An Alternative to Existing Library Websites:

Evaluation of Nine Start Pages Using Criteria Extracted from Library Literature

by

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Abstract

This research evaluates nine internet start pages to determine whether they would be suitable for use in a library context. The methodology involved extracting ninety-six evaluation criteria from library literature and measuring each start page against those criteria. A quantitative measurement method was used, with a single researcher awarding marks of 1.0, 0.5 or 0.0 for each of the tested criteria. Results are displayed in statistical and chart form, and then discussed in narrative form. It is found that there is scope for using some of the tested start pages in a library setting. Sites that provided public pages, consistent speed, rich display and a wide range of library applicable content tested most effectively. However, no single start page met all the criteria. Some, such as iGoogle, lacked a public page, while others had problems loading consistently or provided limited content. Netvibes was the highest testing site. User testing should be conducted as an extension of this research.

Keywords: Start pages, library websites, Web 2.0, web portals

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Introduction

Librarians are acutely aware of the potential and the challenge presented by the internet (Kaur & Manhas, 2008). The rise of powerful search tools such as Google has altered the information provision landscape (Wang & Lim, 2009). The mass dissemination of information was once limited to sources such as the newspaper, the radio, the television and the public library (Bennett, 2003). Of those providers, the public library was the source that allowed the information seeker the most freedom. There, a customer could ask the reference librarian for help; or they could browse the shelves in an organized or disorganized fashion, gathering desired information logically or serendipitously (Bates, 1989). Unlike the nightly news, or the morning paper, the information in a public library was not limited to current events, sports heroics or an editor's ideology. Instead, the information in the library was limited only by the budget of the local council and the librarian's purchasing policy (Bennett, 2003). Beyond that, the customer was restricted only by their ability to use library systems and their level of literacy: passive, hidden, treasured, and abundant, the books in the library gave the customer the best available access to free information (Coyle, 2007).

The rise of the internet, and of Google, the most straightforward and popular information seeking tool, altered this balance (Detlor & Lewis, 2006). Online, the user can search freely for the information they desire, just as they can in a library (McGillis & Toms, 2001). This may still mean that they are searching for city newspapers, Premier League football results, or the weather in Hokitika, but they are also locating instructions on how to build a tree hut, cake recipes and encyclopaedic detail about Brazil (Liu, 2008). And

they are doing it on their terms, not at prescribed times such as just as dinner is served at the dining room table, or with the morning cup of tea (Rowlands, Nicholas, Williams, Huntington & Fieldhouse, 2008). The internet permits even more freedom than the public library: it never shuts, and there are no special Sunday opening hours (Kaur & Manhas, 2008). It is like a Las Vegas casino: shiny, timeless and endlessly compelling. The need that the internet sates is not greed or easy wealth, however, but a burning desire for knowledge (Tennant, 2000). We want to know. It can be Hollywood trivia, race results from Aintree, or the old library standby, how to build a bomb (Kennedy, 1989). Someone, somewhere, wants to know, and another person somewhere else wants to tell them. A cross between a tawdry, all night 7-11, and a mighty, moveable Smithsonian, the internet is an expanding, seemingly limitless disseminator of all types of information (Tennant, 2000).

But librarians are early adaptors (Brezney & Haas, 2005). They embraced CD-ROMs before anyone really understood what Encarta was. Library catalogues were computerised before national bus ticketing systems (Kilgour, 1970). There are PlayStations and televisions in community libraries, and RFID tags in the back of books (Snowball, 2008). Listening pods hang from ceilings in teen areas. Academic writing is stored in databases and made available in most public libraries: we want to help, to inform, to disseminate (McMenemy, 2007). A good reference librarian will be able to search Google better than anyone you've met, can explain Boolean searching to a pimply high school student, and will still know where the Russian-Italian dictionaries are (or be able to demonstrate a useful translation website to the customer) (Kaur & Manhas, 2008).

Out of this early, and comprehensive, adapting to available technologies, many high quality library websites have emerged (Brezney & Haas, 2005). Some, such as the New Zealand National Library's Matapihi (http://www.matapihi.org.nz/), focus upon a specific benefit offered by the internet. Matapihi links a number of historic photo collections held in numerous New Zealand libraries (Copsey, 2006). It takes advantage of the visual component of the internet to unify and display valuable images to an audience that is potentially much larger than any of the individual collections would have access to, either physically or online. MeL (http://mel.org), the Michigan e-library, has access to traditional library information such as the catalogue and genealogical information, but also community information, local history and a web portal (Sadeh, 2008). Denver Public Library has an interactive, exciting site for teenagers, called e-Volver (http://teens .denverlibrary.org/) (Rutherford, 2008). BUBL (http://bubl.ac.uk/) is an advanced subject gateway to the internet (Davidsen, 2005). These sites are taking advantage of the internet to expand the role and function of libraries, and also centralising access to diverse types of information (Han et al, 2007).

But a number of libraries have not incorporated the internet as successfully into their information provision (Wright, 2004). Some, such as the Aberdeen Public Library (http://www.aberdeencity.gov.uk/Libraries/nc_lib/lib_Library_Home.asp), have their homepage hidden on a larger, parent site, limiting access and often loading with a sterile, bureaucratic appearance that reflects the tone of that parent organization (McMenemy, 2007). Others, such as Seattle Public Library (http://www.spl.org/), have text laden home

pages that do little to attract the customer or to help them quickly locate desired information (Schuling, 2007). Some, such as Chelsea District Library (http://www .chelsea.lib.mi.us/), fail to embrace the Principle of Least Effort and are too complex, requiring more effort from the customer than they can be bothered giving (Liu & Lang, 2004).

As McMenemy (2007) notes, there is a general failure of public libraries to successfully realise the potential of the internet. Many sites are too tawdry, lack exposure or fail to display useful information effectively (Wright, 2004). Possible causes for this could be cost, a lack of expertise, or an inability to harness the internet effectively (Wang & Lim, 2009). Whatever the cause, the potential for enhanced organization of electronic information and the chance to manage information overload is being lost (Ubogu, Kekana & Roberts, 2006). Users are being lost too, from both the physical and the virtual library. As Tennant (2000) asserts in his state of the library manifesto at the beginning of the new millennium, libraries are no longer the premier information source. Instead, Google, returning 3,120,000,000 hits for the search 'information', is perceived as the new king (Schmidt, 2007). The web is easier, more approachable, richer, more suited to contemporary life, than the physical library or the existing template for virtual libraries (Schmidt, 2007).

Traditional portals are one response libraries have adopted to address this challenge (Kaur & Manhas, 2008). They are the medium through which librarians can demonstrate a pronounced professional strength: organization (Kaur & Manhas, 2008). Portals reduce

the size of the web (Abels, Kim & White, 2007). They lead users directly to areas of interest. The information in those areas is selected for its quality (Fox, 2008). But the language being used is still library terminology (Travis & Norlin, 2002). The search process involves numerous clicks, rather than a single push of a button. Portals, such as the UNESCO library portal (http://www.unesco-ci.org/cgi-bin/portals/libraries/page.cgi), are text heavy (Wang & Lim, 2009). They are library driven, impersonal, sterile and more complex than the search engines that users are attuned to (Ross & Sennyey, 2008). That complexity is a turn off, as is the institutional nature of many library portals (Wright, 2004).

One potential solution to these issues is offered by the recent development of personal start pages (Metz, 2008). Start pages are populated by a series of widgets selected by the end user (Valenza, 2008). Widgets are mini-web applications created using AJAX, which facilitates the insertion of active content into existing web pages (Metz, 2008). This makes it possible to view numerous pages side by side on a single hosting site, replicating a portal, but with a richer appearance and more straightforward creation and access (Fox, 2008). Stores of widgets are housed by parent start page applications such as Pageflakes or iGoogle (Metz, 2008).

Users can browse the multitude of available widgets on a start page, select them with a single click and place them in related tabs such as ‘Sports’ or ‘News’, personalizing the start page to reflect their interests (Brezney & Haas, 2005). Google can be selected, and placed on the front (or each) page alongside other widgets which appear simultaneously

(Jackson, 2002). There are database widgets, wikipedia widgets, and widgets for gaming, newspapers, library catalogues and social sites (Calhoun, 2006). Start pages can be branded, and in some applications sent to other users as public pages (Muchmore, 2008). With a multitude of sites on screen at once, they encourage browsing and serendipity (Brezney & Haas, 2005). Rich, facilitating organization and personalization, start pages would seem to possess the components to address the prevailing and identified weaknesses of existing library sites (Harris & Lessick, 2007). Like traditional portals, they downsize the net and manage information overload, but they manage it in a richer, more attractive way (Tachau, 2007). They would provide a unified point of access to electronic information (Coyle, 2007). Start pages are however relatively untested in libraries, meaning a number of questions are unanswered.

The research question for this project is therefore:

How can start pages add value to electronic information provision in libraries?

Sub-questions are:

- What existing library website problems, as identified in the literature, do start pages offer a solution for?
- What shortcomings do start pages have that would restrict their use in libraries?
- What type of library applicable content do start pages provide access to?
- Which start pages would provide the most benefit for libraries?

Research Methodology

The research in this project measures start pages against a range of criteria (Yan, Zhang & Garcia, 2007). These criteria have been primarily extracted from literature examining library web pages (Schmidt, Cantallaps & dos Santos, 2008). Some of the literature examines the performance of library websites; some suggests potential uses for library websites; others, such as Roy Tennant's (2000) article, serve as a form of mission statement for what libraries should do with their websites to maximise web presence.

The purpose of the research is not to evaluate the use of start pages in libraries. More precisely, it is to identify the effectiveness of start pages in meeting criteria that have been identified as core to ideal library web site construction and functionality (Adams & Cassner, 2002).

Criteria and Categories

The first stage of the research was a literature review. This review had two purposes: firstly, to determine the direction of current and historic writing about library websites; and secondly to extract criteria to be used in the research (Riccardi, Easton & Small, 2004). The literature review was primarily conducted using the LISA database.

When the criteria had been extracted, they were grouped into five categories (Raward, 2001). These categories were:

- Library
- Web 2.0/Library 2.0

- Internet
- Start Page
- Organization

The criteria in the ‘Library’ category measured the library applicable content of the various start pages, as well as performance in library specific areas such as the ability of a start page to facilitate a customer’s desire to browse, or for the site to serve as a gathering place (Rutherford, 2008).

The ‘Web 2.0/Library 2.0’ category tested the use of 2.0 technologies and philosophies (Abram, 2008). This included whether a site was open source, whether it had customizable functions, and also whether it engendered a sharing or community ethos (Tran, 2009). This category is referred to as ‘Web 2.0’.

The ‘Internet’ category measured internet functionality (McMenemy, 2007). Criteria such as accessibility, speed and the help function were tested (Aitta, Kaleeva & Kortelainen, 2008). The purpose was to determine whether the start page was proficient enough in these areas to be suitable for library use (Lilly & Van Fleet, 2000).

The ‘Start Page’ category included criteria specific to start pages, including the amount of widgets that were available, whether or not there was a public page, and the ease of locating or creating widgets (Metz, 2008).

The ‘Organization’ category tested the ability of each start page to facilitate constructive ordering of the internet (Tachau, 2007). Criteria included the availability of tabs and whether there was enough functionality for the start page to develop into a web portal (Abels et al, 2007). Search engine access is also included in this category, as many articles pointed to the importance of a high quality search engine, especially Google, being accessible from the library home page (Jackson, 2002). Access to organized information, therefore, includes access to a quality search engine (Fox, 2008).

Start Page Selection

Once the criteria were finalized, nine start pages were selected for testing. They were chosen because of their traffic results on alexa.com, a website which monitors and measures internet traffic. The nine sites were:

- Netvibes (www.netvibes.com)
- Pageflakes (www.pageflakes.com)
- iGoogle (www.google.com/ig)
- My Yahoo (http://my.yahoo.com)
- Protopage (www.protopage.com)
- Windows Live (http://my.live.com)
- Eskobo (www.eskobo.com)
- Inbox (www.inbox.com)
- Start Aid (www.startaid.com)

A user account was created for each of these sites before testing began.

Some of these sites, such as iGoogle and Pageflakes, true start pages (Rosenfeld, 2008). They include a large stock of ready made widgets, and access to RSS feeds, which can also be added as widgets (Liu, 2008). Other sites, such as Eskobo and Protopage, offer fewer (or no) ready made widgets, and rely on the user adding RSS feeds which are then displayed as widgets (Wang & Lim, 2009). Both types of page are included in the research, because the final product of a start page that has various mini-sites available on a single page at once is the same with both variations.

Google

An association between libraries and Google is identified in the literature as an important component of a library's web presence (Harpel-Burke, 2005). This refers not only to the Google search engine, clearly established as the first place that a majority of users seek online information, but also other Google applications such as Google Scholar, Google Maps and Google Earth (Brenner & Klein, 2008). Jackson (2002) discusses how a successful library portal should combine Google, superior content, and library tools. Start pages have the potential to realise this model. One component of this research is therefore to test how effectively each start page incorporates Google applications.

Testing

The testing was quantitative. All start pages was tested against each of the ninety-six criteria (Yan et al, 2007). Three results were possible for each test:

1.0: Complete fulfilment of the criteria (Reutschler & Geursen, 2003)

0.5: Partial fulfilment of the criteria (Schmidt et al, 2008)

0.0: No fulfilment of the criteria (Reutschler & Geursen, 2003)

For example, Netvibes scored 1.0 for the ‘Tabs’ criteria in the ‘Organization’ category. Netvibes has a straightforward tabbing function that is easy to create, label and use. iGoogle scored 0.5. It does have a tabbing function, but it has an inconsistent location, and is more complex to use. Eskobo scored 0.0, as it has no tabbing function, presenting all the selected feeds on one page.

The results were tabulated in an excel worksheet (Adams & Cassner, 2002).

Testing Conditions

The testing was completed by one researcher (Detlor & Lewis, 2006). A single computer was used. It was a Compaq Presario V6000 with 1GB of memory. The download speed of the internet connection during testing ranged between 3.47 Mbps and 4.24 Mbps as measured by speedtest.net. An Apple iBook G4, run through the same connection, was used to test the multi-platform criteria.

Replication and Generalization

The research is able to be replicated by other researchers, despite the data being collected by only one researcher (Raward, 2001). The testing conditions were relatively constant (Pickard, 2007). The limited range of responses (1, 0.5, 0) reduced the scope for bias or inaccuracy (Raward, 2001). In most cases, the testing was like a light switch: the criteria were either evident or absent in the start page (Keevil, 1998). In some situations, the

criteria were evident, but with limited functionality, resulting in a partial score (Fox, 2008).

The research could also be applied to other start pages, or library websites in general (Pickard, 2007). The criteria were not derived from the start pages, but from the literature before the start pages were selected (Riccardi et al, 2004). Those start pages were also selected using an independent source that listed internet volume for web sites.

Results

The results of the testing are displayed in two ways. First there is a graphic representation of the findings, demonstrating how the start pages tested against each other in the form of bar charts (Pickard, 2007). These charts are also used to illustrate the results of specific sites in selected areas. Statistical data is employed to establish the mathematical rigour of the research (Pickard, 2007).

The second form of reporting is written analysis (Ivory & Megaw, 2005). The results for each start page are discussed category by category.

Limitations

There is potential for the impartiality of the research to be questioned because only one researcher was involved in the testing (Riccardi et al, 2004). However, the potential for bias was managed by careful framing of questions, and the use of yes/no/partially realised answers. These are identified by Reutschler and Geursen (2003), Raward (2001) and Keevil (1998) as appropriate techniques for reducing the impact of personal perceptions.

The literature does identify potential technical dangers of start pages including site hijacking (O'Neill, 2007). This has not been investigated in the research, because it is outside the scope of the research question (Pickard, 2007). However, an examination of these potential problems should be completed before libraries adopt start pages for use, or create widgets for their catalogues (McMenemy, 2007).

Definitions

AJAX AJAX stands for 'Asynchronous JavaScript and XML' (O'Neill, 2007). It is the technology that enables the unique structure of a start page, facilitating the embedding of numerous widgets in a parent web page so various mini-sites can be viewed at one time (Fox, 2008). AJAX permits the background retrieval of data from a server without interfering with the existing onscreen display (O'Neill, 2007). This means that continual reloading of pages is not required.

Customer The term used specifically to describe someone who uses the library. This is distinct from 'user', which is used to describe someone accessing a generic website.

Library 2.0 The use of Library 2.0 is derived from Casey & Savastinuk's (2006) article which defines the concept as user-generated library change, often involving the use of new, Web 2.0 technologies. Library 2.0 is about making the library more approachable and useable for customers, and encouraging input about the direction of the library. In the context of this project, the technology is an important component, as the research is in part measuring whether start pages have the potential to provide libraries with a web presence that is more customer-orientated (Abram, 2008).

Start Page A start page is a web site that users can populate with widgets and then use as their homepage (Evans, 2009). The widgets are embedded in the home page, and a number of them can be viewed at one time (Metz, 2008). This means that the user can have instant access to favourite web sites as soon as they open the internet, reducing the

need to search or scroll through bookmarks (Rosenfeld, 2008). The widgets often possess rich content, giving start pages an attractive appearance (Valenza, 2008). Many start pages possess a tabbing function that facilitates straightforward organization of the internet (Fox, 2008).

Web 2.0 The definition of Web 2.0 used is that it is a second generation internet permitting user personalization, customization and creation (Detlor & Lewis, 2006). Utilizing social software such as social networking sites, blogs and wikis, the user can generate a web presence without requiring any understanding of complex code or script (Snowball, 2008). Web 2.0 also has an ethos of sharing and collectivism (Casey & Savastinuk, 2006). In the context of this research, this is measured partially in terms of whether or not the start page has public page capability (Muchmore, 2008). Interactivity is a core component of Web 2.0 technologies, which are usually open source (Rutherford, 2008).

Widgets Widgets are portable web sites that can be embedded in larger web pages. This is achieved through the use of AJAX technology (Metz, 2008). Widgets are usually written in XML code. They are stored on a third party server, and can then be selected to populate Web 2.0 sites such as social networking sites or start pages. A widget is in a mini-site nested within another, larger webpage (Evans, 2009). Using widgets is a simple way of embedding rich content in a larger site. To be consistent, the term ‘widget’ is used throughout this project. Some start pages employ other terms, most notably iGoogle, where widgets are called ‘gadgets’ (Harris & Lessick, 2007).

Literature Review

There are numerous areas of library research that apply to this project. The most established field examines library website quality, identifying existing strengths as well as aspects that must be improved upon for libraries to become more competitive in a changing information environment (Harpel-Burke, 2005). Research examining portals in libraries is useful, as start pages replicate some functionality of traditional portals (Jackson, 2005). Research discussing Web 2.0 in libraries is applicable, providing context for the use of interactive, personalized applications in libraries (Casey & Savastinuk, 2006). The role of Google as both competitor and tool for libraries is often identified as crucial to the use library sites receive (Detlor & Lewis, 2006). Lastly, research about start pages is still developing, primarily because they are a new technology. But there are articles that discuss the use and potential of start pages in general as well as in a library setting (Valenza, 2008).

Tennant's (2000) article about the state of library websites is dated and limited by the rapid speed of technological change since the article was written. Library 2.0, for example, was not conceived; start pages did not exist. But the underlying sentiment, that libraries must develop a new information infrastructure or risk being surpassed by other, more innovative information providers, is the argument that informs this project. The specifics of Tennant's vision, such as online reference, integrated information, federated searching and one box search engines have largely been realised. But libraries continue to lose market share. The argument that Tennant states is no less relevant ten years later:

libraries must innovate, must find ways to utilize new technology, or they risk becoming bit-part players in information provision.

Two other ideas that inform the project are Bates' Berrypicking theory, and the Principle of Least Effort. Both were devised before the advent of Web 2.0, but each anticipates the effect of technology upon libraries. Bates (1989) wants library systems to be customer oriented, to encourage browsing and serendipity, and to maintain organization but facilitate adventurous searching. Liu and Lang (2004), in their analysis of Texas university libraries using the Principle of Least Effort, found most customers preferred the internet over complex university databases because of its simplicity and accessibility. To maximise use, library sites should be simple to use and rich in content (Adams & Dougherty, 2002).

The picture McMenemy (2007) portrays in his small scale study of Scottish public library websites, conducted seven years after Tennant's call to arms, reveals that few of the theories has been successfully realised. Branding, access, and even core components such as online catalogue access are poor or lacking altogether. McMenemy's criteria for the functionality of a library site are rudimentary, requiring links to on-line resources, local history sites and library notices. He is not measuring the sites against Google, or Web 2.0 applications. But even on this basic scale, libraries are seen to be failing.

Kaur and Manhas' (2008) study of Indian university students found most respondents to their survey used the internet to gather information for study, but still regarded the

physical library as more useful. However, librarians were identified as not doing enough to organize electronic information, and that most users were consequently searching online independently. Only 54% of them were locating useful information searching this way, leaving almost half of the student body wading fruitlessly through an overloaded web. Another finding was that 77% of users preferred using Google to do their searching, both academic and social. This indicates the wide reach of the search engine, and that libraries are being cut out of the market by a constituency they could reasonably expect to have more access to.

Ross and Sennyey (2008), in their assessment of academic library sites using Foster's technology S curve, suggest the situation is even direr. They report that 89% of American college students begin online searching with a search engine, while only 2% will begin with a library web site. It is a sobering statistic which suggests that in user's minds libraries are becoming obsolete, if they are considering them at all.

Ross and Sennyey suggest a range of things that libraries could implement to make their web provision more relevant. These include restructuring OPACs, constructively embracing Web 2.0, and libraries unifying their electronic presence to provide super-information sites that are more powerful and easily located. Instead of existing single library web sites, they advocate the creation of a library.com to challenge Google. Sites like Matapihi (http://www.matapihi.org.nz) are a movement in this direction, but they lack the varied functionality and content of the all-purpose information machine that Ross and Sennyey suggest.

Fox (2008) provides specific criteria that library web sites should employ. These include one box, one button searching, plain language searching, and mirroring the simplicity of Google. Information should be grouped by tabs into separate, logical pages. Ubugo et al in their 2006 study of portals for academic libraries agree: logical aggregation of subject links is useful. They identify key criteria including personalization, customization and security. Portals should provide e-reference, links to databases and journals, newspapers, other libraries and study guides. This is extending beyond the basic portal model, to a more interactive, richer, Library 2.0 model (Davidsen, 2005).

In a review of library catalogues, Wang & Lim (2009) discuss the changing paradigm of electronic information provision in libraries. They identify features that should be incorporated in this provision, including quality online content, a unified point of entry to electronic information and a rich interface. They state that social networking and personalization should be available to customers through the library interface.

In a study analysing methods of assessing websites, Judd, Farrow & Tims (2006) discuss 'non-quantifiable' (or abstract) criteria such as usability and authority. Tran (2009), in an assessment of website evaluation techniques leading to the creation of an evaluation model, also lists appropriate abstract criteria to measure. These include searchability and interactivity.

Liu (2008) identifies commercial web sites as being more attractive than library sites for college students. But, after doing content analysis on 111 ARL library sites, she finds that

many libraries are including Web 2.0 features such as RSS feeds, blogs, customization, collaborative searching and content sharing. There is a willingness on the part of libraries to embrace the new technologies. But she believes these efforts must be more fully developed, and concludes by suggesting a dynamic conceptual model for library sites that is similar to a start page: using tabbed pages, she proposes separating sites into intuitive areas that are organized, rich and attractive to the user.

Other aspects identified by Sadeh (2008) in a case study of an Ex-Libris library system (Primo) as imperative for a library site include the presence of a social community, similarity to Google, and the integration of the library catalogue with other resources. Sadeh is advocating innovation, integration and above all, simplicity. The library site should be like Google, and like a social site, but with advantage of a librarian's organization skills.

Google is identified as the benchmark for display and simplicity (Wusterman, 2006). It is omnipresent (Sadeh, 2008). It is clear, attractive to look at and easy to use (Vondracek, 2007). A study predicting future digital research techniques identifies the emergence of a Google generation (Rowlands et al, 2008). Calhoun (2006) identifies that Google and the library catalogue need to be integrated for the library to remain relevant. Jackson (2005) recognizes that users abandon library sites and portals for Google. Brezney and Haas (2005), in a paper discussing library portals, state that the Google search box is the ideal. Adams and Dougherty (2002) identify through a panel of college library customers that some students were unaware of the library web site, and that even those who were aware

of it were more likely to search for information using Google, favouring its simplicity and natural language. Google cannot be ignored by libraries, and should be integrated onto the library front page (Brezney & Haas, 2005). Conversely, efforts should also be made to find ways to make library sites more prominent on Google (Calhoun, 2006).

Casey and Savastinuk (2006) define Library 2.0 as a shift in library services from library orientated to user driven. User needs are changing, as people spend more time online, and libraries need to be adaptable enough to change in response. Web 2.0 technology, although not identified as a compulsory component of Library 2.0, provides libraries with an appropriate tool to meet these changing needs. Users demand more than a static web site: they want rich content, expect features such as Google Maps, the ability to be collaborative, and personalization. Abram (2008) claims that this 'hot web' is a vital component of libraries information provision.

Allard (2009) extends this to World 2.0, and discusses how library managers must incorporate Web 2.0 to meet the challenges of a changing information world. Rutherford (2008) agrees in her study measuring the level of implementation of social software in libraries in the USA and New Zealand. She states that the library mission must incorporate more dynamic entry into the online world. Social sites are the new gathering sites that public libraries once were, and it is important for libraries to embrace this new culture to remain relevant. It is this culture change that Rutherford finds most problematic. An inherently conservative library culture and staff reticence is holding libraries back from fully realizing the potential of Web 2.0.

Barry and Tedd's (2008) analysis of Irish public libraries discovered growing use of Web 2.0 technologies in libraries. Using a checklist to assess design, content and authority of library sites, they found many Irish libraries were implementing tools such as online visitor books, mapping, web forums and Flickr to create virtual communities.

Detlor and Lewis (2006) conducted a similar study with American public libraries, assessing 107 ARL member websites. Using similar criteria to Barry and Tedd, they found that American library sites are reasonably innovative with many implementing Web 2.0 technologies. But this rich content is undermined by an ultimate failure to provide a unified gateway to useful resources and information. They recommend greater integration with the non-library web (specifically Google and Google Scholar), using commercial portals to facilitate browsing, and more opportunity for user customization.

The literature directly examining start pages is not highly developed, especially at the peer-reviewed level. There are articles assessing and promoting start pages in trade journals and in on-line review sites. There are early narrative reports about the use of start pages in (primarily school) libraries. Rosenfeld (2008) briefly explains the value of iGoogle for managing information overload and centralizing information. She identifies the richness of start page content, their ease of use, and their attractiveness for teenaged users.

Valenza (2008) relates her experiences as a teacher librarian. She discusses iGoogle as a way to lead users toward the library site: by integrating Google and the library, there is

more chance that the user who chooses Google by default will accidentally locate the adjacent library widget. She notes other benefits for users (especially students) to be customization, portal building, immediate gratification, the sense of play and fun and stress free information management. Start pages are identified as more useful than social software sites such as MySpace for library users because they offer a more extensive range of information. Tabs are discussed as a tool for organizing information in a straightforward manner that suits users' needs.

In a brief review of iGoogle, Marcus (2008) explains how the variety of content available on one page would be attractive to library customers. The instant access to a variety of information is emphasised as a benefit. Evans (2009) defines widgets and discusses the range of content available on start pages. In a review of Netvibes, Singer & Stephens (2007) discuss the value of tabs as an organizational tool, and how the 'fun' component of start pages would enliven library websites.

Metz (2008), in a discussion about the components of start pages, identifies personalization, organization and access to a wider user group as benefits of using widgets. He explains how to create widgets. This is a valuable feature of start pages: rather than forcing the customer to accept the library start page, library ICT staff can make a library widget available for users to put on their own start page. Sites such as yourminis.com (http://www.yourminis.com/), which adapts widgets for use in numerous start pages, facilitate this process.

Start pages, an exemplification of Web 2.0 technology, were designed to take advantage of the possibilities of richness and personalization on the internet (Detlor & Lewis, 2006). End users can customize the web to look attractive, and to make favourite sites easily accessible (Rosenfeld, 2008). As with MySpace and Flickr, start pages were not created specifically for library use (Metz, 2008). But as with those, and other social software sites, there is potential for use by libraries. Dublin City Libraries Netvibes site (http://www.netvibes.com/dublincitypubliclibraries#Home) is an example of this. But because of the limited uptake of start pages by libraries, there is not yet much literature discussing their use in libraries.

There are a number of fields which lead logically to discussion about start pages. One field suggests library web sites are not progressive enough to compete in an innovative information provision market (Tennant, 2000). Another identifies user affinity for Google: libraries must find a way to integrate their services with the search engine to enhance use (Vondracek, 2007). A third field identifies the usefulness of portals for managing information overload, but also finds that lack of innovation and an entrenched library focus restricts uptake (Jackson, 2005). Library 2.0 is identified as one way forward for libraries (Casey & Savastinuk, 2006).

Early literature, primarily from educational practitioners, identifies start pages as innovative sites that have potential to meet the demands identified: richness, organization, user focus, fun, Google integration (Coyle, 2007). In short, the literature suggests that although some libraries have adopted new technologies on their websites, many library

sites have major shortcomings that are leading to low use and lack of appeal, which start pages may provide some solutions for.

Criteria

Library

Criteria	*Source*
E-Reference	Wang & Lim (2009)
Databases	Ubogu et al (2006)
Newspapers	Ubugo et al (2006)
E-Journals	Ubugo et al (2006)
Institutional Branding	Rowlands et al (2008)
Information Organization	Liu (2008)
Information Literacy	Novaljan & Zumer (2004)
Quality Links	Novaljan & Zumer (2004)
Community Content	McMenemy (2007)
Catalogue Access	Calhoun (2006)
Full Text Journal Access	Ubugo et al (2006)
Subject Aggregation	Jackson (2005)
Access to Statistics	Ubugo et al (2006)
Links to Other Libraries	Wang & Lim (2009)
Study Guides	Ubugo et al (2006)
Google	Detlor & Lewis (2006)
Google Scholar	Detlor & Lewis (2006)
Authority	Barry & Tedd (2008)
Finding Aids	Fox (2008)
Facilitates Browsing	Bates (1989)
Customer Oriented	Bates (1989)

Serendipity	Bates (1989)
Gathering Place	Rutherford (2008)
Eases Information Overload	Rosenfeld (2008)
Supersite	Ross & Sennyey (2008)
Enables Library Mission	Rutherford (2008)
Remote Use	Tennant (2000)
Books	Rowlands et al (2008)
Evolving Search	Bates (1989)
Juxtaposition of Ideas	Bates (1989)
Everyday Terminology	Rowlands et al (2008)
Professional	Valenza (2008)
Library Appropriate	Novaljan & Zumer (2004)
Credible Information	Sadeh (2008)

Figure 1: Table identifying 'Library' criteria and source from the literature

Web 2.0

Criteria	*Source*
User Participation	Barry & Tedd (2008)
Online Community	Sadeh (2008)
Interactivity	Sadeh (2008)
Multi-Media	Barry & Tedd (2008)
Customizable	Rosenfeld (2008)
Personalized	Casey & Savastinuk (2006)
Collaborative	Casey & Savastinuk (2006)
Mash-Up	Detlor & Lewis (2006)
Live Chat	Liu (2008)
Open Source	Abram (2008)
Content Richness	Adams & Dougherty (2002)
Fun	Liu (2008)
Virtual Space	Ross & Sennyey (2008)
News Aggregator	Liu (2008)
Captivating	Liu (2008)
Ease of Use	Travis & Norlin (2002)
Intuitive	Duncan & Holliday (2008)
Email	Ubugo et al (2006)
User Centred	Casey & Savastinuk (2006)
Plain Language	Fox (2008)
Collective Intelligence	Han et al (2007)

Portability	Harris & Lessick (2007)
Enhanced Experience	Ross & Sennyey (2008)
Single Point of Access	Coyle (2007)

Figure 2: Table identifying 'Web 2.0/Library 2.0' criteria and source from the literature

Internet

Criteria	*Source*
Accessibility	Liu (2008)
Speed	Antleman, Lynema & Pace (2006)
Easy Access	Schuling (2007)
One Box, One Button	Fox (2008)
Natural Interface	Schmidt (2007)
Learnability	Nichols & Mellinger (2007)
Easy to Read	Calhoun (2006)
Secure	O'Neill (2007)
Efficiency	Aitta et al (2008)
Stimulating	Riccardi et al (2004)
Help	Duncan & Holliday (2008)
Menu Bar	Finder, Dent & Lym (2006)
Site Map	Fox (2008)
Familiar	Fox (2008)
Graphic Management	Schmidt (2007)
Multi-Platform	Lilly & Van Fleet (2000)
Satisfaction	Aitta et al (2008)
Straightforward Navigation	Pisanski & Zumer (2008)

Figure 3: Table identifying 'General Internet Requirements' criteria and source from the literature

Start Page

Criteria	*Source*
Public Page	Metz (2008)
Widget Creation Support	Metz (2008)
Control + Collaboration	Casey & Savastinuk (2006)
High # Widgets	Evans (2009)
Live Links	Barry & Tedd (2008)
Satisfying Appearance	Wang & Lim (2009)
Straightforward Widget Location	Evans (2009)
Memorability	Finder et al (2006)

Figure 4: Table identifying 'Start Page Requirements' criteria and source from the literature

Organization

Criteria	*Source*
Tabs	Fox (2008)
Portal	Jackson (2005)
Logical Groupings	Ubugo et al (2006)
Declutter	Rosenfeld (2008)
Control	Rosenfeld (2008)
Web Organization	Kaur & Manhas (2008)
Controlled Vocabulary	Fox (2008)
Centralization	Ross & Sennyey (2008)
Subject Headings	Jackson (2005)
Resource Evaluation	Wang & Lim (2009)
Search Engine Access	Ross & Sennyey (2008)
Federated Search	Tennant (2000)

Figure 5: Table identifying 'Library' criteria and source from the literature.

Results

The results of the testing are displayed below. The data are shown first, tabulated in the five categories. A sixth table records the total test score for each start page. A final table lists statistical data. The results are illustrated through use of bar charts.

Figure 6: Table Showing Score of Each Start Page in 'Library' Category

	Netvibes	Pageflakes	iGoogle	MyYahoo	Protopage	Eskobo	WindowsLive	Inbox	Start Aid
E-Reference	0.5	0.5	1	0.5	1	1	0.5	0	1
Databases	0	0	0.5	0	0.5	0.5	0	0	0.5
Newspapers	1	0.5	1	1	0.5	1	1	0.5	1
E-Journals	1	0.5	1	1	1	1	0.5	0	1
Institutional Branding	0.5	1	1	0	1	0	0	0	0
Information Organization	1	1	1	1	1	1	0.5	1	1
Information Literacy	0	1	0	0.5	1	0	1	0	1
Quality Links	1	1	1	1	1	1	0.5	0.5	1
Community Content	0	0.5	0	0	0	1	0	0	1
Catalogue Access	1	1	1	1	1	0	1	0	1
Full Text Journal Access	0	0	0	0	0	0	0	0	0
Subject Aggregation	1	1	1	1	1	0	1	0	1
Access to Statistics	0.5	0	0.5	0	0	0	1	0	0
Links to Other Libraries	1	1	1	0.5	1	1	1	0	1
Study Guides	0.5	0	0	0	0	0.5	0	0	1
Google	1	1	1	0	1	0	0	0	1
Google Scholar	1	0	1	0	0	0	0	0	1
Authority	1	0.5	1	0	0	0	0	0	1
Finding Aids	0	0	0	0	0	0	0	0	0
Facilitates Browsing	1	1	1	1	1	0.5	1	0.5	1
Customer Oriented	1	1	1	1	1	1	0.5	1	1
Serendipity	1	1	1	1	1	0.5	0	0.5	0.5
Gathering Place	1	1	0	0	1	0	1	0	0.5
Eases Information Overlo	1	1	1	1	1	0.5	0	0.5	0.5
Supersite	1	1	1	1	1	0.5	0	0	0
Enables Library Mission	1	1	1	1	1	0	0	0	0
Remote Use	1	1	0	0	1	0	1	1	1
Books	1	1	1	1	0	1	0	0	1
Evolving Search	1	1	1	1	1	0	0	0	0
Juxtaposition of Ideas	1	1	1	1	1	1	1	1	1
Everyday Terminology	1	1	1	1	1	1	1	1	0
Professional	0.5	0.5	1	1	0.5	0.5	0.5	1	0
Library Appropriate	1	1	0.5	0.5	1	0	0	0	0
Credible Information	1	1	1	1	1	1	1	1	1
Total (Out of 34)	26.5	25	25.5	20	24.5	15.5	15	9.5	22

Figure 7: Table Showing Score of Each Start Page in 'Web 2.0' Category

	Netvibes	Pageflakes	iGoogle	My Yahoo	Protopage	Eskobo	WindowsLive	Inbox	Start Aid
User Participation	1	1	0	0	1	0	1	0	1
Online Community	1	1	0	0	1	0	1	0	1
Interactivity	1	1	0	0	1	0	1	0	0
Multimedia	1	1	1	1	1	0	1	0	1
Customizeable	1	1	1	1	1	1	1	1	0.5
Personalized	1	1	1	1	1	1	1	1	1
Collaborative	0	0	0	0	0	0	0	0	1
Mash Up	1	1	1	1	1	0	1	1	0
Live Chat	1	1	1	1	1	1	1	1	1
Open Source	1	1	1	1	0.5	1	1	1	1
Content Richness	1	1	1	1	1	0	0.5	0.5	1
Fun	1	1	1	1	0.5	0	0	0	0
Virtual Space	1	1	1	1	1	1	1	1	1
News Aggregator	1	1	1	1	1	1	1	1	1
Captivating	1	1	1	1	1	0	0	0	0
Ease of Use	1	0.5	1	1	0	0.5	0	0.5	0
Intuitive	1	0.5	1	1	0	0.5	0	0.5	0
Email	1	1	1	1	1	0	1	1	1
User Centered	1	1	1	1	1	1	1	1	1
Plain Language	1	1	1	1	1	0.5	0.5	1	0.5
Collective Intelligence	1	1	1	1	1	1	1	1	1
Portability	1	1	0.5	0	1	1	1	0	1
Enhanced Experience	1	1	1	1	1	1	0	0	0
Single Point of Access	1	1	1	1	1	1	0	1	1
Total (Out of 24)	23	22	19.5	19	20	12.5	16	13.5	16

Figure 8: Table Showing Score of Each Start Page in 'Internet' Category

	Netvibes	Pageflakes	iGoogle	MyYahoo	Protopage	Eskobo	WindowsLive	Inbox	Start Aid
Accessibility	0	0	0	1	0	1	0	0	1
Speed	0.5	0.5	1	0.5	0.5	0.5	0	1	0
Easy Access	1	1	1	1	1	1	0	1	0
One Box, One Button	1	1	1	1	1	0	0	0	1
Natural Interface	1	1	1	1	1	0	0.5	0.5	0
Learnability	1	1	1	1	0.5	0.5	0	0.5	0.5
Easy to Read	1	1	1	1	1	1	1	1	1
Secure	1	1	1	1	1	1	1	0	1
Efficiency	1	1	1	1	0	0.5	0	0	0
Stimulating	1	1	1	1	1	0.5	0	0	0
Help	1	0.5	0.5	1	0.5	0	0.5	0.5	0.5
Menu Bar	1	1	1	1	1	1	1	1	1
Site Map	0	0	0	0	0	0	0	0	0
Familiar	1	1	1	1	1	0.5	1	0.5	0
Graphic Management	1	1	1	0.5	1	0	0	0	0
Multi Platform	1	1	1	1	1	1	1	1	1
Satisfaction	1	0.5	1	0.5	0	0	0	0	0
Straightforward Navigation	1	1	1	1	1	1	0	1	0.5
Total (Out of 18)	15.5	14.5	15.5	15.5	12.5	9.5	6	8	7.5

Figure 9: Table Showing Score of Each Start Page in 'Start Page' Category

	Netvibes	Pageflakes	iGoogle	MyYahoo	Protopage	Eskobo	WindowsLive	Inbox	Start Aid
Public Page	1	1	0	0	1	0	1	0	1
Widget Creation Support	1	1	1	1	1	0	1	0	0
Control + Collaboration	0	0	0	0	0	0	0	0	1
High # Widgets	1	1	1	1	0	0	0	0	0
Live Links	0.5	0.5	0.5	1	0.5	0.5	1	1	1
Satisfying Appearance	1	1	1	0.5	1	0	0.5	0	0
Straightforward Widget Location	0.5	0.5	1	1	0	0	0	0	0
Memorability	1	1	1	0.5	1	0	0	0	0
Total (Out of 8)	6	6	5.5	5	4.5	0.5	3.5	1	3

Figure 10: Table Showing Score of Each Start Page in 'Organization' Category

	Netvibes	Pageflakes	iGoogle	MyYahoo	Protopage	Eskobo	WindowsLive	Inbox	Start Aid
Tabs	1	1	0.5	1	1	0	1	0	0.5
Portal	1	1	1	1	1	0	1	0	1
Logical Groupings	1	1	1	1	1	0	1	0	1
Declutter	1	1	1	1	1	0.5	1	0.5	1
Control	1	1	1	1	1	0.5	1	0.5	1
Web Organization	1	1	1	1	1	0.5	1	0.5	1
Controlled Vocabulary	0	0	0	0	0	0	0	0	0
Centralization	1	1	1	1	1	1	0	1	1
Subject Headings	1	1	1	1	1	0.5	1	0	1
Resource Evaluation	0	0.5	0.5	0	0	0	0	0	0
Search Engine Access	1	1	1	0.5	1	0.5	1	0.5	1
Federated Search	0	0	0	0	0	0	0	0	0
Total (Out of 12)	9	9.5	9	8.5	9	3.5	8	3	8.5

Figure 11: Table Showing Total Score of Each Start Page in all Categories

	Netvibes	Pageflakes	iGoogle	MyYahoo	Protopage	Eskobo	WindowsLive	Inbox	Start Aid
Library	26.5	25	25.5	20	24.5	15.5	15	9.5	22
Web 2.0	23	22	19.5	19	20	12.5	16	13.5	16
Internet	15.5	14.5	15.5	15.5	12.5	9.5	6	8	7.5
Start Page	6	6	5.5	5	4.5	0.5	3.5	1	3
Organization	9	9.5	9	8.5	9	3.5	8	3	8.5
Total (Out of 96)	80	77	75	68	70.5	41.5	48.5	35	57

Figure 12: Table Showing Statistical Data for All Categories

	Mean	Range	Variance	Standard Deviation
Library	20.389	17	30.579	5.529
Web 2.0	17.944	10.5	11.858	3.443
Internet	11.611	9.5	13.377	3.657
Start Page	3.889	5.5	3.765	1.94
Organization	7.556	6.5	5.469	2.339
Total	**61.389**	**45**	**242.154**	**15.561**

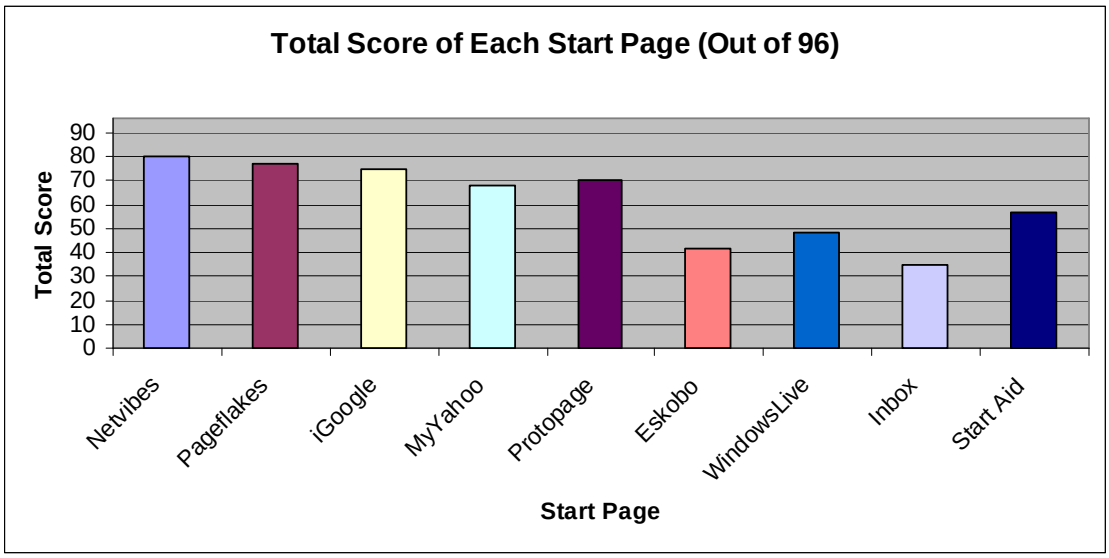

Figure 13: Chart showing total score of each start page

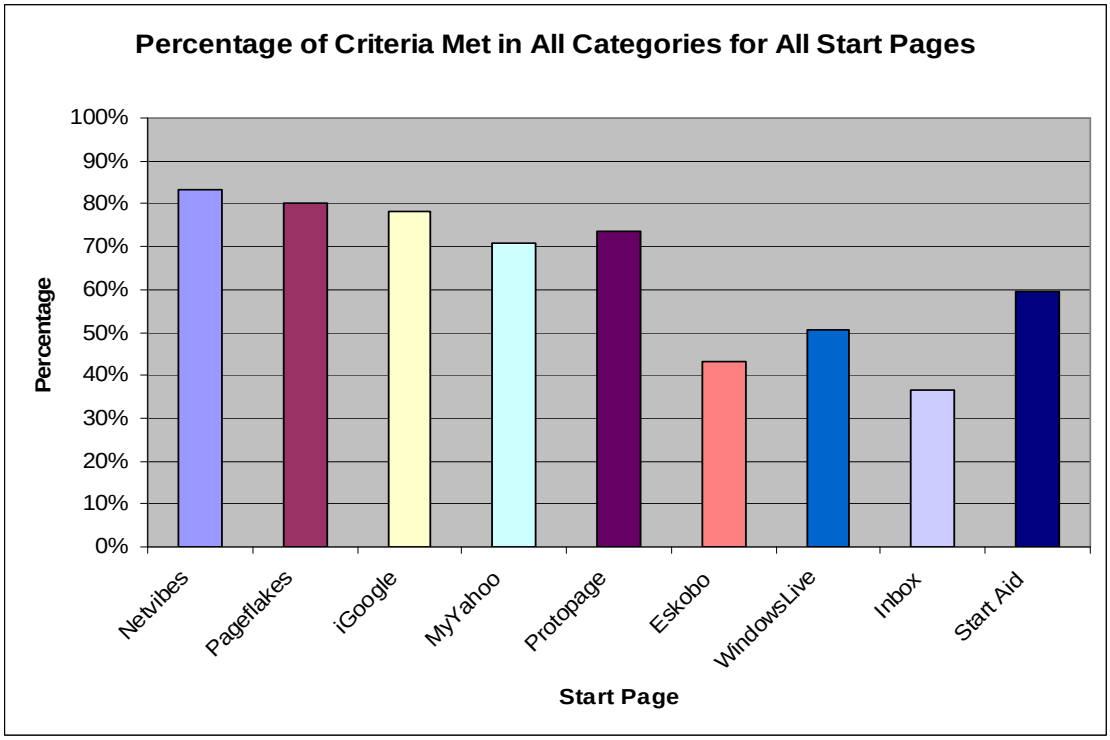

Figure 14: Chart showing percentage of criteria met in all categories for all start pages

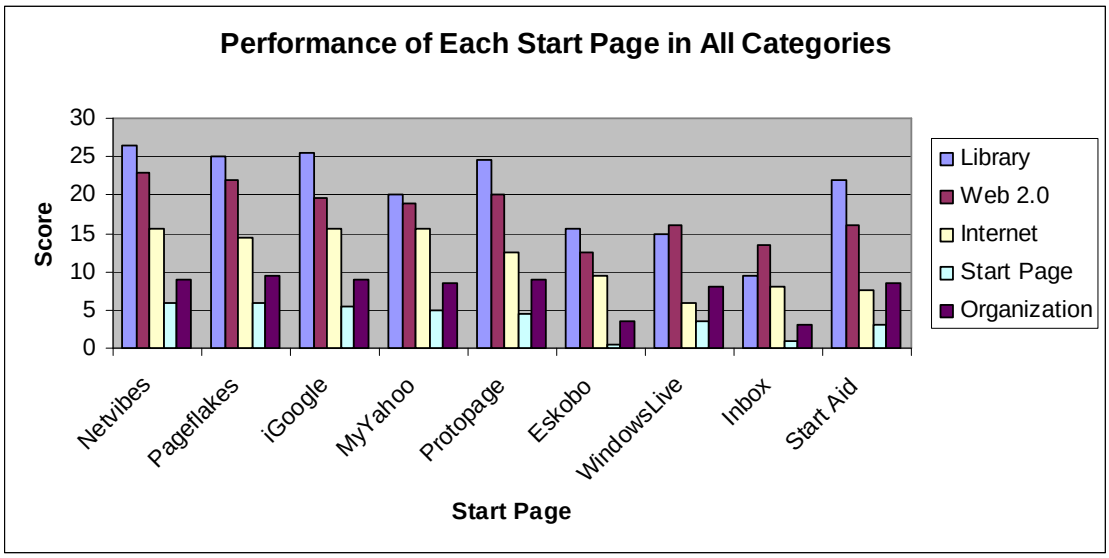

Figure 15: Chart showing performance of each start page in all categories

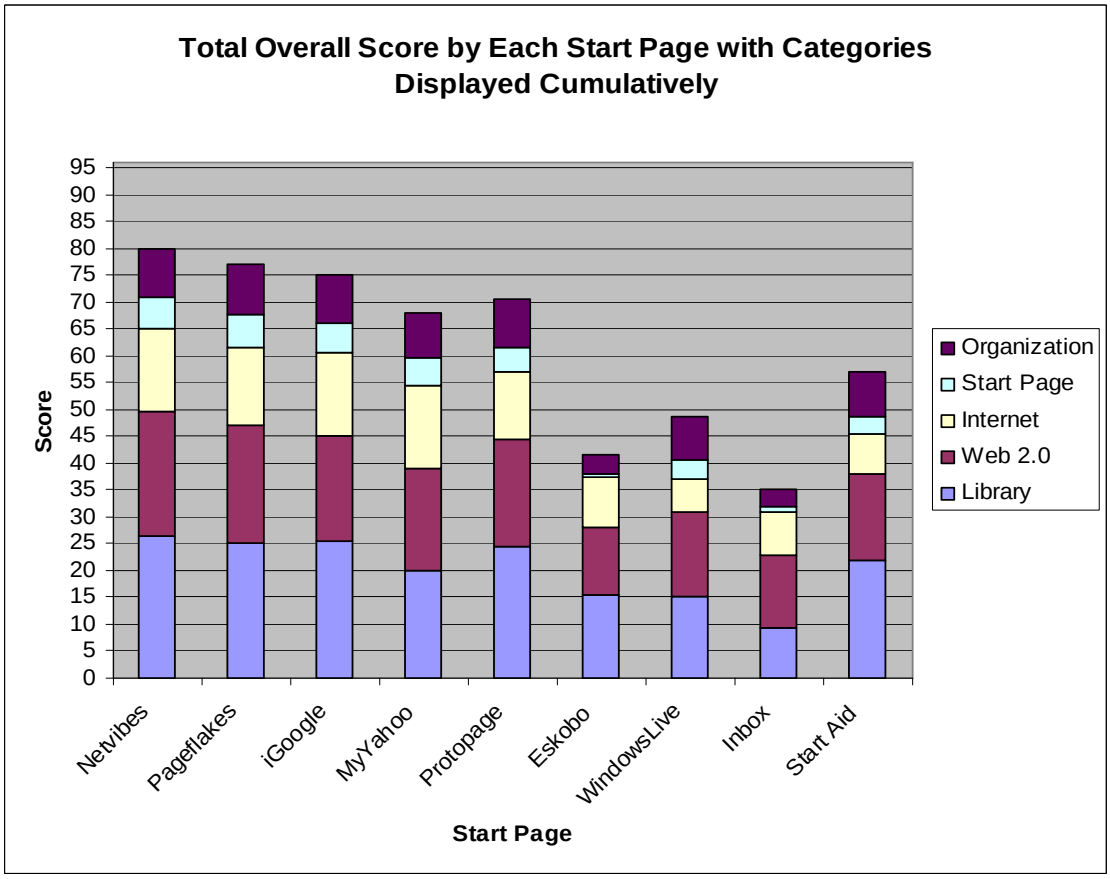

Figure 16: Chart showing total overall score for each start page with categories displayed cumulatively

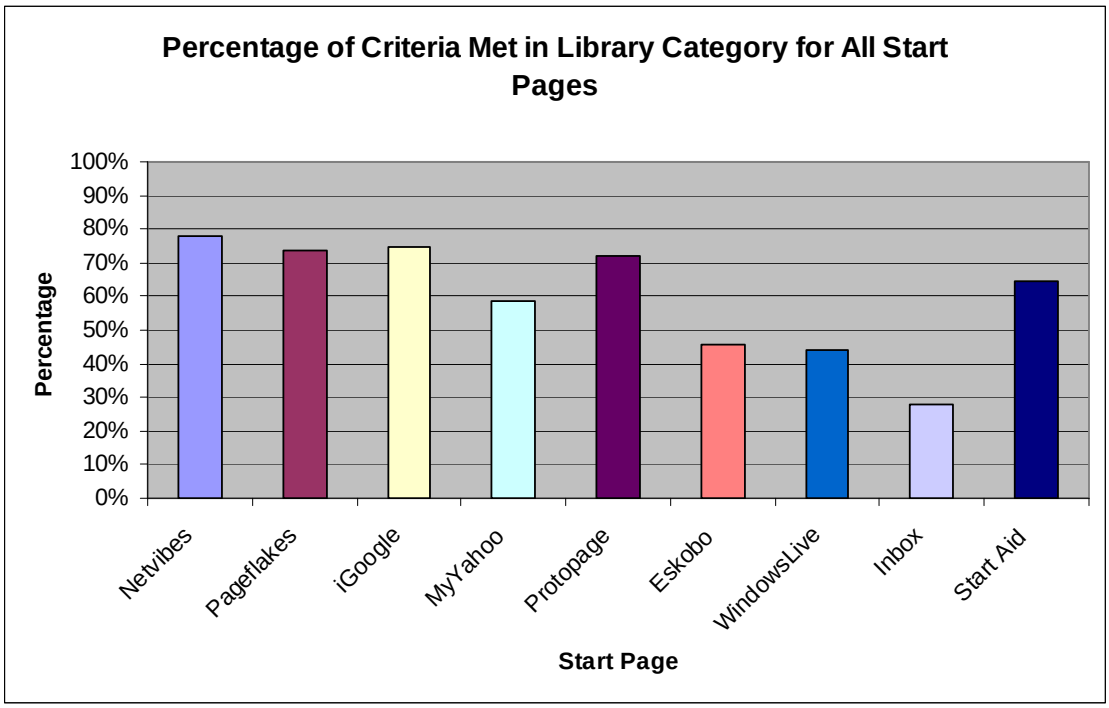

Figure 17: Chart showing percentage of criteria met in 'Library' category for all start pages

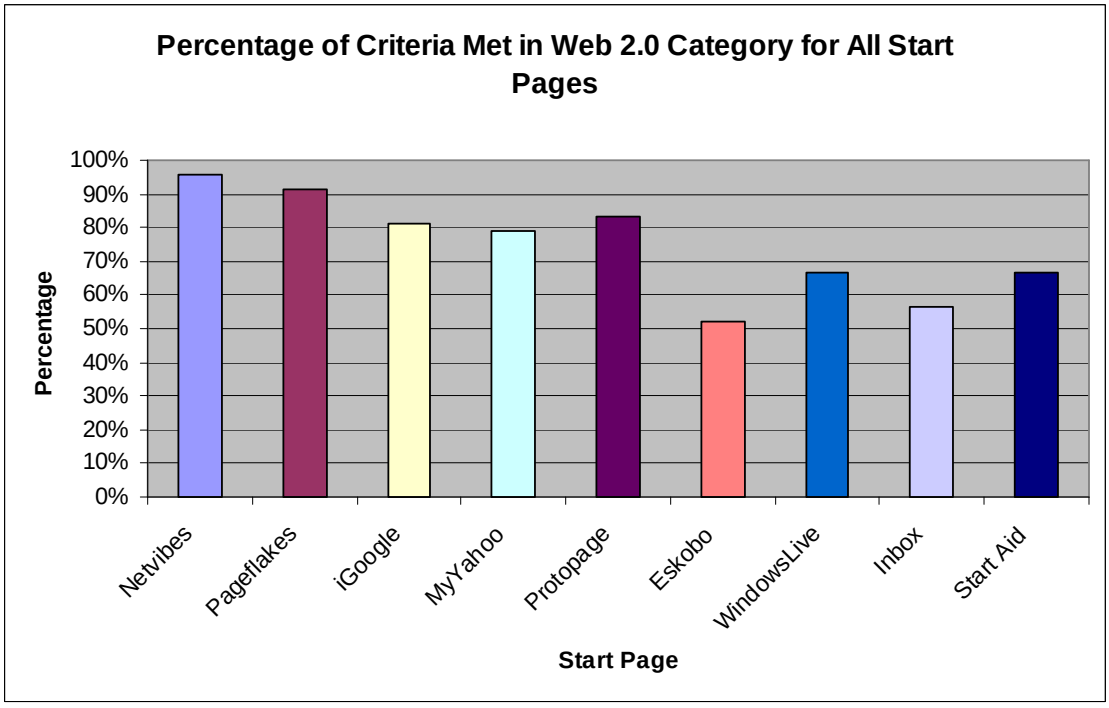

Figure 18: Chart showing percentage of criteria met in 'Web 2.0' category for all start pages

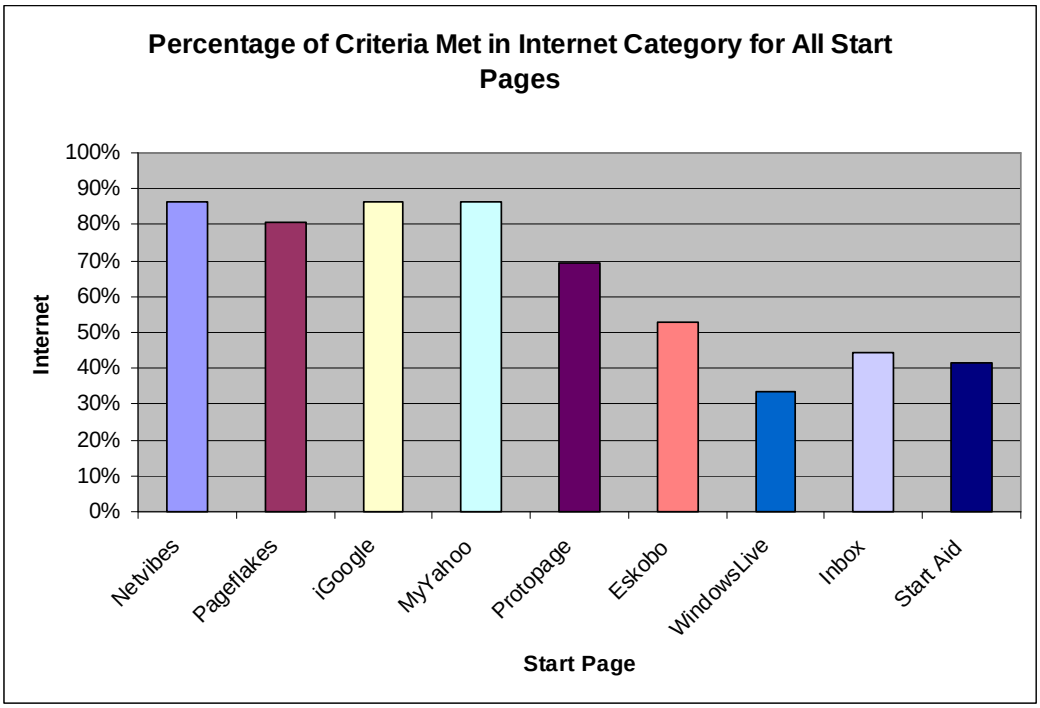

Figure 19: Chart showing percentage of criteria met in 'Internet' category for all start pages

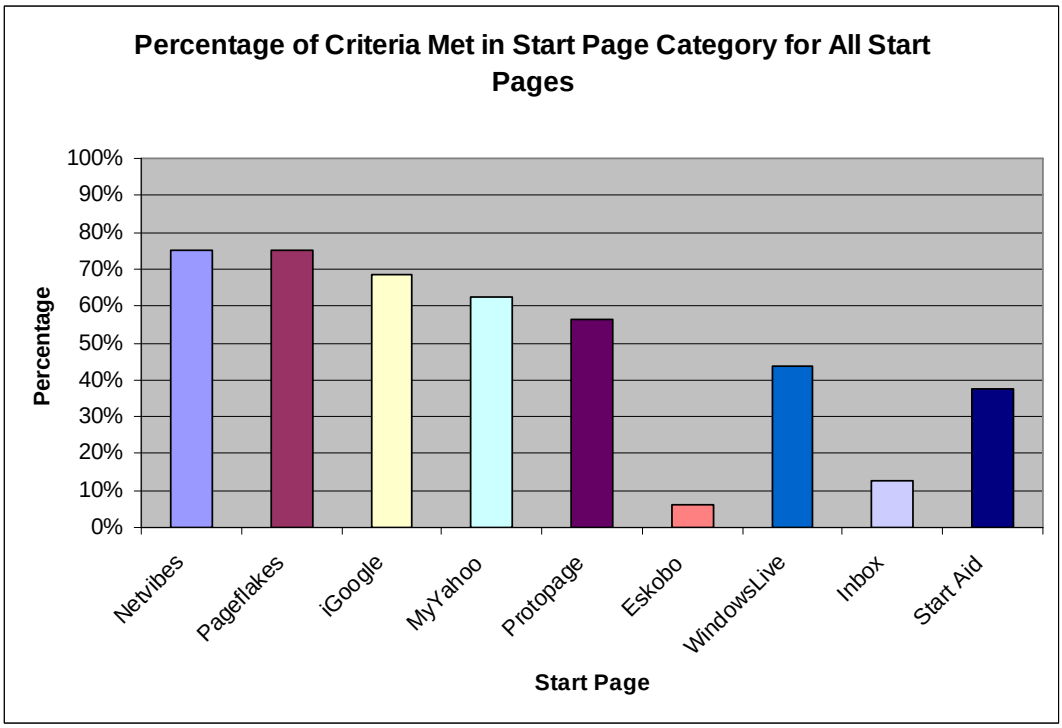

Figure 20: Chart showing percentage of criteria met in 'Start Page' category for all start pages

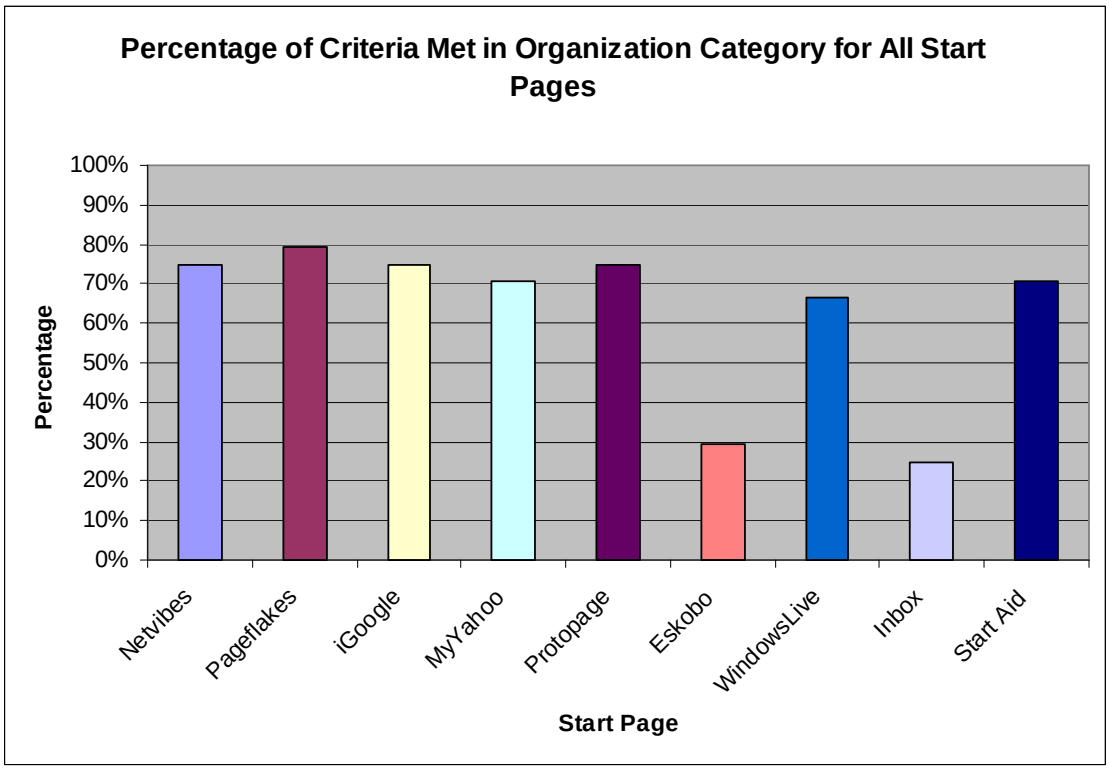

Figure 21: Chart showing percentage of criteria met in 'Organization' category for all start pages

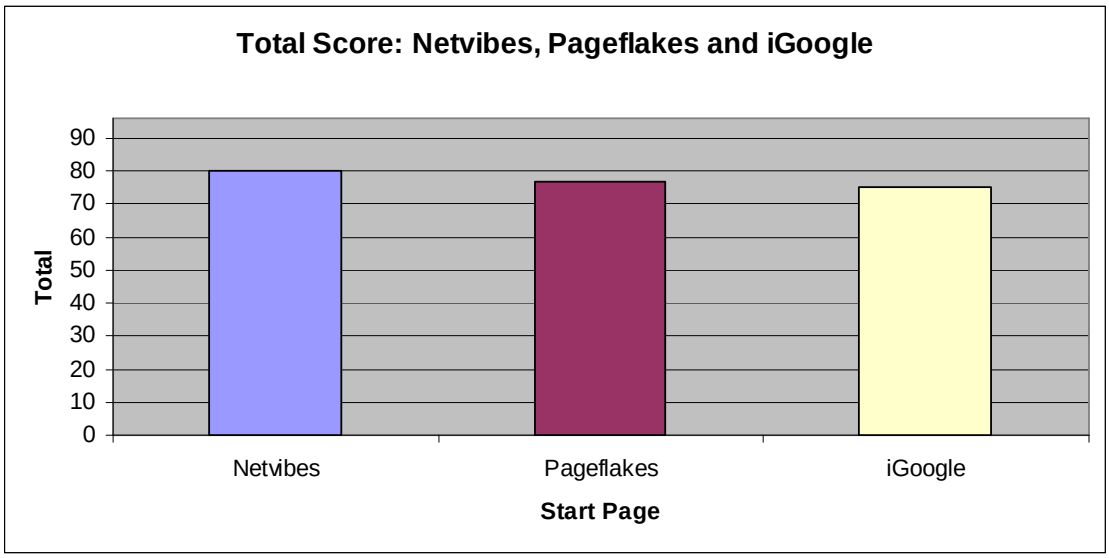

Figure 22: Chart showing the total score in all categories for Netvibes, Pageflakes and iGoogle

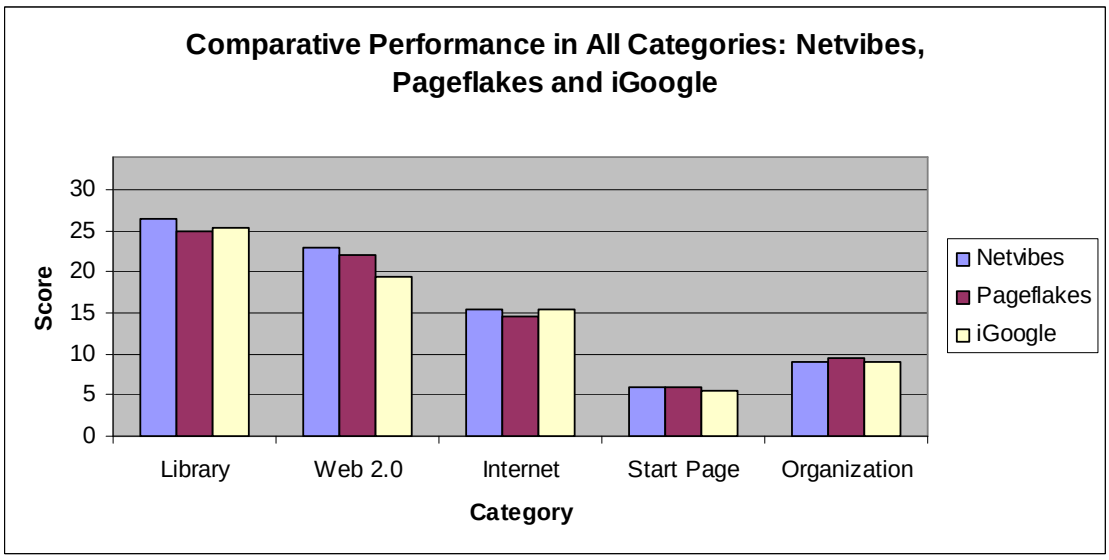

Figure 23: Chart showing comparative performance in all categories for Netvibes, Pageflakes and iGoogle

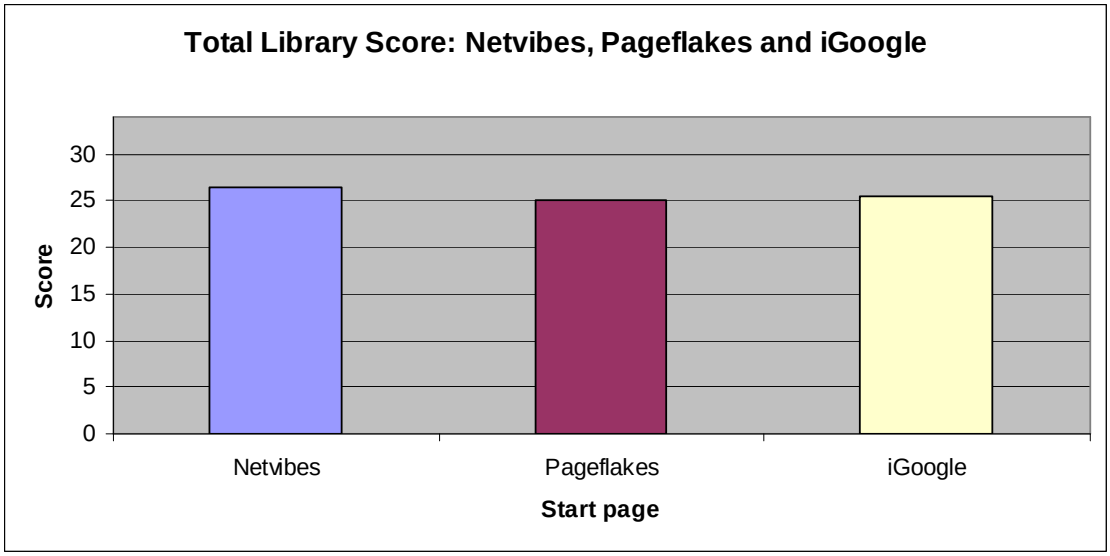

Figure 24: Chart showing score in 'Library' category for Netvibes, Pageflakes and iGoogle

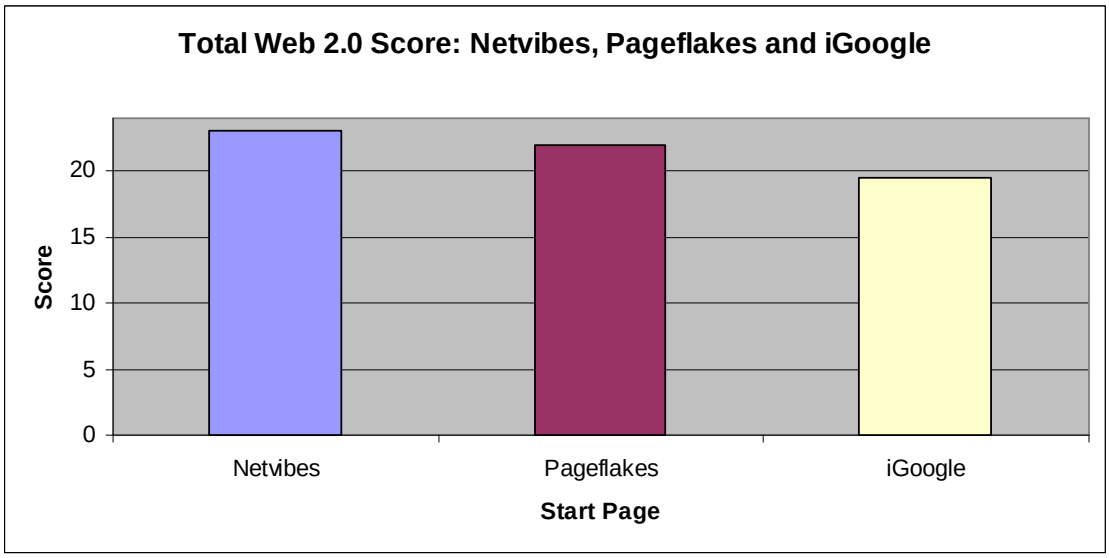

Figure 25: Chart showing score in 'Web 2.0' category for Netvibes, Pageflakes and iGoogle

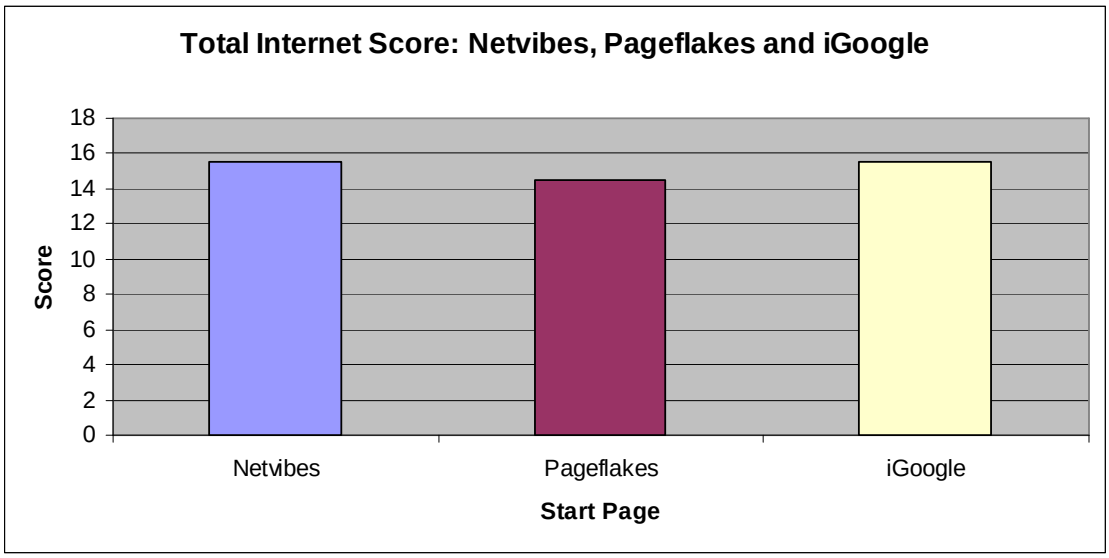

Figure 26: Chart showing score in 'Internet' category for Netvibes, Pageflakes and iGoogle

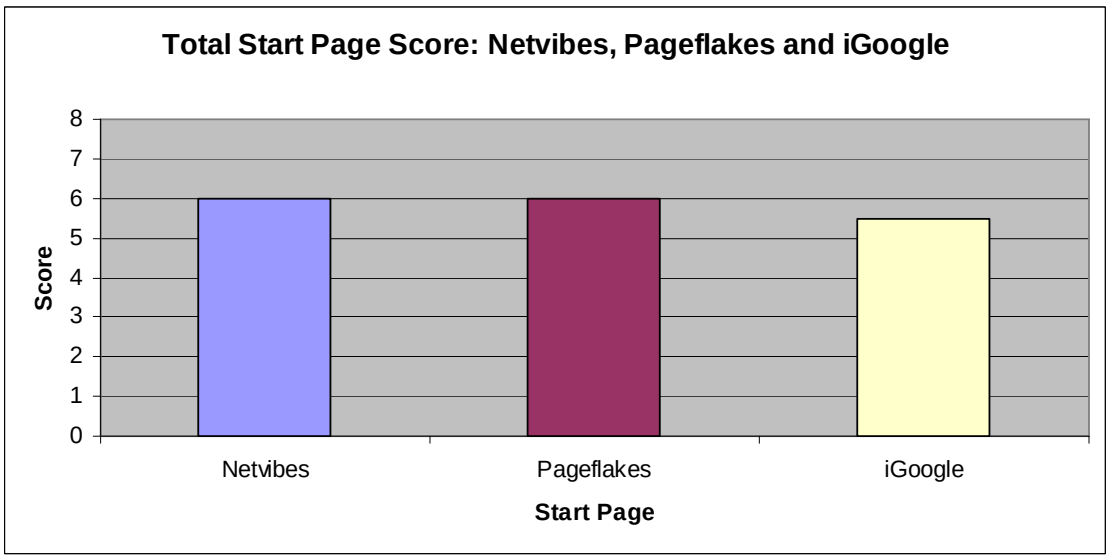

Figure 27: Chart showing score in 'Start Page' category for Netvibes, Pageflakes and iGoogle

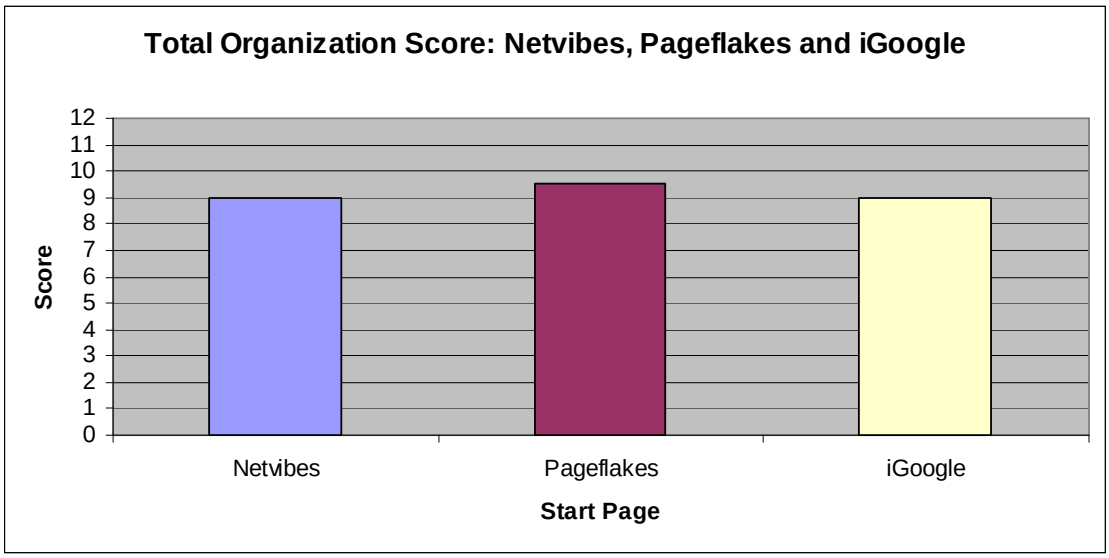

Figure 28: Chart showing score in 'Organization' category for Netvibes, Pageflakes and iGoogle

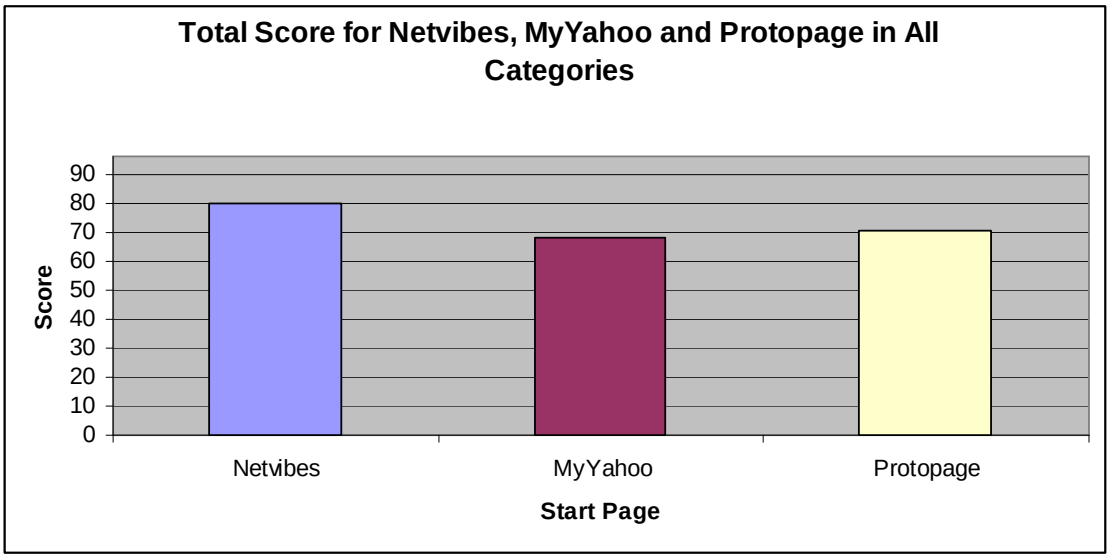

Figure 29: Chart showing total score in all categories for Netvibes, My Yahoo and Protopage

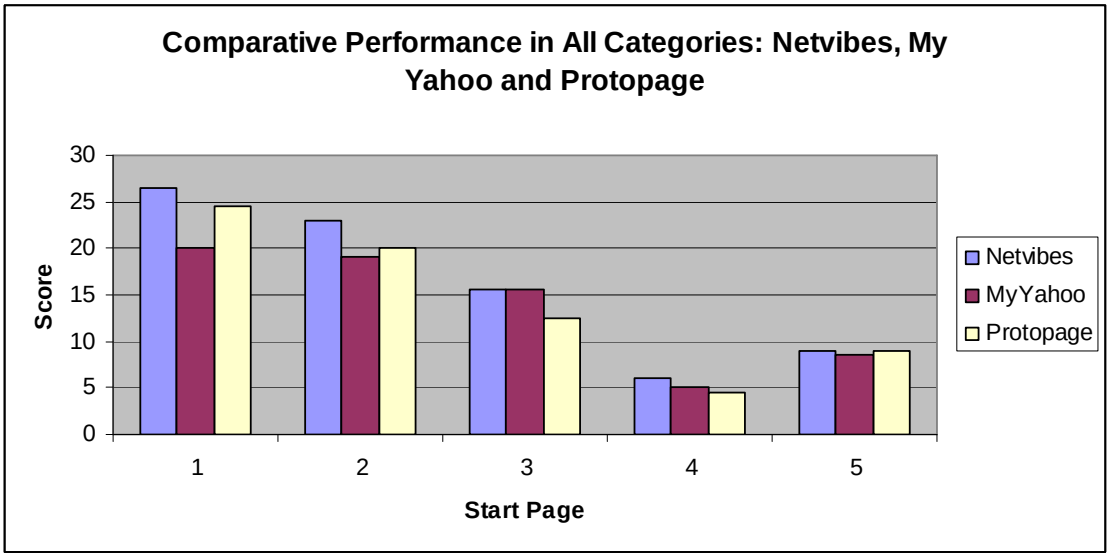

Figure 30: Chart showing comparative performance in all categories for Netvibes, My Yahoo and Protopage

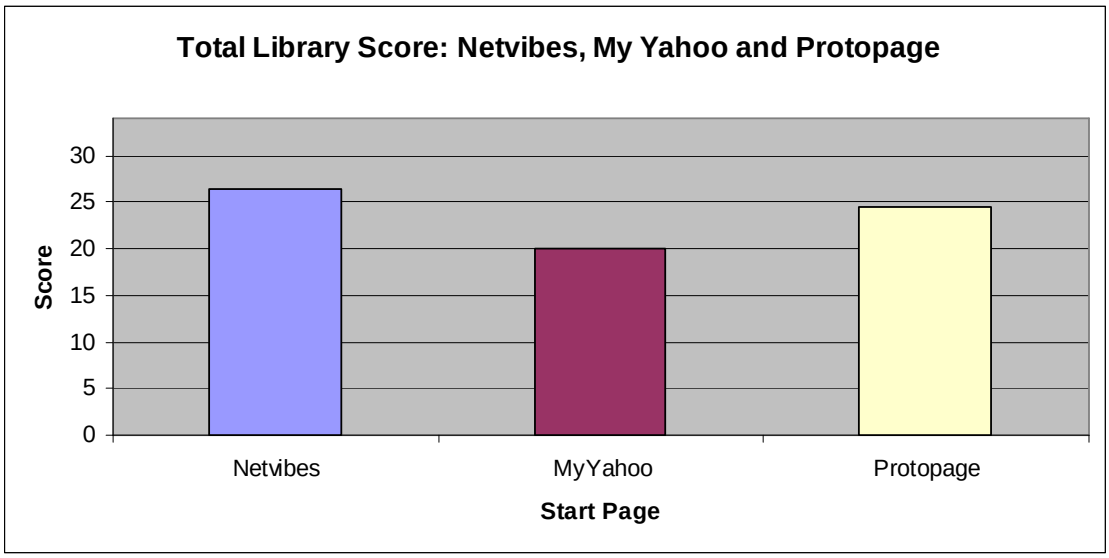

Figure 31: Chart showing score in 'Library' category for Netvibes, My Yahoo and Protopage

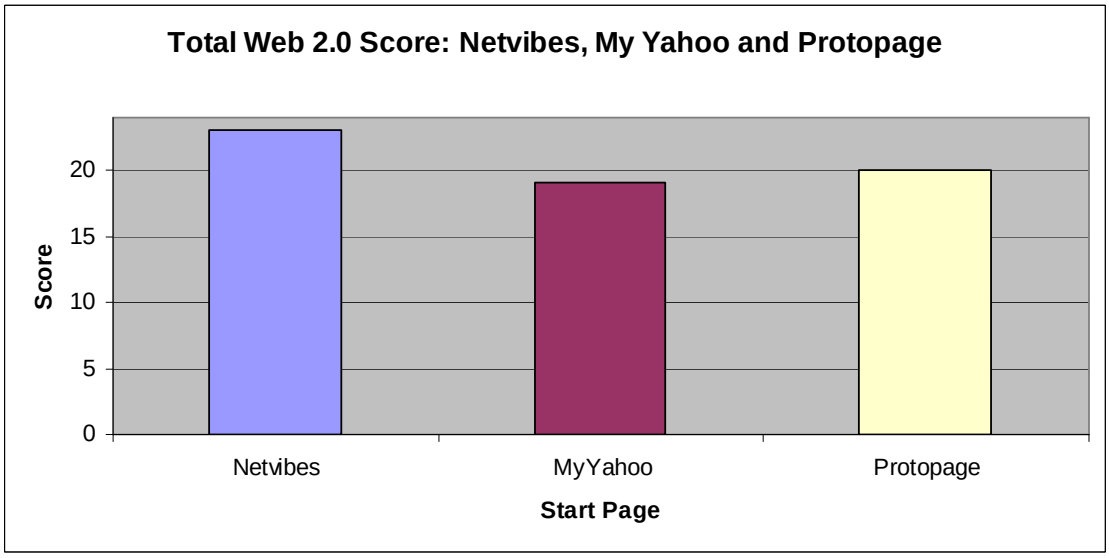

Figure 32: Chart showing score in 'Web 2.0' category for Netvibes, My Yahoo and Protopage

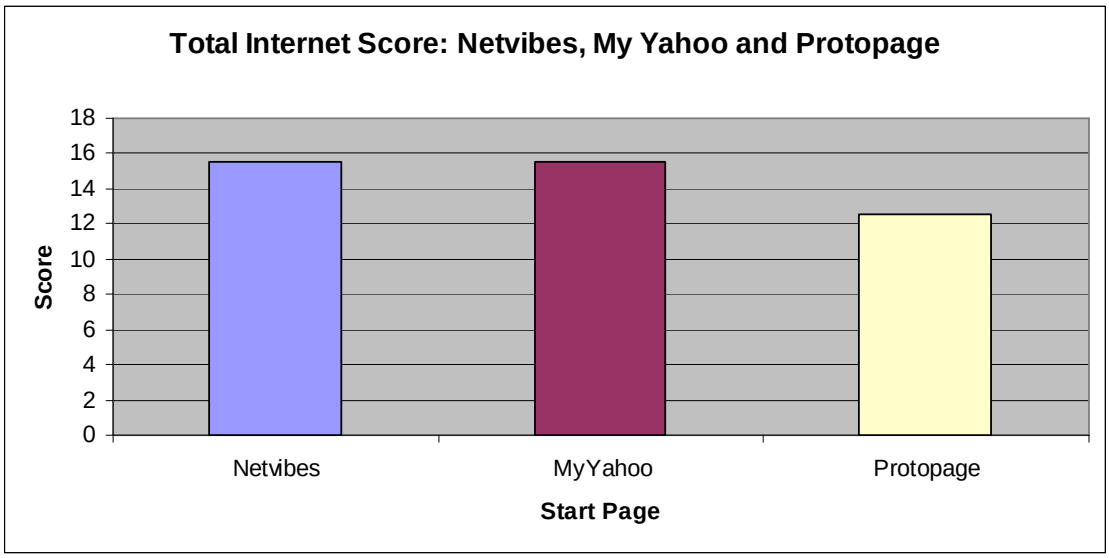

Figure 33: Chart showing score in 'Internet' category for Netvibes, My Yahoo and Protopage

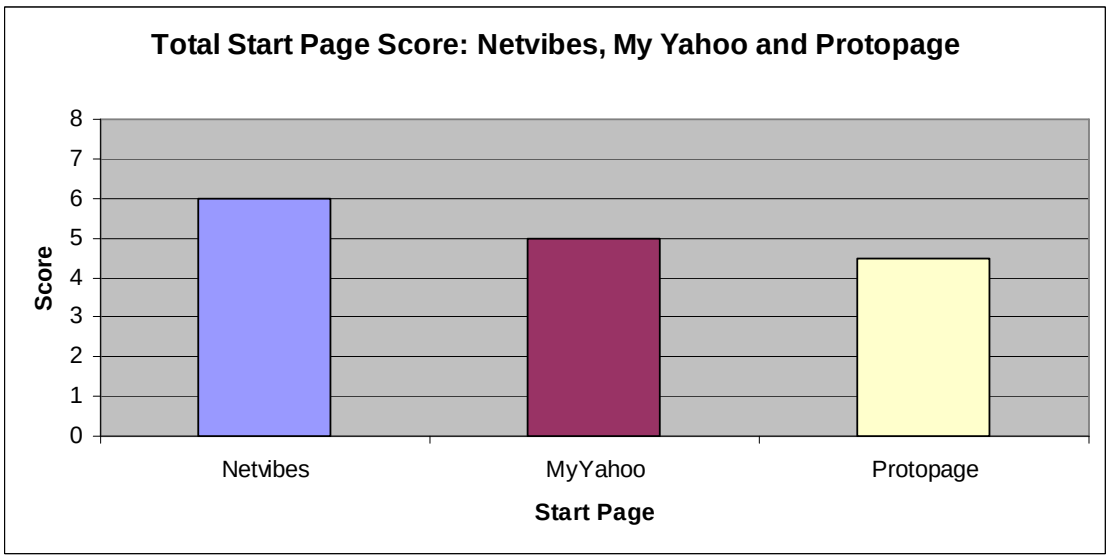

Figure 34: Chart showing score in 'Start Page' category for Netvibes, My Yahoo and Protopage

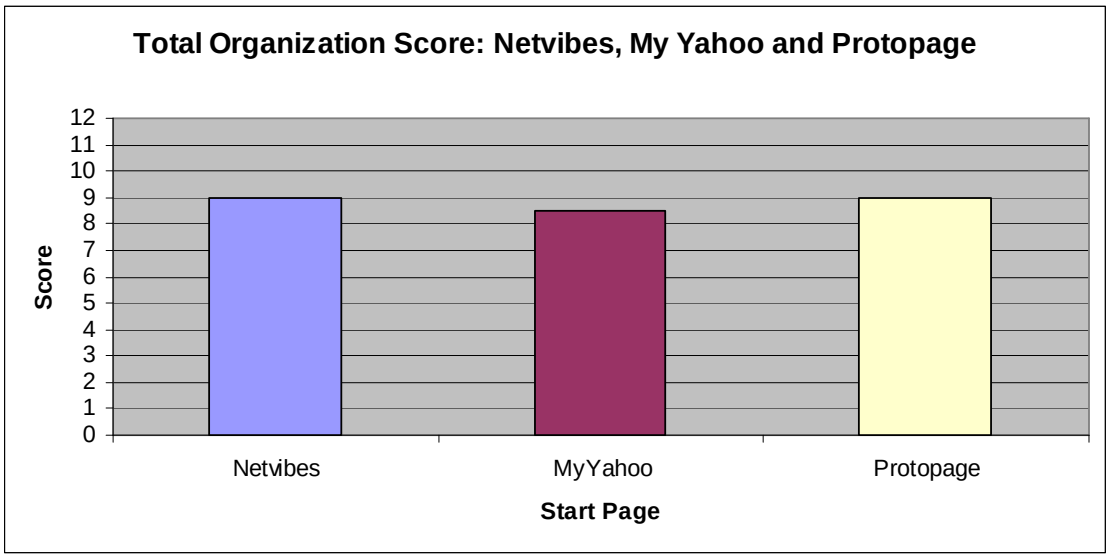

Figure 35: Chart showing score in 'Organization' category for Netvibes, My Yahoo and Protopage

Discussion

Introduction

The test results for each start page are discussed separately. Each of the five tested categories is analysed in order for each start page. A summary of the findings for each start page is presented at the end of the analysis for that start page. The discussion of each start page, therefore, is structured in the following order:

- Library
- Web 2.0
- Internet
- Start Page
- Organization
- Summary

Netvibes

Library

Netvibes has a high number of stored widgets (Rosenfeld, 2008). It has widgets for the complete range of newspapers and magazines, Google and Google Scholar widgets, as well as a Project Gutenberg widget (Neuhaus, Neuhaus & Asher, 2008). The Google search box is constantly available at the top of the page, separated from the widgets (Sadeh, 2008). This availability indicates an ability on the behalf of Netvibes to absorb the strengths of its competitors, unlike My Yahoo or Windows Live, which make the Google search engine difficult to locate (Jackson, 2002).

However, Netvibes does not have the complete range of widgets tested for (Wang & Lim, 2009). Those missing include community content, study guides, some e-reference and links to academic databases (Ubogu et al, 2006). The biggest concern is the absence of e-reference widgets, notably for Infoplease and the CIA World Factbook (Detlor & Lewis, 2006). This suggests there is more focus on the 'fun' potential of the technology rather than on information that has more depth and relevance to a library (Rosenfeld, 2008). These absences can be rectified by use of a widget creation site such as yourminis.com, or by following the site's creation advice, but they affect Netvibes test score in this area (Metz, 2008).

Netvibes is a professional site, without the spelling mistakes found in Eskobo or the restricted display of Start Aid (Pisanski & Zumer, 2005). It can be branded with institutional headers (Maltz, 2005). This means that although a library would be using a

third party site as host, users would be easily able to identify the site as belonging to the library (Evans, 2009). However, unlike iGoogle or Pageflakes, this header (or wallpaper) must be uploaded from a URL, rather than simply from an image file (Tachau, 2007).

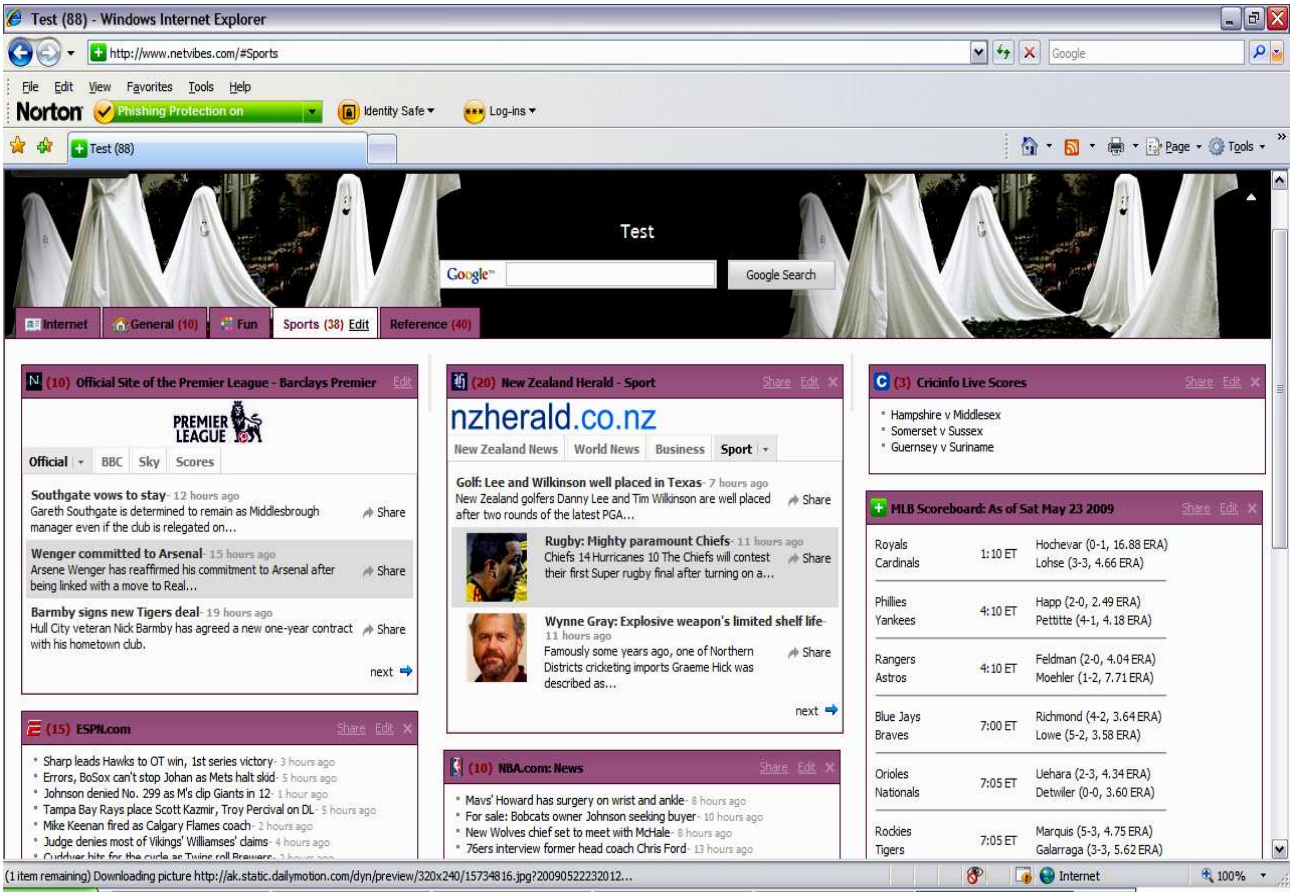

Figure 36: Screen shot of Netvibes

Browsing, serendipity and evolving searches are all possible (Detlor & Lewis, 2006). Once in a tab, users can search freely within selected widgets, or conduct an independent search in Google (Harpel-Burke, 2005). Widgets open in a new window, meaning contact with the home page is not lost. This is an advantage over iGoogle, where widgets open in

the home page window, necessitating use of the back button to return to the start page (Travis & Norlin, 2002).

Web 2.0

Netvibes is colourful, image laden and has widgets for games, movies and photos (Rosenfeld, 2008). When populated with a selection of these widgets, the screen appears interesting, dynamic and fun (Singer & Stephens, 2007). This rich display is similar to iGoogle's, and superior to less developed sites such as Eskobo (Liu, 2008). Interactivity is provided by the widgets such as games and puzzles which allow users to actively engage with the site (Singer & Stephens, 2007).

Netvibes has a public page component, which encourages sharing and community (Barry & Tedd, 2008). This is the greatest advantage that it has over iGoogle, as a library could create a site and share it with customers (Liu, 2008). A Netvibes public page is customizable, enabling the library to exercise selection control over the internet (Davidsen, 2005). However, once the sites are selected, there is no capacity for library customers to add or change widgets (Metz, 2008). It is still more likely, however, that a library community could form around a Netvibes site rather than an iGoogle site simply because library customers would be able to see and use it (Barry & Tedd, 2008).

The site is open source (Abram, 2008). Netvibes therefore maximises its Web 2.0 potential: it is fun, easy to create and use, has rich display and content, can be customized

(by the creator), and is free (Singer & Stephens, 2007). Its only restriction is the inability of library customers to add to the final site (Loerstscher, 2007).

Internet

Netvibes lacks a ready made site map and has no straightforward way to increase font size (Liu, 2008). Accessibility can be managed to an extent by page personalization, and font can be changed within individual PCs, but it is more straightforward and less of an impediment to have this feature available on the loaded page (Lilly & Van Fleet, 2000). The absence of site map is balanced by an effective tabbing function (Fox, 2008).

The most problematic technical feature of Netvibes is that it is prone to freezing when widgets are being loaded (Metz, 2008). This reduces the professionalism of the site (Pisanski & Zumer, 2005). Because the problem occurs during the creation process, it should not affect the end user, but would frustrate a librarian managing the site (Valenza, 2008).

Netvibes has a constructive Help page (Finder et al, 2006). Unlike a number of other start page providers, including Pageflakes, Netvibes does not rely upon a user forum to solve technical issues. This improves the professionalism of the site, indicating a willingness on behalf of the company to invest in user support (Maltz, 2005). However, the ability to make direct contact with Netvibes to resolve technical issues was limited. This means that a library which used the start page would have to develop specialist technical support for the site (Duncan & Holliday, 2008).

Start Page

Setting up a user account is straightforward, requiring only an email address and password (Singer & Stephens, 2007). Content can be added by clicking on an easily identifiable 'Add Content' button at the top of the screen. When this button is clicked, a widget search screen emerges, leaving the home page still visible though pushed down the screen. This is slightly different to iGoogle and Pageflakes, both of which exit the home screen for a new search page when adding widgets (Muchmore, 2008).

Netvibes has a public page component (Metz, 2008). A library could therefore create a Netvibes start page, making it available to all its customers (Harris & Lessick, 2007). This is the defining advantage over iGoogle, which relies instead upon the end user searching for and adding a widget to a start page (Metz, 2008). With Netvibes, a librarian can select a range of quality sites, arrange them into logical groupings, and present them as a finished webpage to customers (Finder et al, 2006).

Netvibes does have a 'Share' function which would allow users to select individual widgets they like from the library public page and add them automatically to their personal start page, or send them to friends (Liu, 2008). This would mean that the customer would have to have knowledge of the share function, and be willing to engage in 'active' browsing.

Clear instructions are provided for creating widgets (Metz, 2008). So, if a public library in a smaller town, for example, wanted a widget for community news, someone within

the ICT team could follow the instructions provided and create a widget for the local council, which could then be added to the start page (Tran, 2009).

Netvibes was more efficient than Pageflakes in returning applicable results during the widget search process (Liu, 2008). A search for 'Chelsea Football Club' returned a number of widgets that related more precisely to the search than Pageflakes' results. This makes the creation process faster and more efficient (Aitta et al, 2008).

There are a range of authoritative and professional widgets available on Netvibes (Rosenfeld, 2008). There are, however, widgets that would be unsuitable for use on many library sites because of the adult (Sexy Bikini Babes) or otherwise inappropriate (inane joke sites) content (Valenza, 2008). But the pre-selection of high quality and useful sites by qualified librarians is one main purpose of the use of start pages in libraries (Davidsen, 2005). The unsuitable content is available on the internet anyway, and start pages allow librarians to harness the best sites and filter the less satisfactory (Jackson, 2002).

Netvibes has a number of widgets that die over time (Barry & Tedd, 2008). When they are loaded to the selected tab, these sites are listed as having a feed that is no longer working. This reduces the authority and professionalism of the start page as it is time consuming and slows the widget search function (Pisanski & Zumer, 2005).

Organization

Netvibes has a straightforward tabbing function (Singer & Stephens, 2007). Information is able to be efficiently centralized and organized into related categories (Singer & Stephens, 2007). It is possible to have tabs for reference, news, sports, books, journals, entertainment, for example, with each tab having a number of relevant widgets contained within (Fox, 2008). A customer who then wanted to read world newspapers would then go to the 'News' tab, while another who wanted audio or e-books, or to search the catalogue, would go to the 'Books' tab (Calhoun, 2006).

However, there is no way of searching all the pages on the site with a single search (Wang & Lim, 2009). This makes the ready access to Google double edged (Calhoun, 2006). Access to Google is identified in the literature as essential as it is the place most users begin searching the internet (Detlor & Lewis, 2006). But with access to Google on each page, users may eventually decline to click on another tab or widget because of the possibility that the information they're seeking may not be there, making Google a more attractive button to click on (Calhoun, 2006). To counter this, the selection process and naming of tabs needs to be accurate (Fox, 2008).

There is no evaluation of the individual widgets (Wang & Lim, 2009). Although some evaluation is obviously implied by a librarian having selected the widget for a tab, customers are increasingly accustomed to sites such as Amazon rating content for usefulness.

Summary

Netvibes is a site that could have potential uses as a library start page (Rosenfeld, 2008). Benefits include its public page facility, its range of widgets and its use of multi-media (Sadeh, 2008). It is a rich site that is easy to use and to manage (Singer & Stephens, 2007). Tabs downsize the internet and allow librarian's to create an attractive, useful range of sites for customers (Singer & Stephens, 2007).

However Netvibes is prone to freezing (Metz, 2008). Despite the high range of ready made widgets, there were areas important to libraries, such as e-reference, that were lacking (Detlor & Lewis, 2006) Too many widgets were dead, making the process of adding widgets frustrating (Barry & Tedd, 2008).

But, ultimately, Netvibes is a reasonably high quality start page that has a great deal of potential for use in libraries. It is open source, facilitates organization of the internet, provides a single point of entry to information, is attractive and has satisfactory functionality (Abram, 2008). Some library applicable information is available (Valenza, 2008). Above all, its public page component allows widgets to be pre-selected, branded and organized, then made available to customers (Stephens, 2008). For these reasons, Netvibes is a site that libraries should consider using as an alternative to existing web pages.

Pageflakes

Library

Although Pageflakes has a wide range of widgets, some library essential widgets are either unavailable or difficult to locate (Novaljan & Zumer, 2004). These include widgets for:

- Thesauri (Ubogu et al, 2006)
- The Wall Street Journal (Liu, 2008)
- The New Yorker (Sadeh, 2008)
- Google Scholar (Neuhaus et al, 2008)
- Study guides (Ubogu et al, 2006)

These limitations are in a number of key library areas: reference, research, news provision and journals (Ubogu et al, 2006). This reflects an incomplete range of content, and a cumbersome widget search function (McGillis & Toms, 2001). Pageflakes is inferior to both Netvibes and iGoogle in this area, reducing the authority of the site (Novaljan & Zumer, 2004).

It is straightforward to browse from widget to widget, and from tab to tab (Fox, 2008). If a wide variety of widgets are selected, serendipity should be possible for a library customer (Detlor & Lewis, 2006). Both are dependent on the quality of selection and selection policy (Davidsen, 2005).

There are enough available widgets in a wide range of areas for Pageflakes to be considered a supersite (Detlor, Takala, Ruhi & Huper, 2007). There are widgets for news, sports, e-books and library catalogues (Calhoun, 2006). There are also widgets for games, YouTube and horoscopes (Singer & Stephens, 2007). The end user can access traditional library information, but also the richness of the wider internet (Liu, 2008). Pageflakes can be branded effectively (Maltz, 2005). It is superior to Netvibes because institutional logos can be uploaded from a PC (Barry & Tedd, 2008). There are also a number of ready made banners and skins, so pages can be linked by a common logo but still appear distinct from each other (Tachau, 2007). This range of display tools is superior to sites such as Eskobo and Start Aid, and similar to the advanced skins available on iGoogle (Tachau, 2007).

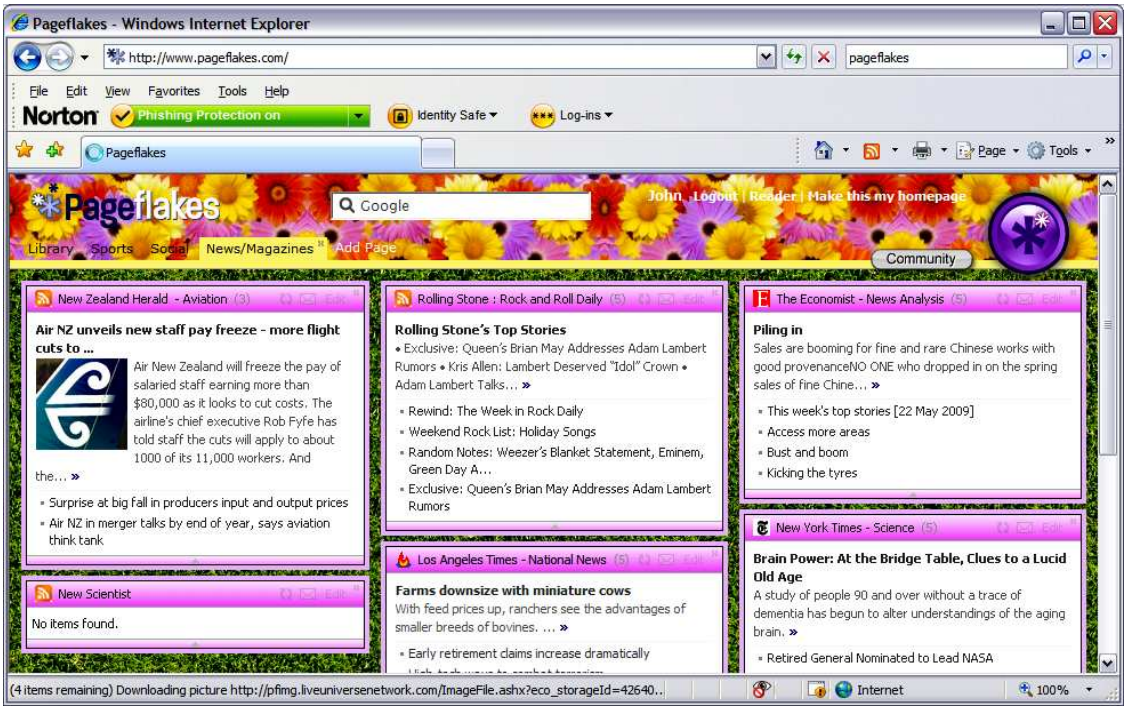

Figure 37: Screen shot of Pageflakes

Pageflakes has high quality widgets in many areas and it organizes the internet in a useful, straightforward and visually attractive way (Tachau, 2007). The site is distinctive and memorable (Finder et al, 2006). The most problematic feature in this category is the amount of unavailable library applicable content (Ubogu et al, 2006). This limits the extent to which Pageflakes could be considered as first choice for a library site.

Web 2.0

Pageflakes effectively captures the Web 2.0 ethos (Sadeh, 2008). It offers a public page function which allows a library to pre-select widgets, organise them and then make the finished site available to all potential users (Metz, 2008). This enables portability, the formation of an online community and basic user participation: they can view the site and interact with the widgets that permit this, such as gaming and instant messaging widgets (Abram, 2008). The public page also enables the content sharing at the core of Web 2.0 functionality, and is obviously more useful for libraries than sites that don't have this (Liu, 2008). If it can't be shared, customers can't use it (Detlor et al, 2007).

Pageflakes is open source, meaning there is no cost (other than labour) for libraries considering set up (Rutherford, 2008). It is customizable, with a range of banners and skins available (Detlor & Lewis, 2006). It can be personalized, has a range of multi-media, and is a rich site both in content and appearance (Liu, 2008). There are numerous image, game and movie widgets (Coyle, 2007).

Pageflakes therefore effectively utilizes the potential of Web 2.0 technology in general, and AJAX technology specifically, to provide libraries with a no-cost, rich and interactive alternative to existing sites (Metz, 2008).

Internet

The major problem with Pageflakes in this category was the regularity with which it froze during testing (O'Neill, 2007). On a number of occasions, the entire site froze, and it was difficult to refresh the page. This made the page unavailable for a prolonged period of time. Edward Byrne also reports in that the site is prone to cyber attack, which can lead to site inaccessibility (Stephens, 2008). This, combined with occasional speed issues, reduces the professionalism and usability of the site, making it difficult to recommend Pageflakes as being appropriate for library use despite its positive components (Sadeh, 2008). While the level of content is high, and the display is rich and advanced, continual freezing would frustrate users and librarians (Metz, 2008). The problem was severe enough during testing to outweigh the numerous benefits found elsewhere in the site (Stephens, 2008).

Pageflakes does not have an accessibility function or a site map (Liu, 2008). It also lacks a professional help function (Duncan & Holliday, 2008). Instead, it relies upon links to forums, with users providing reports on identified problems. While this does reflect the collaborative spirit of Web 2.0, it does reduce the level of professionalism of the site (Maltz, 2005). The lack of access to a help centre is a deterrent for libraries (Duncan & Holliday, 2008). Help forums are often flawed by the incomplete advice offered, and the

occasionally inappropriate tone of contributors (Valenza, 2008). One forum contributor, for example, is ‘sick of seeing a colour photo of a fat guy’ (http://forums.pageflakes.com/viewtopic.php?f=5&t=488&sid=3ff7a175eb1320ca0f8e854993207f55) . Libraries require rapid responses to problems that are affecting web pages, rather than trawling through forums which may not have the solution to all problems (Duncan & Holliday, 2008).

Start Page

Pageflakes is a rich site (Finder et al, 2006). It has a high number of ready made (non-library) widgets which can be added to a site (Evans, 2009). This is quite important, as one advantage of a library using a start page as a home page is that there is very little actual creation required (Singer & Stephens, 2007). If a start page has a low number of stored widgets, and the library had to create most widgets themselves, the ‘ready-made’ advantage of start pages is lost (Valenza, 2008).

However, the widget search function used by Pageflakes is inefficient (Liu, 2008). The most logical results are not always returned, which can make the creation phase more frustrating than it should be (Wang & Lim, 2009). A search for ‘Chelsea Football Club’ returned widgets for ‘Club Kidcast’ and ‘Duffield Cricket Club’, results that are based around the most generic search term (club) rather than the most specific (Chelsea).

The site is prone to having widgets die over time (Barry & Tedd, 2008). This clutters tabs with unwanted widgets, and the appearance and the sense of professionalism both suffer (Valenza, 2008).

Despite these problems Pageflakes is distinctive because of the branding tools and range of content available (Muchmore, 2008). There are information laden widgets, such as Wikipedia and a range of news sites, but also easy access to music, movie, sports and game sites (Liu, 2008). Pageflakes is fun, interesting to look at and to investigate (Finder et al, 2006).

Organization

Pageflakes tested the best of all start pages in the organization category. It has a rating system for its widgets that many other providers don't include (Liu, 2008). This does alert the potential user to the relative value of a site before adding it and testing it, though this function is driven solely by user votes. This is an obvious feature of Web 2.0, with users able to rate and recommend content, with bite sized reviews or star ratings (Liu, 2008). But there is concern that these ratings are made by a small percentage of users, and may not reflect accurately on the worth of the content being rated.

In all other aspects, Pageflakes matches or betters the other sites. It efficiently declutters the internet (Aitta et al, 2008). The tabbing functionality is straightforward, which helps organise and control the web (Fox, 2008). This leads to effective portal functionality, enabling straightforward access to desirable websites through clear subject headings (Abels et al, 2007). This is a valuable tool that provides an advantage over using a search engine as a home page (Loerstscher, 2007). Favoured sites are instantly available and the internet has already been filtered, with Google readily available if the user wants to extend beyond the selected sites (Wang & Lim, 2009).

Summary

While Pageflakes has many positive components, it does have shortcomings in important areas. Problems include a high number of dead widgets, which can leave the page looking unprofessional (Riccardi et al, 2004). Pageflakes also has speed and loading issues (Antleman et al, 2006). It can completely freeze on occasion (Metz, 2008). Without a dedicated ICT help desk, this makes the implementation of Pageflakes risky for a library, as it is not feasible for a library site to be off line for prolonged periods of time (Duncan & Holliday, 2008). Pageflakes also lacks many core library widgets, such as basic e-reference widgets, and common news sites (Ubogu et al, 2006). Searching for widgets is problematic, as the search function is not intuitive and does not always return the most logical results (Finder et al, 2006).

These shortcomings balance the many positives of the site. It is visually attractive, allows wholesale site branding, and encourages personalization and customization (Abram, 2008). Pageflakes would provide libraries with an open source site that facilitates control and declutter of the internet (Metz, 2008). It is a content rich start page (though lacking some core library widgets), and would offer a large visual improvement over many existing library sites (McGillis & Toms, 2001). Most importantly, it has an effective public page component (Metz, 2008).

Pageflakes is an attractive, useful site that offers many potential benefits for libraries. However, the existing problems, especially the speed and freezing issues, and the lack of range of library appropriate widgets mean that libraries should test Pageflakes thoroughly

before implementation as a library site (Antleman et al, 2006). If the identified issues are rectified over time, it would be an effective library tool (McGillis & Toms, 2001).

iGoogle

Library

iGoogle has a very comprehensive range of widgets (Rosenfeld, 2008). It has a wide range of content in core library areas such as news, reference, books and e-journals (Ubogu et al, 2006). Areas where it does lack content include:

- Study guides (Ubogu et al, 2006)
- Information literacy (Novaljan & Zumer, 2004)
- Community content (Barry & Tedd, 2008)

Widgets for these areas are absent for many of the tested start pages. In other tested areas, iGoogle provided multiple widgets (Metz, 2008). A library could be confident that iGoogle would provide customers access to most desired sources of e-information (Evans, 2009).

iGoogle is straightforward to brand (Valenza, 2008). While the creator can select from a range of dynamic pre-made wallpapers, it is straightforward to upload personalized branding (Evans, 2009). The start page can therefore be efficiently labelled with library logos and headers (Evans, 2009).

However, iGoogle scores marginally lower than Netvibes in the ‘Library’ category because of its inability to function as a gathering place, or to provide remote access, both of which make it less library appropriate (Rutherford, 2008). Although it has a greater range of gadgets, it is quicker and does not freeze as often as Netvibes or Pageflakes

(Metz, 2008). But iGoogle ultimately has limited use in a library context because only the creator can see it. Until this is remedied, iGoogle can not realistically be considered as an alternative to existing library web sites (Ross & Sennyey, 2008). Currently, the relevant sharing functionality is in the form of an individual widget created by the library and made available on iGoogle for all users, or OPAC use (Evans, 2009).

Figure 38: Screen shot of iGoogle

Many libraries, including the University of Texas library, create iGoogle widgets (Harris & Lessick, 2007). These libraries promote their widget on their traditional library website, hoping library/Google integration will occur when customers who have an iGoogle start

page will their widget (Calhoun, 2006). This indicates an awareness of the scope of Google: so many customers use it, and it is better to have a limited presence on Google than not (Jackson, 2002). Numerous websites, including the New Zealand Herald (http://www.nzherald.co.nz/) and Major League Baseball (www.mlb.com), offer widgets that are easily added to start pages or other social software. This process is becoming widespread and could be a more effective method of encouraging customers to integrate the library and Google than marketing a pre-selected start page to them (Sadeh, 2008). However, it does restrict the role of the librarian as an internet organiser, and presents libraries with less information control (Coyle, 2007).

Web 2.0

iGoogle takes advantage of Web 2.0 technology to enhance visual appearance (Evans, 2009). It has numerous multi-media sites, making it more interesting than a traditional library site (Sadeh, 2008). It is open source, straightforward to set up, and relatively bug free (Metz, 2008). The widget search box is more intuitive than Pageflakes', and the site is as rich and as much fun as any of the other providers (Finder et al, 2006).

But iGoogle is failing in the other major component of Web 2.0 (Rutherford, 2008). This is not the technology, with which iGoogle is very sound, but the ethos or spirit of Web 2.0. iGoogle restricts the ability of developers to share (Liu, 2008). They can share their widget, but not their whole site (Detlor et al, 2007). How successful would social software sites such as Facebook be if users had to create a special box which they could then add to a giant pool of millions of other boxes and hope other users would come

across it by chance? (Harris & Lessick, 2007). Web 2.0 is partly about being open source, and partly about enabling straightforward user content (Rutherford, 2008). But it is also about the ability to share effortlessly and here iGoogle fails. To have a community form around it, as a public library would want a site to be portable and to be able to be shared (Barry & Tedd, 2008). Despite its obvious qualities, iGoogle's lack of a public page restricts libraries from being able to consider it as a viable home page tool (Metz, 2008).

Internet

iGoogle is the most successful site in this category, only lacking an obvious font-size adjustment function (Pisanski & Zumer, 2005). As with Netvibes, this absence doesn't seem justifiable. Font can be increased on a users' PC, but it would be more useful if this function was obviously available on the home page (Lilly & Van Fleet, 2000). It should be a component of all start pages.

The Help function is more developed than some other sites (Finder et al, 2006). iGoogle has committed to company generated advice, and there is access to user help forums (http://www.google.com/support/forum/p/Web+Search?hl=en). This combination is better than access only to the user forums, although the apparent difficulty in contacting the parent company may be a deterrent to a larger organization such as a library, which would want technical support available (Duncan & Holliday, 2008). Not all issues, such as a problematic tabbing function, were successfully answered in the support area, which led to a partial score.

In other areas iGoogle is a superior tool (Evans, 2009). It is easy to use, intuitive and satisfying (Pisanski & Zumer, 2005). The developers of iGoogle seem aware of the potential of the internet to enhance site appearance and facilitate straightforward use (Marcus, 2008).

Start Page

A problem identified with iGoogle in this category was the number of added widgets that later died (Valenza, 2008). The effect of this for the creator of an iGoogle site is that they would have to check the site regularly to ensure that all the widgets were live (Riccardi et al, 2004). This is as important as maintaining the links on a traditional site (Barry & Tedd, 2008). If they die, there is frustration for the user who clicks on them, and the site loses credibility and authority (Sadeh, 2008). With a start page, the links are displayed on the page, so if a user enters a tab, and five or six of the visible widgets have died, leaving a message such as 'Error module parsing spec: Not a properly formatted file' they could justifiably become frustrated (Barry & Tedd, 2008). The effect of the rich interface is diluted by these error messages (Fox, 2008).

It is worth considering the value of a start page storing so many user created widgets. While iGoogle claims to vet all user-generated widgets before posting them, there are enough dead sites to suggest that some developers are posting imperfectly formed widgets that are in fact not being thoroughly checked by the parent company (Riccardi et al, 2004). As with Netvibes, many of these user generated widgets are also inappropriate for library use (Valenza, 2008). The first three widgets returned in a search for 'sex' are

Sex Videos by Metacafe, Akrosex.com and Sexiest Women on the Planet, none of which would reasonably expect to have a place on a library site (Rutherford, 2008).

But, iGoogle has the best widget creation support, with straightforward instructions and code that can be copied (Metz, 2008). It is also the easiest site on which to locate widgets, with the most obviously applicable results usually being returned (Marcus, 2008). This makes iGoogle a preferable site. It has access to Google's superior search algorithms, meaning that some (if not all) of the frustrations of locating appropriate widgets on other start pages, especially Pageflakes, are less pronounced (Wang & Lim, 2009).

Organization

The tab function of iGoogle is problematic (Abels et al, 2007). During the testing process, the tabs were listed down the side of the home page, rather than along the top as with most other start pages. The process of moving to a new tab was not as intuitive as with a site such as Netvibes (Sadeh, 2008).

However, iGoogle seems to reconsidering this switch to side tabbing. Later in the testing process the tab function reverted back to the top of the page, with similar functionality to the tabbing on other sites. This means that if a user clicked on a tab, they would be taken to the page created for that tab. On yet another day of testing, the tabs were back on the side of the page. It is difficult to determine if this changing of position is due to iGoogle's testing processes, or to a bug in the site design. Either way, it is confusing, and unprofessional (Detlor et al, 2007). The most useful placement is at the top of the page, as

it is a standard and makes the organization of and access to related information more straightforward (Loerstscher, 2007). iGoogle's partial mark in this category reflects the apparent uncertainty.

One identified advantage of the side tabbing was a drop down function, which meant that every widget in each tab is accessible from one page (Detlor et al, 2007). This function was not immediately obvious, and does add text to an otherwise visual site, but effectively centralizes the selected sites (Loerstscher, 2007).

iGoogle has user provided ratings for each widget (Liu, 2008). Given the high number of users, this perhaps will offer an accurate rating for each widget, though it is still probably prudent for the site developer to carefully assess each widget before selecting. This is especially important as some widgets seem to possess different content to that suggested by the description in the search results.

Otherwise, iGoogle offers an effective method of organizing internet information (McGillis & Toms, 2001). There is no limit to the number of tabs that can be created (Nichols & Mellinger, 2007). Simple drag and drop techniques allow the developer to determine which information should be where on the page (Marcus, 2008). Quality widgets are available, and declutter of the internet is largely achieved (Rosenfeld, 2008).

Summary

With a public page and more consistent tabbing functionality iGoogle would have been the most effective start page for libraries to consider using as an alternative to existing library web sites (Ross & Sennyey, 2008). It has the greatest range of widgets, was the quickest and most reliable page tested, and was (tabbing apart) the most intuitive and easy to use site (Pisanski & Zumer, 2005). iGoogle is attractive, and has a range of multi-media widgets available (Sadeh, 2008). It does have some limitations with ongoing changes to the site, notably to tabs, and links that don't remain live (Riccardi et al, 2004). But the biggest problem with iGoogle for libraries is its lack of a public page facility (Metz, 2008). This makes it impossible for libraries to consider using iGoogle as an alternative web page, as customers will not be able to access it (Detlor et al, 2007). Despite its high score overall, iGoogle is the least useful of any of the major start pages because of this limitation when tested in a library context. The remaining options are for libraries to create their own iGoogle gadget, and hope that relevant customers will add it to their start page, or to utilize iGoogle as an OPAC, which are limited returns on the potential of start page technology (Evans, 2009).

My Yahoo

Library

My Yahoo has widgets for some of the library applicable criteria. These include widgets for:

- Newspapers (Liu, 2008)
- Journals (Sadeh, 2008)
- Information literacy (Novaljan & Zumer, 2004)
- Project Gutenberg (Ubogu et al, 2006)
- The New York Public Library (Ubogu et al, 2006)

But the Google search engine widget and the Google Scholar widget are not obviously available, possibly because of commercial imperatives (Neuhaus et al, 2008). There is also no access to:

- A phrase and fable reference work (Novaljan & Zumer, 2004)
- The CIA World Fact Book (Novaljan & Zumer, 2004)
- Study guides(Ubogu et al, 2006)
- Community content (Barry & Tedd, 2008)

These limitations restrict the value of My Yahoo for libraries. Too many library essential widgets are not available (Valenza, 2008). The lack of a Google search box, especially, denies access to a component that was identified in the literature as being a key to library web site effectiveness (Finder et al, 2006).

My Yahoo's appearance is not wholly library appropriate (Novaljan & Zumer, 2004). It is a rich site that looks attractive, interesting and professional (Liu, 2008). It also successfully implements the core tasks of a start page, such as organization and decluttering (Loerstscher, 2007). However, My Yahoo does not provide the capacity for institutional branding, restricting the ability of a library to effectively personalize the site (Riccardi et al, 2004).

Web 2.0

My Yahoo's fails to effectively realise the Web 2.0 ethos of sharing and interaction (Liu, 2008). There is no facility for a public page, which restricts potential for use in a library, as it is difficult for anyone outside the creator of a page is able to see it (Muchmore, 2008). There is a 'Share' button, which allows the creator to email tabs to friends, but that process is more intrusive and labour intensive, and less effective, than simply being able to make the page public (Muchmore, 2008). The initial purpose of a start page may be for an individual to select web sites they are interested in and store them logically in an attractive place, but a natural extension of this is public use (Metz, 2008). It is not just libraries who could effectively use start pages for communal uses: small businesses, schools, and interest groups could conceivably develop uses for public pages as centres of information dissemination (Muchmore, 2008). My Yahoo is not portable, and has limited scope for a library community to be able to develop around it (Maltz, 2005).

Technically, My Yahoo ranks highly compared with the other start pages. It is a visually rich start page, with a variety of different types of media available for use including video

and games (Tachau, 2007). It is as much fun as Pageflakes and Netvibes, and is initially easier to use than Pageflakes (Rosenfeld, 2008). It is captivating and user centred. But ultimately, the effects of these factors (as with iGoogle) are limited unless a public page is launched (Metz, 2008). An effective online library community cannot develop around the site (Sadeh, 2008).

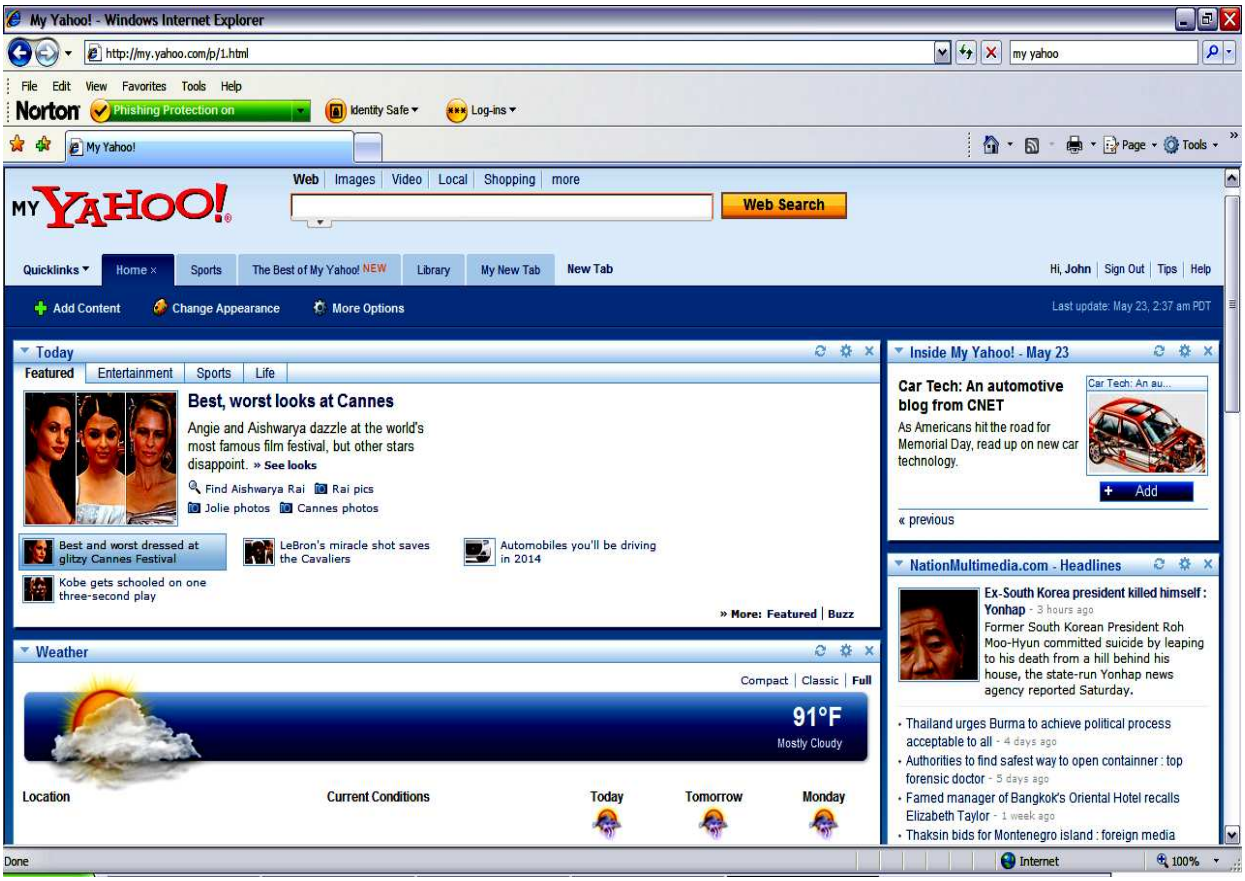

Figure 39: Screen shot of My Yahoo

Internet

My Yahoo has a useful 'Help' function (Finder et al, 2006). The company provides basic instructions for a number of key areas, including adding tabs and personalization (Detlor

& Lewis, 2006). A number of these straightforward instructions are supported by more advanced tutorials, indicating a commitment by My Yahoo to supporting users (Liu, 2008). Another area where the company demonstrates commitment is with accessibility (Pisanski & Zumer, 2005). Although it is not immediately obvious, there is an accessibility function in the 'Change Appearance' tab (Lilly & Van Fleet, 2000). Four different font sizes are available, as well as the ability to alter text and background colour, an advance on most of the tested start pages (Liu, 2008).

My Yahoo is restricted by its slow load times (Metz, 2008). Along with Pageflakes, it is amongst the start pages that were consistently slowest to load pages or widgets during searches (Sadeh, 2008). This reduces the site's usability, and its professionalism is compromised (Pisanski & Zumer, 2005).

My Yahoo has a mixture of very useful features that are balanced by problematic functionality (Fox, 2008). This inability to have all areas working efficiently is frustrating, as the site has some components that are superior to the higher testing start pages, including the 'Help' and 'Accessibility' functions (Liu, 2008).

Start Page

My Yahoo effectively utilizes start page technology. It has a high number of widgets that remain live and it returns relevant results when a widget search is being conducted (Barry & Tedd, 2008). This is an advance on Pageflakes, which often returns results that have only a tenuous link to the search terms. As with iGoogle, this suggests the use of an

efficient search algorithm (Wang & Lim, 2009). The effect is less frustration for the user during the search process, as a My Yahoo page can be quickly set up (Travis & Norlin, 2002).

This is balanced by the limited branding capability of the site (Maltz, 2005). The visual appearance of My Yahoo is better than Eskobo or Start Aid, for example, with a number of themes available (Tachau, 2007). But there is limited scope for personalized branding of the site, which makes it less attractive to an institution such as a library (Riccardi et al, 2004). As discussed above, the factor that restricts use of My Yahoo in a library context is the lack of a public page function (Metz, 2008). If customers cannot view the site, there is no scope for it to be used instead of a traditional library home page.

Organization

My Yahoo has a useful tabbing function which allows the user to effectively organize the internet into relevant subject or interest areas (Fox, 2008). This offers the user a tool for internet control, and does lead to the creation of a low cost web portal (Detlor & Lewis, 2006). The internet can effectively be downsized and decluttered (Loerstscher, 2007). This is a core function of start pages, and My Yahoo is as effective as any of the other sites in achieving this.

Limitations include the lack of any resource evaluation (Liu, 2008). The true value of these is quite tenuous, as they are user as opposed to expert driven, and perhaps prone to manipulation, so this is not a crucial absence. The difficulty in adding a Google search

engine widget, as discussed above, does restrict the usefulness of the site (Sadeh, 2008). Many of the authors listed in the literature review identified straightforward access to Google as a key component of a successful library site (Calhoun, 2006). This was not because they necessarily believed Google to be the best search engine, but because users turn to it more readily than any other search engine (Wang & Lim, 2009). Part of the organization of a library site is to have straightforward access to Google: customers want it, so make it available to them (Brenner & Klein, 2008). My Yahoo also has no obvious widget for Google Scholar or Google Maps (Brenner & Klein, 2008). The usefulness of the site is restricted by these absences, which deny access to tools sought after by library customers (Neuhaus et al, 2008).

Summary

My Yahoo is a superior start page with advanced functionality in some areas. It has an accurate widget search function, developed organizational capabilities, more live widgets than many tested sites, and superior Help and accessibility functions (Finder et al, 2006). But it has a number of faults which reduce its viability as a library site. It has no public page, so the site cannot be shared (Singer & Stephens, 2007). It has limited branding capability (Maltz, 2005). There is minimal access to Google widgets, and some key library widgets are not available. The widget loading process is slow (Metz, 2008). My Yahoo has a great deal of potential, with many superior functions, but the areas that are lacking are functions that are essential to use in a library setting (Novaljan & Zumer, 2004). Without ready access to Google applications and a public page in particular, it is difficult to envisage effective use of My Yahoo by libraries (Brenner & Klein, 2008).

Protopage

Library

Protopage has potential for libraries because of its combination of optimized appearance and information control (Wright, 2004). The site will load any page that has an RSS feed, meaning that a large number of websites can be stored on Protopage (Liu, 2008). It therefore theoretically provides access to a number of library applicable widgets (Ubogu et al, 2006).

Some feeds, however, such as those to international newspapers, would not load (Liu, 2008). It is difficult to determine if this was due to a bug in the search engine, or a failure to read the sites feeds. The apparent bug is that the widget search box sometimes fails to clear previous searches. Even if searches are deleted and the box is clear, when a new search is made Protopage will still occasionally return hits for the previous unrelated search. For example, a search for The Economist returned results for the New York Public Library, a previously deleted search. The only apparent solution to the bug was to completely log out of Protopage, log back in and attempt a new search.

Compounding this, the search box would not accept cut and pasted URLs. These are the most effective ways to add feeds to Protopage because of the search structure. But during testing the feed search engine would only work if the URLs were typed in, increasing frustration during the construction period (Antleman et al, 2006).

There were a limited range of ready made widgets (Valenza, 2008). There was no access to study guides, or to Google Scholar (Neuhaus et al, 2008). In fact, the range of ready made widgets available on Protopage under the heading 'Google' seemed to little relationship to Google applications at all (Jackson, 2002). Instead, they were primarily language sites, which again compromised the authority of Protopage: the main Google sites a user would be looking for would more likely be a search engine, Google Scholar or Google Maps rather than how to learn to speak German (Brenner & Klein, 2008). This is despite a Google search box being positioned on each page, indicating that the company is aware of the value of the Google search engine (Brophy & Bawden, 2005).

Protopage does lend itself to serendipity and browsing (Bates, 1989). The tabbing function permits loading of multiple widgets on the page (Fox, 2008). There is access to useful, high quality sites (Han et al, 2007). A user could browse a page and find something attractive and compelling that would catch their eye (Bates, 1989). In this way it is a more fully developed version of Eskobo, which operates a similar RSS feed driven system (Liu, 2008). But whereas Eskobo is plain and dull, Protopage is a rich, attractive site, with tabs, which is more likely to appear compelling to users (Nichols & Mellinger, 2007).

Web 2.0

Protopage challenges the ethos of Web 2.0 (Abram, 2008). The company displays banner advertisements on the user's home page, which it then offers to remove for $2.49 per

month. This practise contradicts the free, sharing community spirit of Web 2.0 (Sadeh, 2008).

Protopage does have a public page facility (Muchmore, 2008). This makes it attractive to libraries, as they could select site content, choosing quality widgets, and then share it with library customers as a low cost, attractive and interactive portal (Finder et al, 2006).

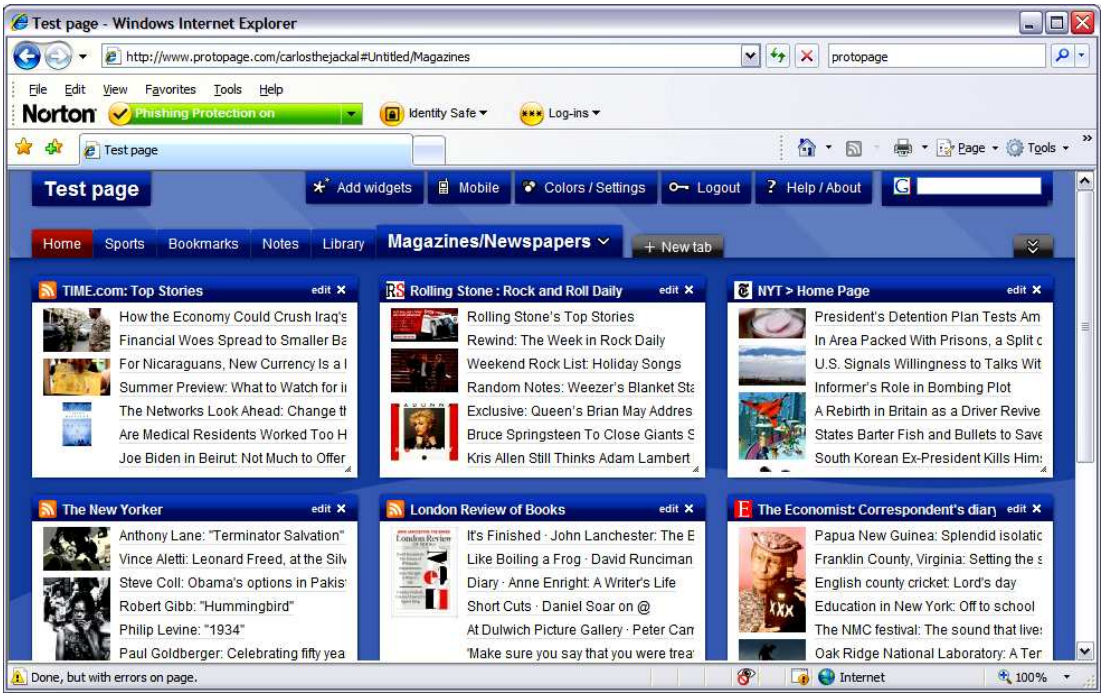

Figure 40: Screen shot of Protopage

Protopage has a sense of fun (Tachau, 2007). There are game widgets, comic strips, humour, movies and the site has instant visual appeal (Liu, 2008). The end user should enjoy using Protopage (Tachau, 2007). The site does, however, lose half a mark because of the amount of frustration involved in set-up, and the slow loading functionality on

occasion (O'Neill, 2007). With Windows Live, it was one of the least enjoyable sites to create.

Internet

Protopage has no accessibility function (Pisanski & Zumer, 2005). This makes it more difficult for users with sight impairment to consider using the start page, as use would involve altering PC settings, creating an impediment to straightforward use (Liu, 2008). The lack of commitment to accessibility by the start pages in general is concerning, as the internet is such a visual tool (Lilly & Van Fleet, 2000). There seems to be a comprehensive lack of desire to consider that anyone without perfect vision uses it. An accessibility button can be easily added, and need not be intrusive.

Protopage also suffers from slowness, especially when moving from one tab to another (Antleman et al, 2006). This may be attributable to the amount of image content on each page, or the advanced graphic display in general, but it does create frustration (Metz, 2008).

It is also a site that is less easy to learn to use than others, most notably Netvibes and iGoogle (Pisanski & Zumer, 2005). This is partly because of the technical difficulties of adding new widgets, which have the potential to leave the creator baffled. But it is also due to more straightforward issues, such as the list of user generated widgets not being in alphabetical order (Travis & Norlin, 2002). This becomes problematic when the list has over fifty headings. The list becomes alphabetical at the bottom, which many users may

not take the time to locate (Schuling, 2007). Another confusing process is naming the tabs, which requires the user to click at the front of the tab, arrow key to the end of the existing, generic name, delete that name and then add a new name (Duncan & Holliday, 2008). This is problematic as the user is also required to click on the name to visit that tab. Most other start pages have a more straightforward method of completing this naming function, most highlighting the name within the tab for renaming as soon as it is created. This is one of a number of characteristics that makes Protopage more difficult to use than it reasonably should be (Travis & Norlin, 2002).

Start Page

Protopage scored in the middle range of all tested start pages in this category. It is more attractive than many of the lower scoring sites, and has the advantage of having a public page (Metz, 2008). These are two core characteristics that make Protopage of value to a library: it will improve a library's website appearance, and can be shared with all library customers (Liu, 2008).

But it ranks poorly against Netvibes, Pageflakes and iGoogle because of issues surrounding widget location and creation as discussed above (Metz, 2008). Protopage widgets are not truly widgets in the sense that those in iGoogle have been created by developers using code. Instead, Protopage widgets are links to RSS feeds, which are manipulated to appear in a more attractive fashion than Eskobo, which uses the same technique, manages. This should make the process more straightforward: all that is required to create a widget is a URL to an RSS feed, removing the step of more complex

code creation (Metz, 2008). If the widget search function was refined, Protopage could have library potential.

Organization

Protopage effectively provides tools for downsizing and organizing the internet, primarily in the form of straightforward tabs (Fox, 2008). These tabs are more consistent than iGoogle, mirror Netvibes and Pageflakes, and are superior to all other tested pages. The only drawback is the frustrating process required to name them.

This tabbing process leads to the straightforward creation of a web portal (Finder et al, 2006). Related sites can be listed under a common heading such as sports or news, and customers can head to that tab to then browse collated sites that will likely be of use (Fox, 2008).

Summary

Protopage has a tremendous amount of potential for use in libraries. It can be used as a public page, it facilitates easy organization of the internet into useable chunks, and it is an attractive, rich site (Ross & Sennyey, 2008). But ultimately, it is a site that is flawed by having too many minor problems, including a demand for payment to remove ads from the site, a problematic widget location function and a limited range of ready made widgets (Travis & Norlin, 2002). It fills the middle ground of the pages tested, being superior to Eskobo and Start Aid in most categories, but having too many minor issues to

be able to challenge the more accomplished sites, especially Netvibes and Pageflakes, which have fewer problems.

However, if these problems are resolved, Protopage would be an effective library tool. Rich, vibrant and with potential access to any RSS feed on the internet, it would be a dynamic site that would enhance the web provision of many libraries (Tachau, 2007). Most importantly, it could be used at home by library customers, an advantage over iGoogle (Rutherford, 2008). But until the noted issues are resolved, Protopage's mid-range test results accurately reflect its suitability for library use.

Eskobo

Library

Eskobo provides access to a number of core library areas including:

- Newspapers (Liu, 2008)
- e-reference (Ubogu et al, 2006)
- e-books (Rowlands et al, 2009)
- Community content. (McMenemy, 2007)

Linking to library catalogues, however, is difficult with only RSS links available (Fox, 2008). There are some feeds linking to catalogues (Sadeh, 2008). For example, a search for 'New York Library Catalogue' returns a hit for the Middle Tennessee State University RSS feed to various libraries, including the New York Public Library (Ubogu et al, 2006). This scattershot form of locating information does return more related hits than iGoogle, which returns no hits for the same search and only one for 'New York Public Library'. The location process for Eskobo is therefore frustrating, but with extensive searching appropriate results can be located (Travis & Norlin, 2002).

There is no straightforward access to the Google search engine, or to Google scholar, which reduces the usefulness of the site, as it is established that customers often seek these tools in the first instance (Ross & Sennyey, 2007). It is more likely that the desired page will be found referenced by a third party site, rather than through a direct link to the page itself (Schmidt, 2007). A search for Google Scholar returns hits with blogs discussing Google Scholar, news about Google Scholar, but not (on the first page of

results) a site that will load a Google Scholar search box to the start page (Neuhaus et al, 2008). The alternative web search engine that is provided is quite effective, returning relevant search results (Tennant, 2000). A search for ‘bananas’, for example, did return hits about the fruit from Wikipedia, and other sites discussing the history and characteristics of bananas. But the search engine lacks the branding and familiarity of Google (Rowlands et al, 2008).

English does not seem to be the main language of the developer of the Eskobo site (Fox, 2008). There are examples of incorrect spelling and poor grammar on the front page (Novaljan & Zumer, 2004). One is the banner on top of the home page which reads ‘You can include eskobo button on your site for your visitors are use easily your rss support’, a sentence which seems to be attempting to relay two disparate pieces of information (how to let your friends share Eskobo, and how to get RSS support). Advice is offered encouraging the user to ‘Add Search Results on Your Page’. While these mistakes are probably due to the site originating from Turkey, they contain basic errors, meaning that the site does not appear very professional (Fox, 2008). Poor spelling and grammar in banner headings, even on a third party hosting site, would reflect poorly on a library using that site (Younis, 2002).

Eskobo is not the supersite identified as desirable in the literature (Detlor et al, 2007). Supersite implies access to a multitude of electronic resources, and those resources (including catalogue, news, games, video, books) being unified and organized in attractive fashion for the end user (Sadeh, 2008). Eskobo has too many gaps in its

provision, and it also fails to provide enough adequate organizational tools for this to be the case (Han et al, 2007). The site offers only a single page, rather than numerous pages divided into related subjects (Valenza, 2008). The display is basic, without much visual richness (a colourful weather widget is an exception) (Liu, 2008). The range of sites is limited with a reliance on RSS, resulting in many searches returning a plethora of blogs and little of more substance (Detlor et al, 2007).

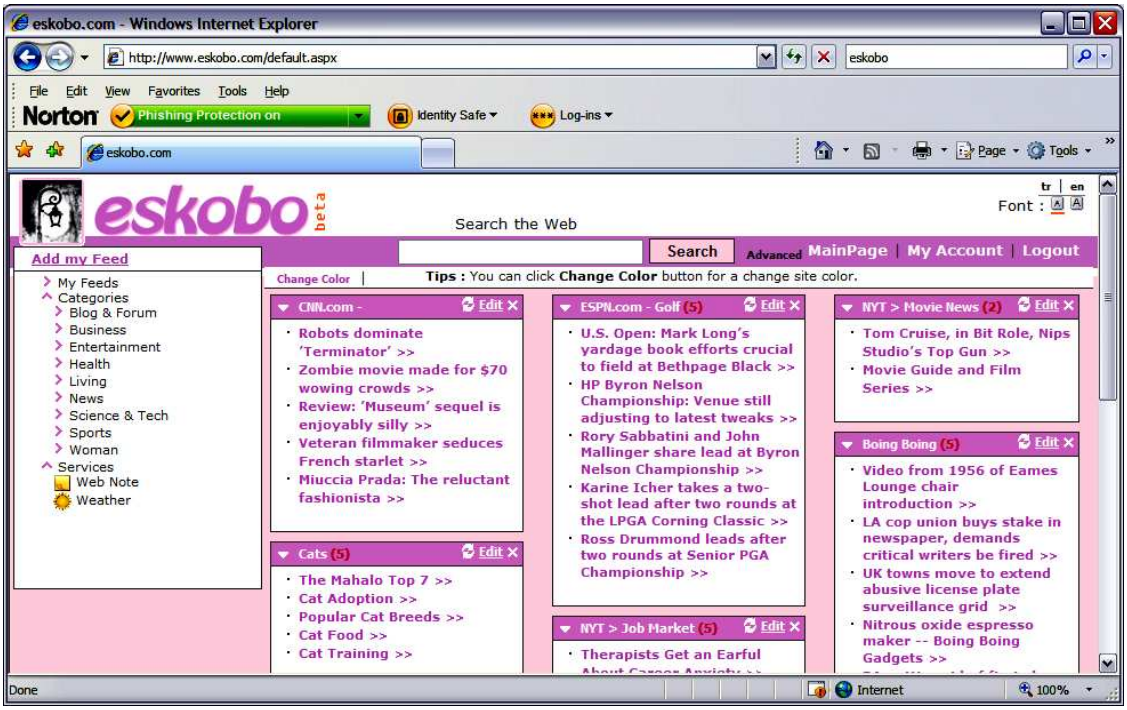

Figure 41: Screen shot of Eskobo

Web 2.0

Eskobo does not fully take advantage of Web 2.0 technology. It does not have an obvious public page component, which limits its use by libraries and other similar organizations (Stephens, 2008). It has limited multi-media display, and does not effectively incorporate

mash-ups (Sadeh, 2008). It has basic content. Compared with Netvibes or iGoogle, which are both more straightforward and have more interactive widgets, is not fun to set-up or use (Riccardi et al, 2004). This combination means there is no sharing capability, limited content and little of the sense of fun associated with Web 2.0 software (Abram, 2008).

Eskobo is not intuitive or straightforward to use (Finder et al, 2006). It does have an 'Add to My Site' button for adding content, but it is more difficult to preview the site that is being added than it is with iGoogle, for example (Marcus, 2008). Having followed the 'Add My Feed' link, located an appropriate RSS feed from the web, and pasted it into the search box, the user will often receive a message saying 'Not Found!!' Because, rather than meaning that the site will add the user's cut and pasted feed at this point, it will in fact search for a feed that the user can then add. Again, this seems to be a mistranslation which makes the creation process less straightforward (Riccardi et al, 2004). If the user clicks on the advanced search button, they can then add their own feed. This process is too convoluted and not clear enough to be useful, intuitive or fun (Sadeh, 2008).

Eskobo does not have a widget library, instead providing access to as many RSS feeds from the internet as its search engine can locate (Wang & Lim, 2009). A search for 'Cats' will return a number of RSS feeds about cats presented in text form, whereas a search for 'Cats' on iGoogle will return a smaller amount of widgets, each with an attractive picture box that presents an instant visual idea of what the widget contains (Liu, 2008). Eskobo, therefore, is not taking advantage of available Web 2.0 technology with its presentation

and it is less interesting as a result. It is dry as opposed to rich, textual rather than visual (Liu, 2008).

The user is required to do more of the work, with Eskobo not providing enough content (McGillis & Toms, 2001). Part of Web 2.0's attraction is that it is easy, and the processes involved with Eskobo reduce that sense of ease (Pisanski & Zumer, 2005). The user has to search, and/or cut and paste, making Eskobo little more than an extended feed reader, rather than a true start page (Evans, 2009).

Internet

Eskobo is one of the few tested sites that offered an easily locatable accessibility function (Pisanski & Zumer, 2005). There are only two font sizes, regular and large, but this is an advance over the start pages which rely on users altering the settings of their PCs. There are also a number of font colour choices, all of which place dark text on a lighter background (Lilly & Van Fleet, 2000). This does limit barriers to use of the site.

In many other areas in this category Eskobo was inferior to other sites. Its loading speed and general functionality were poor, leading to frustration (Sadeh, 2008). Often, the site would freeze during the loading process, and this always occurred if a feed was dead (Metz, 2008). No message would display: instead, it would appear as if the feed was still attempting to load (Aitta et al, 2008). This problem was not unique to Eskobo, but when combined with its other shortcomings made it a very frustrating site to work with.

While Eskobo did have a ‘Contact’ button, allowing the user to send mail to the company, there was no more immediate source of help available (Finder et al, 2006). The user forums and FAQs popular with many other providers were not available (Detlor & Lewis, 2006).

The interface of the system is limited, with most feeds loading only text (Sadeh, 2008). The branding of the site was equally poor, with the user unable to upload any images of their own, limiting the appeal of the site to libraries (Riccardi et al, 2004). The colours available were dull, leaving the site with a primitive look in comparison to the multitude of images and multi-media available on sites such as iGoogle (Sadeh, 2008).

Eskobo was also one of the most difficult sites to learn to use efficiently (Aitta et al, 2008). The upload process, as discussed, was not intuitive, and the instructions did not always make sense (Fox, 2008). Location of desirable feeds was difficult, and the range of stored feeds was very low (Schmidt, 2007). There was no graphic management, very limited satisfaction and Eskobo, after exposure to the more visually appealing sites such as Netvibes and iGoogle, seemed antiquated and unrewarding (Liu, 2008).

Start Page

Eskobo only scored half a point in this category, for live links (Barry & Tedd, 2008). Most of the feeds it linked to were live, but the ones that were dead slowed the system down considerably, and this was frustrating enough for it to lose the half point (Barry & Tedd, 2008).

In all other areas, Eskobo failed to meet even this standard. It had no public page capability (Stephens, 2008). It had a low number of ready made feeds, and searching for new feeds was problematic, with desired sites rarely returned at the top of the list (Schmidt, 2007). It looked the least attractive of all the sites tested, with very limited scope for personalization (Detlor & Lewis, 2006). This combination led to Eskobo being the least memorable of the sites, and one which it is unlikely would improve upon the existing web pages of many libraries, in terms of performance, appearance and content (McGillis & Toms, 2001).

Organization

Eskobo has a limited range of subject headings in the right hand column (Valenza, 2008). These had been pre-selected by the company, and the user is unable to add to or alter them (Loerstscher, 2007). A small number of feeds are listed under each heading. The user is therefore unable to organize information into subject areas of their choosing, or to add further relevant feeds to the pre-selected headings (Fox, 2008). Any new feeds the user selects are stored together on the main page (Rosenfeld, 2008). The user can drag and drop them, so that related sites are near to each other, but they cannot be listed together under a subject heading or tab, which is far more preferable, as it clearly defines the location of related information which will make it easier for the user to find what they are looking for (Fox, 2008). Instead, the user must scroll down an entire web page. This limits the functionality of Eskobo as an internet organization site (Loerstscher, 2007). It does not have portal functionality (Abels et al, 2007). It is closer to a set of favourite

feeds which are available on the screen at one time rather than being in a drop down box (Metz, 2008).

There is no resource evaluation on Eskobo, and no apparent attempt to return search results in relevance order (Liu, 2008).

Summary

Eskobo is unsuitable for use in a library context. It is a limited site, which offers only marginal organization of the internet, basic display and a small range of feeds (Loerstscher, 2007). There is no public page capability, meaning that a library could not effectively share the site with customers (Stephens, 2008). Eskobo suffers from a lack of professionalism, and a failure to take advantage of the potential of available technologies (Pisanski & Zumer, 2005). In comparison with some of the other tested sites it is difficult to add new sites, or to constructively organize the selected sites (Novaljan & Zumer, 2004). The end result is a start page that cannot be shared, has basic appearance, provides limited tools for organizing the internet and has frustrating functionality (Fox, 2008).

Windows Live

Library

Windows Live tests poorly in this category. It has an incomplete range of widgets for:

- e-reference (Ubogu et al, 2006)
- Magazines (Novaljan & Zumer, 2004)
- Google applications (Brophy & Bawden, 2005)
- Study guides (Ubogu et al, 2006)
- Community content (McMenemy, 2007)

Some of these absences are baffling. Windows Live has an RSS search box that should permit the addition of any live RSS feed to the start page (Wang & Lim, 2009). But a Google search for 'New Scientist RSS' locates relevant feeds that a search in Windows Live fails to identify. This makes the search process frustrating, and it is difficult for the user to have confidence in the widget/feed search box (Riccardi et al, 2004). Ultimately, too many key sites are not available (or listed too deep in the results), reducing the value and authority of Windows Live for a library (Barry & Tedd, 2008). It is difficult to locate desired information or to effectively downsize the internet (Schuling, 2007).

Web 2.0

Windows Live does take advantage of some available Web 2.0 technologies (Abram, 2008). By offering a public page, it is allowing users to share information and favoured sites (Stephens, 2008). It is an open source application, meaning it is an attractive

alternative to existing web pages in terms of cost (Abram, 2008). It also has comprehensive live chat and email provision (Liu, 2008).

But in other areas, Windows Live is less successful. The display of the site is limited with a choice of basic colours the only opportunity for personalization (Detlor & Lewis, 2006). There are very few images or logos attached to the added widgets, creating a display that is more text based than other providers (Liu, 2008). The site is difficult to use (Riccardi et al, 2004). To add a widget that is not already created, for example, the developer is required to click on 'Advanced Search', then search for a website, then click 'Add to my page' then confirm the last step one more time. If the developer chooses to not add any of the listed sites, the back button must be used to relocate the start page, as the search process necessitates leaving the site (Travis & Norlin, 2002).

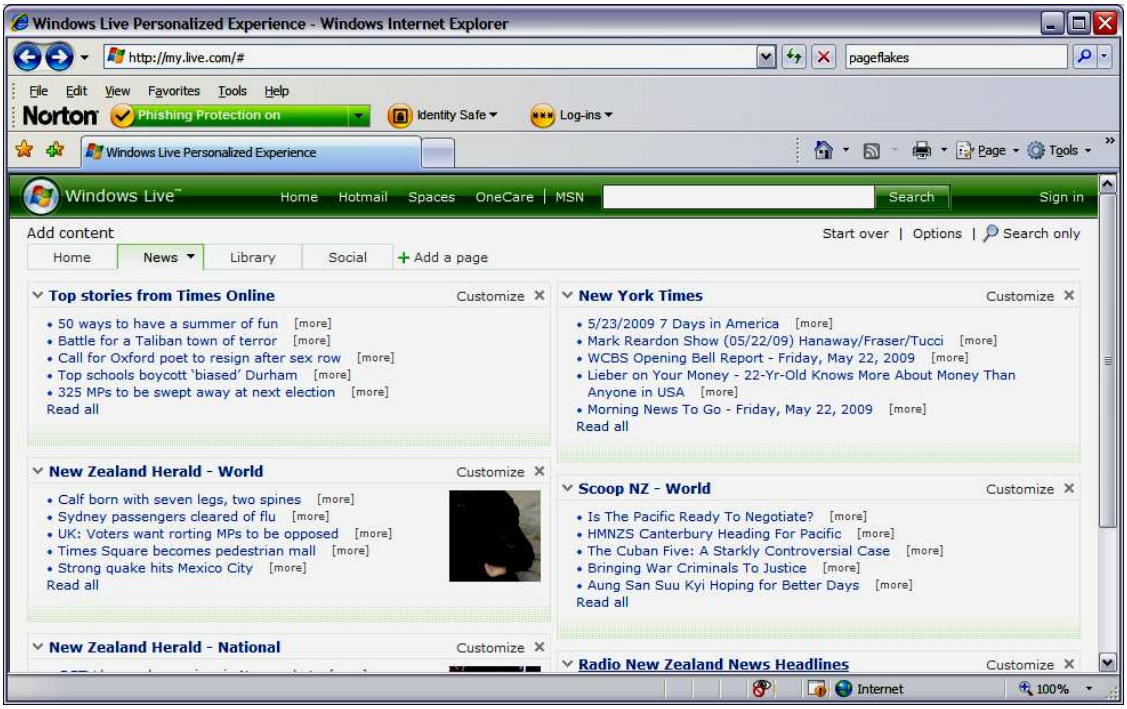

Figure 42: Screen shot of Windows Live

Windows Live does not provide a central access point(Davidsen, 2005). There are a confusing amount of sites which are able to be opened that have ‘Windows Live’ incorporated into their title, indicating a branding issue for the company (Maltz, 2005). This is the most frustrating aspect of the site, as the actual start page is hidden behind a number of other company sites. The start page is difficult to locate either from the other sites, or in a Google search. This lack of intuitiveness and lack of internet visibility would limit appeal in a library setting, as customers could struggle to find it (Maltz, 2005).

Windows Live is frustrating rather than fun, with a dull appearance and convoluted creation and search processes (Adams & Dougherty, 2002). It has limited, difficult to locate content, and is not as rich as other sites (Schuling, 2007). This balances the value of the public page functionality of the site (Muchmore, 2008).

Internet

Windows Live is the lowest performed of all the start pages in this category. Problems include:

- No accessibility function (Pisanski & Zumer, 2005)
- Poor speed (Metz, 2008)
- Limited interface (Sadeh, 2008)
- Basic graphics (Schmidt, 2007)
- Complex navigation (Aitta et al, 2008)

A number of the better performed start pages lack some of these components. Netvibes has loading and speed problems; iGoogle has no true accessibility function (Lilly & Van Fleet, 2000). But Windows Live has faults in the largest number of areas. It is slow, difficult to find, and has limited capacity for branding (Metz, 2008). Navigation during the widget creation phase, and during the general use of the site, is overly complex (Aitta et al, 2008). This combination of factors mean the site is unsatisfying, difficult to learn and inefficient (McGillis & Toms, 2001).

Positive components include that Windows Live is a password secured site, and that there is an element of familiarity contained within the site (Tennant, 2000). It is also easy to read and does have an expert generated 'Help' function (Finder et al, 2006). This does not cover all aspects of need, but is an advance on the user forums companies such as Pageflakes use.

Start Page

Windows Live's strength in this category is its public page functionality, meaning that it does have potential for use by libraries as customers would be able to access the site remotely (Schmidt, 2007). There is also constructive advice for developers about how to create their own widgets, and most of the widgets on the site are live (Barry & Tedd, 2008).

But the number of stored widgets is the lowest of the start pages with this feature (Evans, 2009). It is also difficult to locate external widgets (Valenza, 2008). This lack of ready

made, satisfying widgets, combined with the convoluted search process of locating feeds and the very basic display means that Windows Live fails to take advantage of start page technology (Metz, 2008).

The site is frustrating rather than memorable during the creation phase. The generic branding also limits the site's appeal: it looks like a company, rather than personal, site (Harris & Lessick, 2007).

Organization

Windows Live can be effectively organized (Han et al, 2007). With its straightforward tabbing system, internet information can be easily categorized into linked areas such as 'Library' or 'News' (Liu, 2008). If the other components of the site, most notably the site creation process, were as straightforward, the site would have been much more useful as a whole (Singer & Stephens, 2007). If there was a greater range of high quality widgets, or a comprehensive and accurate search process, Windows Live would have functioned as a useful web portal (Davidsen, 2005). But the lack of quality sites and the dull appearance limit this potential (Finder et al, 2006).

Summary

Windows Live has unrealised potential. With a public page facility, straightforward tabbing and access to a large user group, the site could have had value as a library alternative (Stephens, 2008). But the site is flawed, lacking quality content, being

difficult to locate and use, and having a dull appearance (McGillis & Toms, 2001). It is a slow, limited site that has little potential for library use unless its functionality and content is upgraded (Fox, 2008).

Inbox

Library

Widgets for Inbox are pre-selected by the provider and cannot be added to. No widget creation advice is offered (Metz, 2008). The range of widgets that are made available would not be wholly useful in a library setting. For example, Inbox lacks the full range of widgets in the following areas:

- e-reference (Ubogu et al, 2006)
- Magazines (Novaljan & Zumer, 2004)
- Newspapers (Liu, 2008)
- Google applications (Brophy & Bawden, 2005)
- Project Gutenberg (Ubogu et al, 2006)
- Library catalogues (Sadeh, 2008)
- Community content (McMenemy, 2007)
- Study guides (Ubogu et al, 2006)

The search engine that is provided instead of Google links to commercial rather than information sites (Rowlands et al, 2008). A search for ‘banana’, for example, returns hits for Betty Crocker products, Banana Republic goods, and Fossil Handbags, rather than general information sites such as Wikipedia. This combination of an incomplete range of widgets and limited search engine functionality restricts the scope for use of Inbox in libraries (Tennant, 2000). Lacking essential library tools, the site would not improve access to information that was relevant to library users (Schmidt, 2007).

Web 2.0

Inbox has basic customization features (Detlor & Lewis, 2006). The user is able to select from a range of colours and themes. The range of themes is not large, and incorporates personal interests such as ‘Dogs’ or ‘The United Kingdom’ (Harris & Lessick, 2007). A number of related widgets are automatically added when the user selects a theme. The user can therefore personalize the site, but on a limited scale (Detlor & Lewis, 2006). Other components of Web 2.0 that are incorporated in the site include access to email and live chat (Liu, 2008). Inbox is also open source (Abram, 2008).

Figure 43: Screen shot of Inbox

But the screen display of Inbox is not as developed as many of the other tested sites (Evans, 2009). In the middle of the home page, there is a large box that has alternating advertisements which are colourful, active and visually attractive. The body of the site, however, is text-based with few graphics (Liu, 2008). Taken as a whole, the site does not fulfil the potential for attractive display provided by Web 2.0 technology (Schuling 2007). The result is that Inbox looks less attractive than the more developed sites (Evans, 2009).

Internet

Inbox provides access to a dedicated help and suggestion area that is company generated (Finder et al, 2006). This suggests a willingness by the company to invest in solutions and improvements, rather than just in the front end as many of the providers do. The speed of Inbox is also consistent and it freezes less readily than a number of the other graphic heavy sites, notably Netvibes (Metz, 2008). This reliability may be the trade off of having a text-laden screen, but the limited display does offset this advantage (Schuling, 2007).

A potential problem did develop during the login process. If the prospective user does not have an available email address, they are requested to enter their cell phone details instead (Valenza, 2008). This request would seem to have little relevance to internet signup, and may be a commercial data gathering technique. The sense of Web 2.0 community is reduced, especially when the process is combined with a commercially orientated search engine (Rutherford, 2008).

Inbox has no accessibility function (Liu, 2008). It also lacks the one box, one button search functionality of many of the other tested start pages (Wang & Lim, 2009). It is more difficult to use than Netvibes, for example, because it does not have an identifiable tabbing function, and it was difficult to locate desired information (Schmidt, 2007). This combination makes the site inefficient and reduces any sense of stimulation (Liu, 2008).

Ultimately, Inbox provides an unsatisfying internet start page experience (McGillis & Toms, 2001). It is limited and dull, and this is frustrating when it is evident that technology exists to produce much more interactive, attractive sites that do not dictate to the user so completely in terms of content and display (Rutherford, 2008).

Start Page

Inbox lacks public page capability, and provides access to a low number of widgets (Schmidt, 2007). There is no support for widget creation, and users are unable to add their own widgets (O'Neill, 2007). Serendipity is unlikely because of the prescribed range of widgets (Bates, 1989). The limited display and lack of developed content mean the site is not memorable in comparison with a site such as iGoogle, which has more content and more potential for enhanced display and personalization (Abram, 2008).

The most important component that is absent is the capacity for making a public page (Muchmore, 2008). As with the other sites that do not provide public pages, this restricts potential for use by libraries (Stephens, 2008). With Inbox, this is compounded by the limited access to relevant content (Schmidt, 2007). A library could effectively downsize

the internet or select effectively, as the range of sites available is so limited and; and the widgets are available could not be made available to library customers (Loerstscher, 2007). This combination reduces the usefulness of Inbox in a library context.

A positive aspect of the site is that most links were live and remained so over time (Barry & Tedd, 2008). This may be a side-effect of not providing any user created widgets (O'Neill, 2007). It is a problematic area of start pages: it is useful to be able to access so many iGoogle widgets, but it becomes frustrating when widgets die (Barry & Tedd, 2008). This begs the question that if only widgets that were created by professional developers were available would the proportion of live sites be more satisfactory (O'Neill, 2007)? Or is it more important to allow users to be contributors, in the spirit of Web 2.0 (Rutherford, 2008)?

Organization

Inbox provides limited tools to organize the internet constructively (Coyle, 2007). It does reduce the size of the net by offering only access to a few web sites, but the range of sites made available is small (Loerstscher, 2007). This extends the purpose of the start page too far: the end user (or librarian) should still be left with a variety of sites to select from, which would allow that user to then organize according to their tastes and needs (Schmidt, 2007). A start page should facilitate that selection process, rather than presenting a limited range of sites as a *fait accompli* (Davidsen, 2005). Instead of effectively decluttering the internet, Inbox denudes the internet of its richness before the end user has access to it (Schmidt, 2007).

There is no tab function with Inbox (Fox, 2008). Instead, widgets nest other widgets inside them. Inbox cannot therefore act as a portal (Duncan & Holliday, 2008). Rather, it is, like Eskobo, a group of favourite sites (Han et al, 2007). These are not the user's favourite sites, however, but a pre-selection of favourites made by Inbox staff.

So, as a tool for librarians to use to organize the internet, Inbox has numerous limitations (Han et al, 2007). There is very little scope for the librarian to exert any selection skill over the site, or to present information in related, organized areas (Davidsen, 2005). Serendipity is eliminated by the dry range of widgets, and there is no scope for basic library tools such as subject headings (Fox, 2008).

Summary

Inbox is the lowest scoring site of all the start pages tested. It is limited by a number of factors including basic display, a small range of widgets, and has no potential for use as a web portal (Davidsen, 2005). Basic tools such as its search engine are corrupted by apparent commercial imperatives and poor access to general information sites (Liu, 2008). There is no access to essential sites incorporating library relevant information sources such as e-reference or magazines, and no public page capability (Finder et al, 2006). There is also no capacity for libraries to select quality sites from the internet (Fox, 2008). Inbox was a fast loading site and widgets remained live over time (Riccardi et al, 2004). But the range of shortcomings was large enough to suggest that there is very little scope for use of Inbox in a library context.

Start Aid

Library

Start Aid does not provide widgets for users to download. Instead, users must download bookmarked sites to a Start Aid page, where the collected sites can be organized into related 'trees' (Rosenfeld, 2008). A Start Aid page will therefore have as much quality content as the user has already collected over time (Fox, 2008). It also means that any web page can be added to Start Aid, as the site is not reliant upon widget creation (Metz, 2008). If the web page exists, it can be stored in a Start Aid tree, and accessed with a single click (Detlor et al, 2007).

Start Aid therefore organizes and displays favourite sites on a webpage rather than in a dropdown box (Han et al, 2007). Content is not limited by the availability of widgets or RSS feed (Wang & Lim, 2009). There is access to news sites, online reference, community content, all the Google applications and a multitude of library catalogues (Calhoun, 2006). Because of this, Start Aid facilitates access to the greatest number of websites.

Start Aid does not look library appropriate (Novaljan & Zumer, 2004). The display is basic, and comes from a different technological generation than iGoogle, for example (Metz, 2008). Instead of rich images and interactive display, Start Aid has a plain webpage with abundant text (Liu, 2008). Functionality is unnecessarily complicated, most notably in the download and dispersal of sites into organized categories (Fox, 2008).

Web 2.0

Some parts of Web 2.0 are utilized effectively by Start Aid (Metz, 2008). User participation is a strong component of the site. There is an online community which has the potential to develop as a web page sharing site (Sadeh, 2008). Start Aid is collaborative in a way that most of the other pages are not: rather than uploading or adding a widget that an unidentified creator has made available, users are encouraged to share favourite pages, collaborate and become online friends (Maltz, 2005). In this context, it is the most social of the tested sites (Rutherford, 2008).

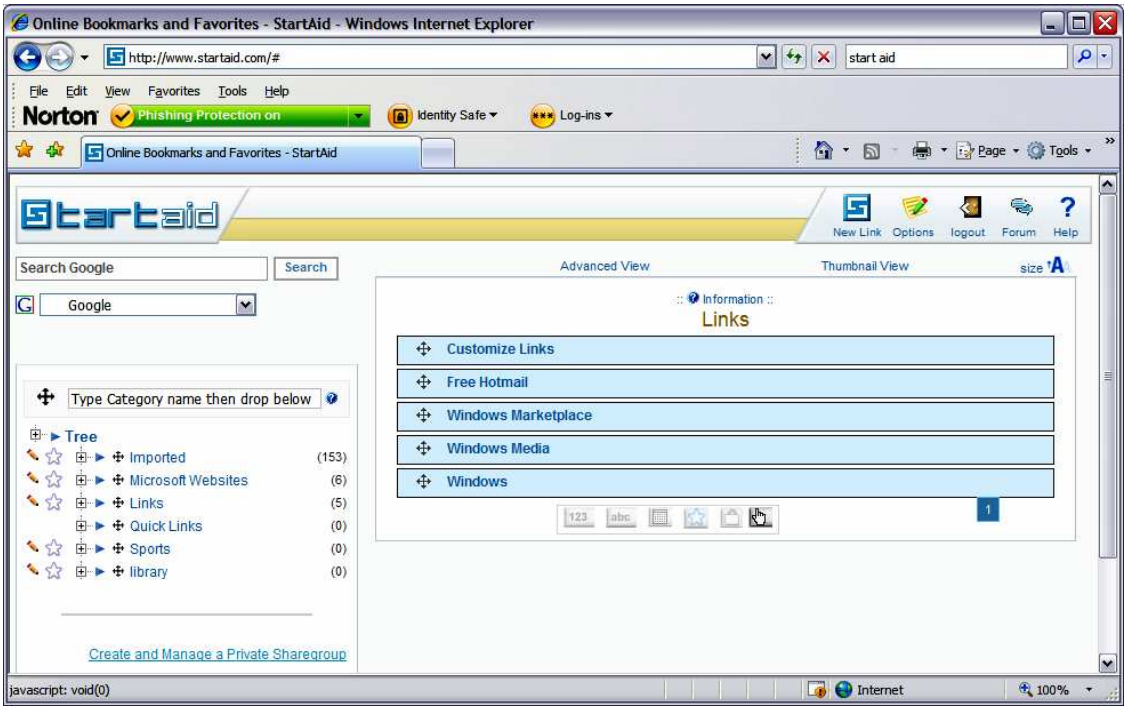

Figure 44: Screen shot of Start Aid

But the customization capacity of the site is less effective (Detlor & Lewis, 2006). The overall appearance of Start Aid is dull, with basic colours and expandable boxes

populating the site (Singer & Stephens, 2007). The potential of AJAX technology is unrealised, and the site is not attractive or startling in the way iGoogle is (Metz, 2008). So, although a sense of fun could possibly develop over time once the fellow users became known, there is no obvious visual sense of excitement in the site (Liu, 2008). The games and movie previews that are instantly accessible when iGoogle is opened are not evident (Evans, 2009). The concepts employed on the site ('trees' instead of 'tabs') seem contrived to create a point of difference with other start pages.

Internet

Start Aid tested poorly in this category. This is partly because it is more complicated than the other sites (Wang & Lim, 2009). The initial upload of the bookmarks is not straightforward. The terminology is different: 'Type Category name then drop below' is not as easy to process as 'Create Tab' (Nichols & Mellinger, 2007). An effect is that it takes longer to learn how to use Start Aid, when a major benefit of a site such as Netvibes is that it is instantly obvious how to use it (Neuhaus et al, 2008).

When the user returns to Start Aid after having set it up, there are no basic instructions to follow (Nichols & Mellinger, 2007). The navigation is not as straightforward as Pageflakes, for example: the user needs to click on the chosen tree, scroll down the results that creates, and then click again on the desired page (Travis & Norlin, 2002). This, as with iGoogle, opens on the existing page rather than in a new page meaning that to return to the start page the user is required to use the 'back' button, or to keep moving forwards and not return at all (Travis & Norlin, 2002).

This leads to low scores for efficiency and satisfaction (Liu, 2008). Over time, a user may become efficient with Start Aid, and be stimulated and satisfied by its community ethos (Sadeh, 2008). But a first time user, in a hurry to find desired information, would be unlikely to record similar feelings (Schmidt, 2007). It has been established in the literature that this lack of instant appeal is an existing fault with library sites, and use of Start Aid would not rectify the problem (Tennant, 2000).

Start Page

Start Aid is the only start page to score a point in the control and collaboration category (Maltz, 2005). Conceivably, if a library did use a Start Aid start page, the customer could push favourite sites onto that site (with controller approval) using the 'Share' function. Start Aid also scores because it has a public page function (Stephens, 2008). Most of the tested links were live (Riccardi et al, 2004).

In other areas, however, Start Aid scores poorly. It has a dull appearance, and limited creator support (Metz, 2008). It is difficult to locate sites to add directly from the front page, and is one of the least memorable of the start pages because of the basic display and complicated, antiquated functionality (Nichols & Mellinger, 2007).

Organization

Start Aid scores well in this category because it provides tools for organizing the internet (Schmidt, 2007). Despite being more complex than tabs, the trees have the same function (Fox, 2008). So, it is possible for a user to put all their sports websites into one tree, all

their news sites into another, and so on (Liu, 2008). This is an advance over the single page of display offered by Inbox and Eskobo, but less straightforward to use than the page top tabs of Netvibes and Pageflakes (Singer & Stephens, 2007).

Control over the internet is therefore attainable (Wang & Lim, 2009). The internet is reduced to a set of favoured subjects, each of which could conceivably contain a limited number of high quality related sites (Valenza, 2008). This is, in effect, organizing bookmarks into a basic type of web portal (Rosenfeld, 2008).

Summary

Start Aid effectively sits in the middle ground between the more traditional start pages such as Netvibes and iGoogle, and the less developed start pages such as Inbox and Eskobo. It has better potential for organization than the latter sites, but is too complicated and unattractive to compete with the former sites (Finder et al, 2006). It is the site which attempts to embrace the ethos of Web 2.0 most completely (Abram, 2008). With more commitment to upgrading the appearance of the site, and making it easier to use in key areas such as uploading bookmarks, it would be a much more appealing start page (Novaljan & Zumer, 2004). Ultimately though, a site utilizing the concept of transferring bookmarks from one location to another does not present as much potential as sites such as Netvibes or iGoogle which provide access to new, rich content (Han et al, 2007). Start Aid offers as much organization and more community as these sites, but lacks the instant appeal generated by their visual richness and sense of fun (Schmidt, 2007).

Conclusion

The evolution of the internet presents a threat to the continued role of the library as a primary site for information location (Brenner & Klein, 2008). A large amount of attractive, essential information is now available on websites that are easily located through powerful, simple tools (Tennant, 2000). The one box, one button simplicity of the Google search engine, for example, challenges the viability of library websites (Fox, 2008). Google is attractive, approachable, easy to use, and capable of instant dissemination of masses of information (Brophy & Bawden, 2005). It is free and accessible to anyone with an internet connection (Brophy & Bawden, 2005). It has universal brand recognition (Rowlands et al, 2008). Instead of library websites, this is where many potential library customers often begin their information searching (Brenner & Klein, 2008).

Social software sites are a major part of the second internet revolution (Abram, 2008). Sites such as Facebook and Youtube encourage user content and personalization of the internet (Coyle, 2007). Users can add to the internet (Detlor et al, 2007). They can change how it looks (Snowball, 2008). They can create, out of the mass of electronic information, a site that has their colours, their pictures, their name and their information on it (Rosenfeld, 2008). This provides users with an antidote to the globalization of information and everyday life. The ability to create individual, personalized sites makes the internet seem less corporate and less prescribed (Abram, 2008). The user has a voice and a presence (Rosenfeld, 2008).

But the electronic information provision of libraries should offer more than just access to dominant search engines, or the ability for a customer to personalize the site, populating it with Flickr images and Pac-Man games (Abram, 2008). Libraries need to combine these functions with a notable skill of the librarian: selection (Tennant, 2000). Librarians can downsize the internet by selecting relevant and useful websites, and organizing them for straightforward customer access (Wright, 2004). The resultant sites would then incorporate Google, the social component of the internet, and high quality, well organized web information (Calhoun, 2006). They would provide a single point of access to rich, accessible and relevant library websites in portal form(Detlor et al, 2007).

Start pages present libraries with the tools to achieve this multi-faceted functionality (Harris & Lessick, 2007). They offer access to the Google search engine, and all other Google applications (Brenner & Klein, 2008). They have a wide range of widgets relevant in a library context, including access to e-reference tools, newspaper feeds, Project Gutenberg and library catalogues (Ubogu et al, 2006). These widgets can be displayed on screen at once, or in organized tabs, and are accessible with a single click (Brezney & Haas, 2005). The display and content of start pages can be customized (Detlor & Lewis, 2006). Users can choose their own headers and skins, and can potentially embed a Facebook widget in-between those for the New York Times and the British Library (McGillis & Toms, 2001).

Some start pages offer public page functionality (Stephens, 2008). This would enable a library to select a range of widgets, organize them into related tabs such as ‘News’,

‘Library’ and ‘Community’, brand the site with library logos, and then make it available to library customers (Liu, 2008). The customers could then have access to a library site that was a rich, personalized web portal (Brezney & Haas, 2005). Visual, dynamic and straightforward rather than textual, static and overly complex, start pages are a potential solution to problems identified as existing in traditional library websites (Tennant, 2000). Open source, incorporating Google, social software and relevant library content, this technology does present libraries with the opportunity to add value to their existing web provision (Rutherford, 2008).

But during the research it became clear that none of the tested start pages possessed all of the components required for optimal library use. Only those sites with public page functionality, for example, could be used effectively as a library site (Stephens, 2008). This reduces the potential for use of iGoogle, a site which had a wide range of content, consistent speed, and obvious name recognition, but no public page (Schmidt, 2007). The best option available is for a library to create an iGoogle widget, making it available for customers to add to their start page (Metz, 2008).

No single site had a complete range of library applicable widgets (Ubogu et al, 2006). This means that to effectively implement a start page, a library would have to create content (Metz, 2008). While this is reasonably straightforward through use of a widget creation site or by copying the code available on most start page sites, it does mean none of the start pages are completely library ready (Metz, 2008).

Some start pages, such as Eskobo, provide display that does not realise the potential of AJAX technology (O'Neill, 2007). It primarily utilized a text display and had a limited store of widgets (Schuling, 2007). Eskobo also lacked a tabbing function (Rosenfeld, 2008). Other sites, such as Windows Live, had convoluted search and creation processes. Even the higher testing sites had problems with freezing and widgets that died over time (Metz, 2008). Not all start pages, therefore, would represent an upgrade on existing library sites.

Netvibes is the most library appropriate site. It has a wide range of widgets, public page functionality and rich display (Schmidt, 2007). It is easy to use, and has a straightforward tabbing function that facilitates the creation of a web portal (Sadeh, 2008). Google applications are incorporated, and a Google search engine is set on each page (Harpel-Burke, 2005). There is a high multi-media component, and Netvibes can be branded with library logos (Sadeh, 2008). Two identified problems were that the full range of library content tested for was not available, and the site froze occasionally during the widget loading process (O'Neill, 2007).

Start pages are not designed for libraries. None of the tested sites were completely perfect for library use. But the top end start pages tested effectively enough to indicate that they possess functionality relevant to libraries. Incorporating library content with Google and social software, facilitating organization of the internet and possessing rich, interactive display, the start page is a tool libraries should consider using to upgrade web provision.

Further Study

This project should be followed by testing of start pages in a library context. This could be a qualitative study that tests customer reactions to and perceptions of library start pages (Reutschler & Geursen, 2003). Such testing would extend the findings of this research and would help determine whether customers found start pages rewarding when used by libraries (Aitta et al, 2008). This would complement the current research, which has tested the content of the start pages but has not investigated customer response.

It would also be relevant to test the technical responsiveness of selected start pages (O'Neill, 2007). Issues to consider would include the functionality of each start page on a variety of computers, operating systems and bandwidths. For start pages to be effective as library tools, customers need to be able to access them from a wide range of technical settings.

Research is required into the technical stability of start pages. As noted above, concerns do exist about the ability of start pages to withstand cyber attacks (Valenza, 2008). The extent of this vulnerability should be assessed before libraries adopt start pages as alternatives to existing websites.

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