the chances of users finding our sites by optimising the pages for search engines by understanding how they work (Unger & Chandler, 2009). It is also important to design for as many "types" of users as possible. "The conventional wisdom in web design is that about half of web users prefer to search for keywords, while the other half prefer to browse through pages and lists of links" (Lynch & Horton, 2008, Web analytics as a planning tool, para. 2). This means multiple pathways to the same information may have to be designed to maximise the

methods by which a user may come to access the information depending on their information-seeking preferences.

Our sites also need to recognise that some students at least search the web, not their own university's sites, for information. If students do not automatically go to their own university's site, this raises questions about the utility of Centres spending limited financial and human resources to develop new resources. Our survey indicated that some sites tend to almost exclusively develop their own resources rather than link to existing resources on other sites. When asked how frequently their website refers users to external sites via links, 15% of respondents said their site never linked to other sites, 40% said their site did so only occasionally, and only 35% said their site did so frequently or very frequently. This makes sense if the assumption is that students from the home institution are the users of the site and the resources are designed specifically for their perhaps unique needs, but not if our own students are not necessarily the ones using our resources. While it may be the case that institutional policies or political concerns may encourage in-house resource development rather than linking, we ignore demonstrated user behaviour at our peril. If we are not attracting users to the resources we have developed, it might be necessary to rethink the ways we encourage users to our sites with resources directly relevant to their needs. Alternatively, we can convince users to see our sites as a hub from which they may then be directed to excellent resources elsewhere; as one respondent wrote, "other unis have developed some brilliant resources – why [re]invent the wheel?" (respondent 45).

Finally, while it was beyond the scope of this survey, it must be acknowledged that students may interact with physical resources in different ways to how they might choose to use online resources. For example, studies show that web users "scan" websites, they do not "read" them. Neilson (1997) found that "79 percent of [the] test users always scanned any new page they came across; only 16 percent read word-by-word" (How users read on the web, para. 2). This information-seeking behaviour makes design choices such as highlighted keywords, meaningful subheadings, and bulleted text essential. Text-heavy pages with little visual differentiation between sections, key pieces of information, or links between this material and other resources can be visually exhausting to read on the one hand, and exhaust the limited patience of the information "scanner" (Krug, 2006, 2008).

2.3. Recommendations for user-centred design

A number of key principles can be extracted as guidelines for ensuring user-centred design:

1. *Identify how people use the website and design accordingly.*

   We need to understand the medium to design successfully for it. However, this means we need to adapt (not forget) the skills we already have. Student-focussed pedagogy leads naturally to user-centred design; however, we may need to adopt different visual and textual strategies to communicate in a different medium. This does not mean "dumbing down" content; rather we need to optimise the way we present information so our users can readily access the learning material. Just as we approach preparing PowerPoint presentations and handouts differently, so too must we consider the optimal strategies for communicating on the web.

2. *Identify who is using the site currently and what they come to the site for.*

   It is important to utilise a range of strategies in addition to web metrics to collect user information. We can use our understanding of our users' needs to design "hooks" for grabbing student attention and "sell" our sites, to convince students they will find what they are looking for, and guide them to it quickly.

3. *Develop strategies to attract students to the website.*

   Detailed user analysis will show who is currently using the site for what, but will also demonstrate who is not using the site. This information is a valuable starting point to reconsider website marketing strategies to attract the users we would like to see using our sites more frequently. Taking steps to ascertain what features would attract them and determining ways to market the site specifically to them are strategies that may lead to

increased web traffic. If we are developing resources designed for our own unique environments, we need to actively market this to the relevant cohort.

3. Purpose

As with any form of communication, effective websites have a clear purpose that matches the needs of the audience. We asked advisers questions related to their understanding of the purposes of their website, how they went about achieving these and the extent to which this understanding of purpose was developed and shared throughout the Centre.

3.1. What is the purpose of ALL websites?

When asked the purpose of their current sites, providing resources to students was, not surprisingly, the most highly rated, with 95% of respondents stating that this purpose was important or very important. This was followed by advertising or providing information about the Centre (80%). Respondents also saw facilitating active learning through online resources (65%), simplifying administration (60%) and providing resources to academics (50%) as significant purposes of their websites. As can be seen from the range of different purposes, ALL websites are seen to have both an administrative and a learning role, serve students and staff, and provide both resources and opportunities for active learning. However, these results also suggest that the distinction between primary and secondary purposes is unclear – the sites are trying to be all things to all users, which raises questions about the effectiveness of the design for the actual users of the site.

The design of a website should be driven by a purpose that matches the needs of the site's actual audience, not those who might visit it (Hunt, 2008). Designing for diverse audiences with very different purposes compromises the effectiveness of the communication for the actual visitors as it is not possible to design for all possible audiences (Hunt, 2008). Further, providing features the users do not want is a waste of resources. This often occurs in a web context when designs are driven by available technology rather than an analysis of user needs. As Lynch and Horton (2008) argue, "unfortunately, web projects are often approached as a 'technology problem,' and projects can get colored from the beginning by enthusiasms for particular web techniques (Flash, blogs, podcasts, Ajax), not by human or business needs" (Initial planning, p. 1). Purpose, not technology, needs to be the driver.

In an ALL context, this issue is encountered in relation to the notion of "interactive activities", driven by a desire to move from the provision of static resources that focus on information delivery to resources that engage students in active learning. With the proliferation of web technologies that allow for "interactivity", this desire is very understandable. However, there appears to be a mismatch between what advisors would like to provide and what they do. Sixty-five percent of advisors nominate facilitating active learning as an important purpose, but only a few websites have interactive activities (40% of respondents reported no interactive activities, and 45% of advisors reported fewer than 10 interactive activities). The respondents appeared well aware of this mismatch as, when asked what they would like to add to their websites, roughly three-quarters of those who responded nominated "interactivity".

One respondent also noted that not only is there a mismatch between the sites and the desired purpose, but also potentially with the students' desires: "our new site has only been through a pilot phase, but generally we found that most people are there to access the resources and not necessarily to participate, much to my chagrin" (respondent 47). This suggests that what students want from our sites may not match what we "want them to want"; students want quick access to solutions while we want them to engage with the concepts and tease out the implications. Providing unwanted features can also have more serious ramifications for the use of the site: "Information presented to a person who is not interested or ready to process it is effectively noise" (Lidwell, Holden, & Butler, 2010, as cited in Brown, 2010, p. 31). Many visitors to a site have a specific aim or task they wish to complete as quickly as possible. Any design or feature that interferes with this purpose is likely to annoy the user. Navigating to the desired resource should be quick and easy, and once at the right resource, users will only engage

if they believe in the value of the feature (Krug, 2008). Engagement is rarely entered into for its own sake. This can be a challenge for educational sites as students may be under considerable pressure and so want "quick" rather than "good" or "complete" advice. The design needs to convince students that the engagement and time invested are worthwhile.

The purpose of a website must be clear not only in terms of design specifications, but also with regards to the role of the website itself within the Centre's operation (Hunt, 2008). The website is part of the Centre's operation and does not exist in isolation. For education sites, it is important to make a distinction between learning sites and those that deliver information. Herrington, Reeves, and Oliver (2005) convincingly argue that often university learning sites incorporate information delivery approaches rather than embracing learning approaches. For ALL Centres, one or both roles may be appropriate, but it is essential that there is some kind of clarity regarding which purpose the site is aiming to fulfil; that way, design decisions can be made based on best practice principles for the specific purpose rather than straddling across a number of purposes and falling through the cracks.

The majority of advisers surveyed seem to be caught between a pedagogical desire to provide an interactive learning experience and the reality of satisfying different and diverse purposes. As such, their resources are being stretched in a multitude of different ways, and this is compounded by the problem that advisors are not particularly certain who their site's actual users are and what it is they really want. This occurs in an institutional context where the distinction between learning and information delivery is often not clearly delineated.

3.2. How do we clarify our purpose?

As with any project, a process of informed discussion culminating in written objectives can clarify a site's purpose. Objectives need to be clear to allow a common understanding to be reached by all stakeholders, and measurable objectives allow a more objective evaluation of whether a site has reached its aims (Unger & Chandler, 2009). An evaluation process is ultimately essential if the site is to have integrity and to provide data for future decision making. Although most of the survey's respondents thought that their Centre's vision for the website was clear, only 5% reported having a written vision statement that was clearly understood by staff. In any design project it is difficult to achieve consistency and clarity of vision over time and through staff changes without a living, written document. This may well be borne out by the fact that 30% of respondents reported that lack of clarity about the Centre's vision for the website had an adverse impact on the way their sites were developed and maintained. It is also important that any vision statement distinguish between primary and secondary purposes. While there might be multiple facets to a website, there needs to be a clear sense of the site's overarching purpose within the Centre and the ways in which staff intend to design features that complement this purpose.

3.3. Recommendations for clarifying purpose

Given that websites need a clear vision and purpose, it is important for ALL Centres to:

1. Determine the role and purpose the website plays in the Centre's function and identify how the site will enhance or extend the current activities and purpose of the Centre.
2. Design for the users who visit the site and ensure that the design and features of the site match their needs and behaviours. This does not mean that the pedagogy underpinning the site need be compromised.
3. Write a set of objectives or a vision statement that is clear and measurable. This document should ideally arise out of informed staff consultation and be revisited often as parameters, circumstances and resources change.

4. Resources and design management

As the previous sections have discussed, the purpose of the website should match the requirements of its visitors. However, it is also crucial that there is an alignment between an understanding of purpose and audience and the ways in which resources are allocated to

developing a website. It is perhaps obvious to suggest that the budget and resources allocated to a project need to match the project requirements, but it is also necessary that the resources allocated match the priority given to the website within Centres, and that resources, which are always limited, are being assigned to web projects that best fit the needs of the actual users. Similarly, if web design is to be successful, the full range of expertise needed must be taken into account and broader design management issues, standards and compliance must be considered.

4.1. How do we prioritise website development?

While many respondents indicated that their Centres wished to develop interactive, comprehensive websites, this was typically not reflected in the priority assigned to the website by the Centre. When asked how highly their Centres prioritised website development and maintenance, 20% responded that they fixed things when they needed to, but typically just left the site alone. Fifty percent reported updating the site regularly and putting new information on the site when they had the time, and only 30% considered the website a core aspect of the Centre and consistently developed new material and functions for their sites. Interestingly, 70% of respondents reported that a lack of perceived priority of the website had a moderate, high or very high impact on their development and maintenance practices. These results seem to indicate that while advisors felt that the website was important, other demands were of a higher priority. It could be conjectured that the website has become an additional task rather than replacing existing tasks in already overstretched Centres.

This is not to imply that websites should be a Centre's highest priority. Centres work in different ways and some institutional contexts may make the provision of online resources and facilities more important than would be the case in other institutions. However, given the important relationship between the prioritisation of a project and the allocation of time and money to it, it was interesting that 85% of respondents indicated that insufficient time was a factor that impacted highly or very highly on the development and maintenance of their websites, and 45% responded that insufficient funds impacted highly or very highly. This suggests a potential mismatch between resources and prioritisation. Web development can be a costly, time-consuming exercise. If the website is a peripheral element or not considered as high a priority as other Centre activities, can the expense be justified? Conversely, if the website is a high priority what steps are being taken to correspondingly prioritise time and funds into the project? Just as a website cannot realistically aim to be all things to all people, not all Centre tasks can be of equal priority and funded equally. Tough decisions and sacrifices in other areas may have to be made if website development is very important.

4.2. What expertise is needed?

As expected, ALL staff reported being heavily involved in the development and maintenance of their own websites. Approximately 95% of respondents reported involvement in initial site development. When outside assistance was sought it was primarily in the area of technical assistance (approximately 45% from university IT services, 25% from external IT providers); rarely did staff consult with ALL staff from other Centres (<10%), and only 25% sought assistance from instructional designers. A similar pattern emerges with the maintenance and ongoing development of the websites. With some outside technical support, ALL staff predominantly design, manage and maintain their own sites in-house.

The literature keenly stresses that web development requires a range of expertise. Even the development of small sites involves graphical, technical and web design skills (Veen, 2001). Graphical skills are needed to determine the site's overall look and feel, including interactive elements. Technical expertise is required to choose and implement the appropriate technology for the project. Web design joins these elements together to provide a usable, functioning site by organising the structure and content as well as designing the overall web experience. Larger sites also need strategic and project management skills (Lynch & Horton, 2008). Specialised sites require additional personnel. E-learning sites need both content experts and instructional designers to ensure they incorporate sound pedagogical principles (Jonassen, 2005; Herrington

et al., 2005). All these skills sets are required to produce a professional website (Lynch & Horton, 2008; Hunt, 2008; Schneiderman et al., 2010).

Respondents were aware that a range of skills are needed in producing a website, though general IT skills were most frequently mentioned. When asked to list the most important challenges faced in developing their websites, advisors nominated IT technical issues (lack of expertise and understanding new technologies), web design issues (having "lots of ideas" but being unable to conceptualise the design), instructional design issues (e.g. incorporating interactivity) and management issues (e.g. lack of support/interest from colleagues). However, in spite of the recognition of the wide range of skills necessary, most advisors (approximately 60%) received no training. Where advisors did receive training, it was in IT areas such as webpage creation, uploading pages or using specific software packages. Instructional design or web design skills were not mentioned, though one Centre had hired an online education developer (respondent 27). Similarly, when considering future developments and nominating the expertise they were missing, advisors were three times more likely to list IT expertise (10 responses) than educational or instructional design expertise (3 responses). It appears that while advisors are aware of the multitude of skills needed, Centres believe that IT skills are the most important skill set to acquire. It could be conjectured that Centres are struggling to see beyond the technology.

For small developments, such as the ALL websites, a number of these skills are often combined in one person. For example the instructional designer is likely to provide the web design skills and possibly even some of the content expertise. Similarly, the technical staff may provide the graphical skills. However, it is very rare to find one person with all these skills (Veen, 2001). Web development is a team endeavour that needs to include the full range of skills. If staff within ALL Centres do not possess the full range of skills it will be necessary to either outsource elements of the design or invest in staff training. As both of these options are costly, it is again important that Centres have fully considered the purpose and priority of the website within the operational and organisational context and that users are being kept to the forefront of any design conversation to ensure resources are being used to maximum effect.

4.3. Following a process

A web development methodology is essential, as web development is both a relatively new field and a rapidly changing one, so standards and guidelines are not settled (Brown, 2010). Following a methodology helps ensure that all the important issues are considered and the expertise of the team effectively utilised (Schneiderman et al., 2010). While many different methodologies are available, most generally include the stages of site definition, information architecture, site design, site construction, site marketing and finally post-implementation review (Lynch & Horton, 2008).

Ensuring compliance to web standards, for example, highlights the importance of following a process. These standards are a set of best practices for building websites and have been defined by a number of international bodies such as the World Wide Web Consortium (W3C). Issues addressed include accessibility (usable by people of all abilities), interoperability (works in a variety of browsers and devices) and usability. As well as being important ethical considerations, some issues, such as accessibility, can have legal implications. In 2000, the Sydney Organising Committee for the Olympic Games was successfully sued by a blind man who could not use their site (Deare, 2004). Further, as these standards are constantly evolving as technology changes, practices need to be continually updated. Standards compliance requires not only expertise, but also consideration of the standards throughout the site design. A development process provides the necessary framework for this to occur.

Our survey did not specifically address the development methodology that Centres followed. However, not surprisingly, some evidence suggests that Centres are adapting their existing processes to online. Three quarters of respondents reported having editorial guidelines such as style guides and roughly 90% had guidelines for the graphic design to ensure a consistent look and feel. Arguably these guidelines carry over from those needed for printed booklets, an area Centres have expertise in. However, guidelines in areas unique to the online environment are

more scarce. Only approximately 25% of respondents reported that their Centres have guidelines for systematic usability testing. The same number reported that their sites are accessible. Slightly fewer (20%) reported that their site complies with W3C standards such as valid HTML/CSS.

Our findings suggest that it is likely that Centres are not taking advantage of well-established design processes in developing their websites. Not only does this make the design process more difficult, but it may also be resulting in some websites missing critical design issues.

4.4. Recommendations for resource and design management

This leads to three key recommendations:

1. Centres should ensure that their projects have a realistic budget and timeline to realise the purpose for the site. If sufficient resources are not available, they should adjust their project purpose to match their resources.
2. Ideally the development team should include the full range of expertise required. This may not be possible in all organisational situations. However, each skill set that is missing will compromise the site. Identify ways such as targeted professional development or consulting relevant professionals in the organisation to try and cover shortfalls. Be realistic with professional development expectations. For example, learning to create professional web pages may be unrealistic, while understanding web standard requirements is realistic.
3. Identify and follow a web development methodology. Spend time on the site concept, usability design and pedagogical underpinnings. Arguably these will determine the success of the site more than the standard of the implementation.

5. Conclusion

A number of constraints in terms of time, resources and institutional contexts are inherent in the way ALL Centres work, and it is therefore not realistic to expect that our websites can be all things to all people. In order to design a site that is pedagogically sound we must not lose sight of who our actual audience is and our purpose in putting material on the web in the first place. This purpose will be different in different Centres, but must be clearly articulated within the Centre so that a site can be designed according to the priority of the project and the resources available. Moreover, it is crucial that we recognise the variety of different skills that go into effective web design. Wide consultation with people possessing skills in IT, instructional design and discipline specific knowledge will make our sites more effective for our audiences. We need to begin to develop logical, systematic processes for developing our sites to ensure they meet the needs of our users within well-defined parameters.

Web development is a complex, multi-disciplinary field that includes elements traditionally far outside the expertise of ALL Centres. Ad-hoc approaches to development are likely to be frustrating experiences with the potential to absorb considerable resources for little benefit. The complexity and cost of web development cannot be underestimated. Conversely, by developing a clear understanding of the issues involved, Centres are in a position to harness the opportunities and utilise the ubiquitous nature of the web and thus find new and more effective ways of fulfilling their role.

Acknowledgements

We would like to thank David Rowland at AALL for helping us distribute the surveys and also those who kindly took the time to complete the survey. Without this, we would not have had a paper.

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