

Homepages of Higher Education Websites: IA in Action

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Abstract. This study involves an analysis of 16 Higher Education homepages to investigate the type of Information Architecture adopted with user categories in perspective. The aspects highlighted and discussed include feature and content prioritisation; organisational systems; labels and identifiers; navigation and navigational tools. The paper argues that through a cohesive structure all the pieces of a website are brought together and become findable from the homepage.

Keywords: higher educations websites, information architecture, homepages, findability, user categories, navigation.

1 Introduction

A University homepage should aim to provide user categories with a starting point to intuitively and confidently delve into the information content they require. It should also provide a daily overview of important news and updates. Presenting a quick way of getting to the most useful content of the site and establishing a strong brand on the homepage by portraying the information coming from a recognised authoritative source are other vital features. Successful homepages expose new and useful content in a way that it is proportional to the role of the homepage as a gateway to all information content.

Higher Education websites have vast amounts of information which they need to communicate. Due to intense competition, the communication ought to be based on a high professional standard with the ultimate goal being that of an impressive virtual visit which reflects the benefits of a thriving educational environment while portraying the image of being a centre of research, reference, culture and an institution of social worth and credibility.

This study involves a comparative analysis between homepages of 16 universities in Australia, Europe, USA and Asia. These homepages have been analysed to identify the type of Information Architecture adopted for the homepage to fulfil an ePR function for the institution. Feature and content prioritisation, organisational systems, labels and identifiers and navigations and navigational tools are all aspects of IA that aim to produce a successful homepage.

The paper is organised as follows. The section following this introduction gives an overview of the term Information Architecture for the purpose of this study. Section 3 focuses on the literature related to university homepages with special reference to the theme of Information Architecture. Section 4 briefly outlines the methodology and examines the findings. Section 5 concludes the study.

2 Information Architecture Defined

Websites and homepages are intricate systems of information spaces which require specific methods of organisation for an explicitly detailed task to be accomplished. Information Architecture organises and designs interactive information spaces through a cohesive structure advocating specific styles to make information findable for users [1].

Functionality and content organised into a structure for intuitiveness of navigation for ease of findability [2] involve labelling items, creating categories, devising navigational systems, creating indexing and search systems, prioritising information content. Site organisation equates Information Architecture and involves the structure, grouping, and labelling of content. Site structure is the completeness and form of the site as a whole and should reflect sponsors' needs, users' needs and an appropriate structural design through effective IA design [3].

Effective IA borrows from a number of attributes of a usable system whereby users can quickly, easily and intuitively find information content. The information space ought to be conducive to user-centeredness with a combination of global and local navigation systems addressing the factors of findability and viewability. Ultimately, understanding business objectives and constraints, the content, and the requirements of the users of the site is central to creating the proper IA [4], [5].

According to the Information Architecture Institute, IA is defined¹ as:

- the structural design of an information space to facilitate task completion and intuitive access to content
- the combination of organisation, labelling, search and navigation systems within websites and intranets
- the art and science of structuring and classifying information environments to support usability and findability
- an emerging discipline and community of practice focused on bringing principles of design and architecture to the digital landscape.

3 Higher Education Homepages in Perspective

Higher Education websites are challenged in a competitive arena in guiding people through the myriad of information available. They need to present a website functional enough for users to successfully find the information they require and thus find value in the system because the information is valuable to them [6]. User-focused information and navigation structures are a necessity [7] and stakeholders' views are to be kept in perspective [8].

Categories of information ought to be defined according to what the viewing audience is interested in, irrespective of the internal administrative organisation [9] while limiting number of categories on the homepage to as few as possible, without compromising usability. The relationship between the context/business, the content and the users for adequate IA of Higher Education intranets is a necessity [10], [11].

¹ www.iainstitute.org/en/learn/resources/what_is_ia.php

A number of studies have been conducted on the theme of a higher education's virtual presence². Cisneros et al. [12] discuss the efforts of the University of Arizona to manage institutional data and the importance of devising a project based on IA to deal with what they term as oceans of data.

Darch and Szeto [13] explain how the University of Queensland embarked on project to rebuild its site to meet client rather than administrative needs by providing an adequate scenario for client-focused web systems that give the required competitive edge through good IA and usability techniques.

Ellis and Patterson [14] discuss issues of large amounts of information in an increasingly competitive educational marketplace in the Higher Education scenario. Forty-two Australian university websites were rated on 16 characteristics that aimed to provide a comprehensive picture of the navigational structure and the use of various web technologies and design approaches. The authors found that the majority of Australian University homepages lack basic usability characteristics which impeded users to find information, to navigate throughout the site easily and gain a consistent impression of the implied status of the site.

Zhu et al. [15] describe a university portal as a one-stop client-oriented website providing information to specific user needs and characteristics. They give an overview of the core functions of a well-implemented university information portal, including its benefits, its requirements and its architecture.

Ruwoldt and Spencer [16] examined the homepages of 68 universities in Australia, Canada, USA, Asia and Europe, looking for emerging industry standards and opportunities for improving quality and usability of a homepage. According to the authors the homepage is the most visible online representation of a university's style, activities and reputation. They identified key audience groups, an emerging standard for the content and IA of a university's homepage, and some additional features that could distinguish an institution from its competitors.

In a study, da Silva et al. [17] explored the relationship between prior categories and user browsing patterns and identified visitor groups of a website in the educational domain while analysing the traces of different user behavior.

Bao and Ellis [18] investigated 31 academic institutions and found a user-friendly webpage is the result of clear visual IA. While discussing the audience-based and topic-based structures, primary navigation features and the presence of news and events items on the homepage they concluded that the emerging trend was to employ a combination of industry standard practices in relation to coding and layout combined with a mix of topic-based and audience-based structures.

Higher Education websites generally portray an emerging industry standard for IA on their homepages [19], [20], [21] by organising information in two categories, namely:

- 'For' – audience
- 'About' – information

Instone [22] refers to these categories as 'relevant-for', 'specific-to'.

² The mention of these studies is not exhaustive.

4 Methodology and Findings

An analysis of the homepages of 16 universities in Australia, Europe, USA and Asia (see Appendix I) was conducted for the period 10 October 2008 to 10 February 2009. The thorough analysis highlights basic usability features related to IA for the sake of findability through their presence on the homepage. Certain industry trends and standards were identified. The analysis was based on the following features from the homepage:

- feature and content prioritisation
- organisational systems
- labels and identifiers
- navigation and navigational tools.

4.1 Feature and Content Prioritisation

Number of Links. The analysis tried to find whether the number of links on the homepage was too large and provided clutter. It was found that the number of links (Quicklinks and Search excluded) on the homepage varied from as little as 20 to over 60. The menu expanded into sub-menu items within the navigation bar when the number of links on the homepage was large.

Key Information Content. The analysis tried to find whether key information content was available on the homepage and whether there was a similar trend. It was found that key information content on the homepages mostly refers to: Information about the University; Job Opportunities; Faculties, Departments and Schools; Library; Research; Job Opportunities; Campus Life; Courses; Admissions; Supporting the Institution.

It was noted that:

- key content was directly specific to various audiences
- e-services mostly included webmail and student portals
- news and events items were present on all the University homepages.

4.2 Organisational Systems

The homepages were investigated for the type of site organisation according to categories. The prevailing trend is that they are clearly organised into two groups (see Table 1):

- 'For' – audience-specific
- 'About' – topic-related.

Other categories were Study; Faculties/Schools/Campuses/Colleges/Centres; Campus Resources.

Alphabetical listing was present in the 'about' category on the University of Yale homepage. Alphabetical listings were also found in the Quicklinks of 7 homepages. There was no other apparent sorting pattern.

Table 1. Distinction of categories on the homepage.

Categories clearly distinguished	Categories unclearly distinguished
www.unimelb.edu.au	www.latrobe.edu.au
www.usyd.edu.au	www.lu.se/lund-university
www.uwa.edu.au	english.pku.edu.cn
www.sussex.ac.uk	www.ucp.edu.pk
www.um.edu.mt	
www.uni-hannover.de/en	
www.pitt.edu	
www.princeton.edu	
www.richmond.edu	
www.yale.edu	
www.hku.hk	
www.nus.edu.sg	

The Audience-Specific Category. Key audience groups, an emerging standard for the content and IA of a university's homepage, were identified. Users of Higher Education websites are relatively broad although they can be brought down to specific audience categories. From the analysis of the homepages, the following audiences were identified: Alumni; Business/Corporations; Current Students; Employees/Staff/Faculty; Employers; Exchange Students; Foundations; Friends; Future International Students; Future/Prospective Students/Undergraduate Applicants/Graduate School Applicants; Guests /Visitors/Campus Visitors; Industry; Media/Journalists; Parents; Patients; Postdocs.

4.3 Labels and Identifiers

The homepages of these Universities are careful about the labelling system at the top-level navigation. At a lower-level (sub-menus, quicklink items, local navigation) labelling items with terms such as *The Melbourne* (unimelb), *Model Panther Central* (pitt), *BannerWeb* (richmond), *iPoint* (uwa), *IVLE* (nus) require users to be familiar with these terms. The University of Sydney overcomes this problem by giving the meaning of the term *Sydnovate* (Technology Transfer Office).

Personalised portals are usually labelled with the name of the portal as is the case of *eSims* (University of Malta) and *StiL* (University of Lund), although in the latter the term 'login' is an identifier for the function of this link.

4.4 Navigation and Navigational Tools

Global Navigation. The analysis investigated the type of items included in the global navigation systems which serve to keep a user oriented in the information space and provide easy access to all the main sections and functions of the site.

Global navigation was mostly prevalent at the top of the homepage and in some instances on the left of the screen. The most popular items were the logo which strongly brands the site, an A-Z Index, a Sitemap, Quicklinks, Search, Contact Us,

link to the website in the national language. Links of the type About, Calendar, Research and Faculties were also available. Global navigation based on common organisational systems by audience and by topic was also present. It was found that only the University of Yale did not make use of the global navigation feature at the top of the homepage.

In some cases homepages had the possibility of expanding the menu into sub-menu items within the global navigation bar. Sub-menus, allowing user access directly to deeper levels of a site from the homepage were found in the homepages of the Universities of Yale and Singapore in the topic-based navigation bar while for the Universities of Hannover and Richmond they were in the user-specific bar.

Local Navigation. The local navigation system investigated from the homepage focusing on only a small subset of the total information and arranged around a specific topic or task or site section was found mostly for news items and categories like Alumni, Study and information relevant to courses, admissions and enrolment.

Footer Navigation. This type of navigation was found on all the homepages except on that of the University of Yale. The items displayed were Copyright Statements; Terms of Use; Legal Disclaimers; Accessibility Policies; Privacy Policies; Contact Details; Sitemap; Campus Map; Feedback/Suggestion Box. Global navigation was repeated in the footer navigation on the homepage of the University of Pittsburg.

In-Page Navigation. This type of navigation was only present on the University of Hanover homepage with a link to the top of the page. Although not all homepages were above the fold, the homepages did not extend beyond two 'scrolls'.

Supplementary Navigation Features. The supplementary navigation investigated related to the presence of the A-Z Index, Sitemap and Quicklinks (See Table 2).

A-Z Index. This was present on 8 University homepages. For the University of Western Australia, the A-Z Index, labelled *A-Z websites*, was listed in the Quicklinks.

Sitemap. This high level diagram, defining IA through a hierarchical system and reflecting the information structure but not necessarily indicative of the navigation structure, was present on 10 homepages. The University of Hong Kong labelled this item *Site Guide* with a link to an intermediate page.

Quicklinks. This supplementary navigational tool may be categorised as follows:

- an ePR function to promote University initiatives (*Yale Campaign, DegreePlus, Collegian*). University-centric jargon is used rather than widely understood labels
- a user-based function to provide links to essential online services (Webmail; Directory; Library; Student Portal; Job Openings)
- an audience-specific listing targeted to a particular user category (Students – Scholarships; Semester Dates; Exam Timetables; Accommodation and Student Organisations)
- an alphabetical listing giving the impression that Quicklinks was an A-Z Index of a specific category (Faculties/Schools/Campuses/Colleges/Centres)
- a repeated navigation feature that mirrors the links in the global navigation bar (University of Central Punjab).

Table 2. Supplementary navigational features on the homepage.

Site	A – Z Index	Sitemap	Quicklinks
www.latrobe.edu.au	No	Yes	Yes
www.unimelb.edu.au	Yes	No	No
www.usyd.edu.au	No	Yes	Yes
www.uwa.edu.au	Yes	No	Yes
www.lu.se/lund-university	No	Yes	No
www.sussex.ac.uk	Yes	No	No
www.um.edu.mt	Yes	Yes	Yes
www.uni-hannover.de/en	Yes	Yes	No
www.pitt.edu	Yes	No	Yes
www.princeton.edu	Yes	Yes	Yes
www.richmond.edu	No	No	Yes
www.yale.edu	Yes	No	Yes
www.hku.hk	No	Yes	Yes
www.nus.edu.sg	No	Yes	Yes
English.pku.edu.cn	No	Yes	No
www.ucp.edu.pk	No	Yes	Yes

Search Facility. Just as in the physical world it is quicker to ask for indications for the information we cannot easily find, so in the virtual world we make use of a search facility instead of using other navigational tools. An analysis of this feature (see Table 3) was made to examine the use of:

- a standard search box for the whole of the website from the homepage
- a scoped search function with the possibility to narrow specific sections of the website from the homepage.

It was found that all the Universities use the standard search box except the University of Malta that uses a link to a page with a search facility.

Scoped search functions were available on 6 homepages with the following search categories: People; Expertise; Structure; Intranet; *iPoint*; Websites; Staff Directory; Advanced Search; Web pages; Staff; Organisation; Education; Courses and Programmes by keywords.

Table 3. Use of the Standard and Scoped Search Features.

Standard Search Box	Scoped Search Function
www.latrobe.edu.au	www.uwa.edu.au
www.unimelb.edu.au	www.lu.se/lund-university
www.usyd.edu.au	www.um.edu.mt
www.sussex.ac.uk	www.uni-hannover.de/en
www.pitt.edu	www.princeton.edu
www.richmond.edu	www.nus.edu.sg
www.yale.edu	
www.hku.hk	
english.pku.edu.cn	
www.ucp.edu.pk	

5 Conclusions

This study has provided the opportunity to analyse certain features which predominate the Information Architecture of the homepages in the Higher Education scenario.

The main purpose of a University website is to inform various user categories about the services offered to provide certain services in an attempt to project itself with the qualities that constitute it [23] which include being:

- a place for research and study
- a centre of reference and competence
- a centre of further education
- a cultural meeting place (public lectures, collections and archives, concerts, exhibitions)
- a place for fora (conferences, symposia, meetings)
- a meeting place and services centre for students and staff
- a partner of industry (involved in specialised research and creating tomorrow's professionals).

The homepage, the primary shop window, is a strong identifier for the way the institution is perceived by its audience by depicting a university's ways, activities and reputation.

5.1 Adequate IA from the Homepage

The homepage provides a direct navigational path for users when a usable and findable system is enabled through a satisfactory form of IA.

Feature and Content Prioritisation. An adequate use of links on the homepage allows users to find content and complete tasks without the necessity of having to delve deep thus using the least possible clicks. A shallow type of IA is enjoyed without compromising clutter and confusing the user. The presence of News and Events on every homepage of these websites shows that a University wants to showcase itself in an attempt to project the qualities that constitute it by being an active participator in everyday life. Through regular updates this aspect of the homepage gives a fresh look and feel to the whole information content on the site.

Organisational Systems. Listing and sorting different categories according to content that is audience-specific, topic-related or alphabetically sequenced provides a means to greater functionality. The prevailing trend for these homepages is the clear distinction between the audience-specific and topic-related categories enabling users to go straight to the content through labels 'for' and 'about', or by being in different navigational areas as opposed to being displayed in a single navigation cluster with no clear distinction.

Labels and Identifiers. The text chosen for navigation links to help describe the content or services should not consist of terminology that is usually used by the

organisation as insider jargon and is not understood by the user. Usable labels that are user-centric are a must [24].

Navigation and Navigational Tools. Navigation is a usability characteristic closely related to IA. A good navigation feature to avoid clutter is expanding the menu into a sub-menu when the number of navigational links on the homepage is large. Adequate navigational tools (including A-Z Index, Quicklinks, Sitemap, Standard Search and Scoped Search) from the homepage allow users to find content and complete tasks without the necessity of having to delve deep and thus enjoy a shallower type of IA.

In conclusion, it is vital to understand business strategies and user needs from an all-embracing perspective before defining the IA for a Higher Education website. Only then will it be possible to delve into the detailed relationships between content. Understanding these detailed relationships leads on to show how specific user requirements are met. The ultimate goal is to adopt an approach that presents well-organised, findable content that meets the needs of users and the business. Through a cohesive structure all the pieces of a website are brought together in a uniform manner to become findable – this is precisely the single most important element of success.

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Appendix I

The list of the 16 Universities analysed in the paper.

Name of University	URL	Acronym
La Trobe University	www.latrobe.edu.au	latrobe
University of Melbourne	www.unimelb.edu.au	unimelb
University of Sydney	www.usyd.edu.au	usyd
University of Western Australia	www.uwa.edu.au	uwa
University of Lund	www.lu.se/lund-university	lu
University of Sussex	www.sussex.ac.uk	sussex
University of Malta	www.um.edu.mt	um
University of Hannover	www.uni-hannover.de/en	uni-hannover
University of Pittsburg	www.pitt.edu	pitt
University of Princeton	www.princeton.edu	princeton
University of Richmond	www.richmond.edu	richmond
University of Yale	www.yale.edu	yale
University of Hong Kong	www.hku.hk	hku
National University of Singapore	www.nus.edu.sg	nus
University of Peking	English.pku.edu.cn	pku
University of Central Punjab	www.ucp.edu.pk	ucp