SCHOOL OF COMPUTING, ENGINEERING AND INFORMATION SCIENCES

Masters Programme in Computing
IS0718 Dissertation

Gilles Couzin

Assessing the web presence of research-led UK universities in a Web 2.0 world: connecting with core audiences

2009/10

Declaration

I declare the following:

1. that the material contained in this dissertation is the end result of my own work and that due acknowledgement has been given in the bibliography and references to ALL sources be they printed, electronic or personal.

2. the Word Count of this Dissertation is approximately 16000.

3. that unless this dissertation has been confirmed as confidential, I agree to an entire electronic copy or sections of the dissertation to being placed on Blackboard, if deemed appropriate, to allow future students the opportunity to see examples of past dissertations. I understand that if displayed on Blackboard it would be made available for no longer than five years and that students would be able to print off copies or download. The authorship would remain anonymous.

4. I agree to my dissertation being submitted to a plagiarism detection service, where it will be stored in a database and compared against work submitted from this or any other School or from other institutions using the service.
   In the event of the service detecting a high degree of similarity between content within the service this will be reported back to my supervisor and second marker, who may decide to undertake further investigation that may ultimately lead to disciplinary actions, should instances of plagiarism be detected.

5. I have read the UNN/CEIS Policy Statement on Ethics in Research and Consultancy and I confirm that ethical issues have been considered, evaluated and appropriately addressed in this research.

Signature:

Date:

Abstract

Over the last 10 to 15 years, UK universities have flourished beyond national borders and now compete globally. However in light of the recent financial crisis and its impact on the social, economic and educational life of the UK and the rest of the world, they are facing unprecedented challenges as they are required to do more for less in an increasingly competitive market.

In this context they have to increase their recruitment efforts to attract students from all over the world. A quality web presence is unarguably a crucial tool in supporting this effort.

The aim of this project is to develop a better understanding of a) the usability factors of university websites matter most to prospective students, and b) the potential role of Social Networking Sites (SNSs) such as Facebook as part of university's web strategy.

An online questionnaire was designed to assess prospective students information seeking behaviour when researching universities they are interested in, their attitudes towards social media as part of this process, and identify the usability criteria they value most in university websites. This was followed by a series of Repertory Grid interviews that sought to explore further these usability criteria.

The results confirmed that the key element of a university's web presence is its official website, and that although SNSs have a role to play it is peripheral and for the most part outside a university's sphere of influence. Instead universities should focus their efforts on providing easy to find quality and relevant content, and use SNSs to add genuine value to prospective students experience rather than for purely promotional purposes. There was also a marked preference for more modern looking designs that offer clear and fewer choices with the right amount of information.

Finally, it was found that the Microsoft Usability Guidelines (MUG) and Repertory Grid Technique (RGT) provided a valuable framework for evaluating website usability factors.

Acknowledgements

I would like to take this opportunity to thank the people who helped and supported me during the past few months.

Firstly, I would like to thank my supervisor Ed Hyatt: your advice was invaluable and thank you for giving me your time and encouragement whenever I needed it.

I would also like to thank all my colleagues at the University of Bristol who helped me one way or the other: in particular Sarah Richards and Bethan Sperduty in the Widening Participating and Undergraduate Recruitment Office, and also Alan Lockett in the Language Centre.

Most of all I cannot be grateful enough to all the students who gave their time to complete the questionnaire and those who took part in the interviews; without their participation this project would not have been possible.

Finally I would like to thank my wife for her support and for keeping our household going while my mind and spare time were taken by this project, and my daughter for providing much needed light relief and distraction!

Contents

List of figures

List of tables

1 Introduction

The principal motivation for choosing this project was to provide a set of recommendations that would inform the redevelopment of the University of Bristol's overall web presence. In doing so, it was hoped that the investigation would also provide useful information for others to use, both in terms of the results and of the methodology used.

1.1 Background to the study

UK Higher Education Institutions (HEIs) have not been immune to the globalisation phenomenon that has taken place since the late 80s: HEIs have become global institutions and as such they must be able to compete at an international as well as national level. Until the recent financial crisis and resulting global economic downturn, the UK HE sector was extremely successful and healthy: the UK is the second most popular destination for international students with 11% of the market share[1], the number of students grew by a third in 10 years (raising from 1.8 million in 1997 to 2.4 million in 2007) and research performance is first class[2]. However, since then the world has experienced its biggest financial crisis since 1929, which has led the HE sector to fiercer competition for student (particularly from overseas), as well as drastic funding cuts now taking their toll on research and teaching resources.

In this respect, Bristol is no different from other universities, but as a research-led traditional university it faces some specific challenges. Chief among these is how it can adapt to the critical changes that are taking place while strengthening its reputation for academic excellence, history and overall desirability.

Against this background, universities will have to produce greater efforts to reach out to their core constituencies, communicate their brand and proposition, and ultimately establish their reputation on the global stage. A quality web presence is unarguably a critical aspect of a successful strategy for achieving these aims. However, in the age of the social web a university's web presence goes far beyond the boundaries of its official website to include not only what it can control such as its

[1] OECD, Higher Education at a glance, 2008
[2] Universities UK, UK Higher Education in 2023

Wikipedia entry or Facebook page for example, but also what others say about it on the same Facebook, YouTube or review sites like Whatuni.com. The challenge for all universities is to understand how social media can be harnessed to better connect with users in a meaningful way and help shape how the institution is perceived globally.

1.2 Aims and objectives

The overall aim of this project was to assess the web presence of research-intensive universities from the point of view of two core target audiences (prospective home and international students) in order to:

a) identify the most important usability attributes of their official website,

b) explore the potential role and impact of Social Networking Sites (SNSs) in their web strategy.

The websites' usability was assessed using the methodology developed by Tung et al. (2009), which is based on the Microsoft Usability Guidelines (MUG) devised by Keeker (1997) and expanded through use of the Repertory Grid Technique developed by Kelly in the 50s[3]. MUG is a popular and widely accepted set of heuristic guidelines for evaluating website usability. This method builds on previous research, notably by Agarwal and Venkatesh (2002) who devised a heuristic evaluation instrument that requires users to assign weights and ratings to the MUG attributes (5 categories divided into 14 sub-categories). As part of their study, Tung et al. (2009) evaluated six well known B2C websites such as Yahoo! and MSN. Therefore this study serves a double purpose in that it evaluates Tung et al.'s methodology by applying it to university websites, while providing useful information on what users consider to be important attributes of these sites.

An online survey was also used to gather quantitative data on prospective students' use of SNSs and their perception of universities using these same SNSs for recruitment purposes. The survey was also used to assess the MUG criteria they perceived to be most important for university websites.

[3] Wikipedia, Repertory Grid [online] Available at http://en.wikipedia.org/wiki/Repertory_grid [Last accessed 12/11/2009]

The following objectives were identified for the project:

1. To produce a critical review of the literature in the fields of usability and user experience, and Web 2.0 services in relation to the Higher Education sector.
2. To investigate the role of SNSs on the information seeking behaviour of prospective students when researching a university course.
3. To investigate whether a university's presence on SNSs affects how it is perceived by prospective students.
4. To investigate prospective students' opinions on the attributes they consider most important to research-led university websites.
5. To compare whether and how the responses of prospective home and international students differed.
6. To assess the value of MUG and RGT as usability evaluation methods for websites.
7. To assess how the University of Bristol's web presence rated compared with that of five other universities in the same competing bracket.
8. To produce a set of recommendations for the University of Bristol's web presence re-development.
9. To report the findings from objectives 1 to 8 in a dissertation.

All of the above objectives were achieved to some extent, except objective 5 which had to be abandoned for reasons explained in section 3.2.1.

1.3 Work done and results

The research conducted for this project aimed to be original and had two components.

First an online questionnaire was used to capture quantitative (i.e. statistical) and, to some extent, qualitative data. It aimed to provide answers to questions 2, 3, 4 and 5, and had three main goals:

1. Finding out about prospective students' information seeking behaviour when researching a university course.

2. Eliciting their attitude towards universities using Social Networking Sites.

3. Eliciting the usability factors they deemed most important in university websites.

Just over 100 subjects completed the questionnaire. The results confirmed that a university's official website is the most important communication tool in its marketing blend, as most respondents said they would visit a university's official website as part of their search. Prospective students also tend to use student-created groups on SNSs like Facebook (overwhelmingly) as part of their search. On the whole they do not object to universities using SNSs for recruitment purposes, but except for meeting other students going to the same university, they are unlikely to use university-created groups. Despite the undeniable popularity of Facebook, they tend to favour dedicated student community and/or university comparison websites rather than generic SNSs when it comes to researching universities. In terms of what usability aspects they value most in university websites, the survey showed that prospective students want quality and relevant content that is easy to find.

Second, interviews were conducted to a) capture qualitative data on the usability criteria that matter to prospective students and the meanings they ascribe to them, and b) get them to rate six university websites including Bristol against these criteria. Part of the interviews aim was to cross-check the responses with those in the section of the survey that focused on the usability criteria of websites. The interviews revealed that when put in as situation where they had to compare websites by looking at them, the respondents valued ease of use (particularly factors relating to appearance) over content. Their preference went for more modern looking and eye-catching designs that offer clear and fewer choices with the right amount of information, while at the same time conveying the brand and values of the institution. UCL's website was deemed the most successful in balancing these requirements, while the University of Bristol's website fell some way short.

This dual methodology was chosen because it was felt that in order to answer the research questions fully a combination of both quantitative and qualitative methods

was the best approach. A survey of school leavers, first year undergraduate and taught postgraduate university students in the form of an online questionnaire provided the former, while individual interviews using the Repertory Grid Technique (RGT) provided the latter.

An online survey questionnaire seemed the most effective method for gaining insight into the attitudes of prospective students towards university websites and associated social network sites as a source of information for choosing a university. Large amounts of data based on a representative sample of a given population can be obtained through questionnaires, in a short time and at relatively low cost. This data can then easily be processed and analysed to generate statistical information. Surveys are particularly useful for describing the specific demographic (e.g. age, gender, etc) and behavioural (e.g. the proportion of prospective students who visit university websites as part of their fact finding) characteristics in a population, and to uncover potentially significant associations between these characteristics.

However, surveys have their limitations. Apart from the fact that obtaining a sufficiently high response rate is difficult, the data itself can lack detail and depth and for these reasons they often need to be supplemented by other research methods. A number of techniques and methods for evaluating website usability are discussed in sections 2.2.1 and 2.2.2, including the RGT which, for the purpose of the present study, was retained to complement the survey. The main reason for this choice was manifold. First RGT addresses an important criticism of analytic methods, in particular heuristic evaluation: that is they use heuristics – depending on the method, they are called 'usability guidelines' (Keeker, 1997), 'design guidelines' (Nielsen and Tahir, 2002) or Key Quality Factors (Cox and Dale, 2002) – unquestionably, without taking into account the meanings users attribute to them (Tung et al., 2009). Second, RGT is particularly suitable for carrying out background research in website usability, both for investigating user perceptions of what they value most in a website and comparing websites within an industry. Third, RGT is a relatively novel approach to website usability evaluation and it seemed a valuable exercise to investigate its worth as a research method in this domain.

1.4 Structure of the report

This report consists of six chapters including the present introductory one which sets the scene for the study, states the research questions and provides a summary of the work done and the results obtained.

Chapter 2 examines the literature that forms the theoretical framework underpinning the study. It explores the research into two relevant areas: usability and user experience and, and Web 2.0 and social media, and how they apply to the HE context and student experience.

Chapter 3 provides a detailed description of the research methodology, including subject sampling, questionnaire design, interview technique and data analysis method.

Chapter 4 describes the results obtained from the questionnaire and interviews. It contains a number of tables and figures that convert the raw data into meaningful information.

Chapter 5 discusses the results of the study and relates them to previous research as introduced in chapter 2. The discussion focuses on four areas relating to key research questions: the role of SNSs when researching a university course, assessment of usability criteria for university websites, comparative evaluation of six websites under scrutiny and evaluation of MUG and RGT as website usability assessment tools.

Finally, chapter 6 presents the summary and conclusions of the project. It gives a brief evaluation of the project, followed by a discussion of its limitations, and concludes with a set of recommendations for the redesign of the University of Bristol web presence.

2 Literature review

2.1 Introduction

The background research for this project focuses on two main areas of particular relevance.

The first area is concerned with user experience and usability evaluation. Firstly it provides a brief overview of the concepts of usability and user experience (UX), and their relationship. Secondly it looks at various usability evaluation methods, with particular focus on the Microsoft Usability Guidelines (MUG) and Repertory Grid Technique (RGT). Thirdly it investigates how UX and usability concepts and techniques have been used to evaluate the usability of university websites.

The second area examines the concepts of so-called "social media" (aka Web 2.0 and "social web"). First it provides a brief history and identifies its defining principles and characteristics. Then it considers the impact of social media on the way large organisations such as universities communicate with their audiences. Finally it examines the extent to which universities have embraced social media to enhance their brand and reputation, and students' attitudes to Web 2.0 technologies.

2.2 Usability and the user experience

Although usability and User Experience (UX) are two closely related concepts in the fields of interaction design and Human Computer Interaction (HCI), they cover different aspects of how users experience a computer system, whether an ATM or a website. Traditionally, the more established field of HCI has been primarily concerned with *usability*, i.e. "proposing techniques, methods, and guidelines for designing better and more "usable" artefacts." (Agarwal and Venkatesh, 2002) Although the term *user experience*, for its part, has been used for some time it is only in the 1990s that it gained wider attention as it found its true meaning with the advent of the World Wide Web.

The term *usability* has always suffered from a lack of clarity, meaning different things to different people (Bevan, 1995). Nonetheless, Bevan suggests that there are two

distinct but complementary approaches to usability: (a) is essentially product-oriented and equates usability with "ease of use" (i.e. how easy a product is to use), and (b) is a broader, more user-oriented approach that defines usability as "quality of use" (i.e. "as the ability to use a product for its intended purpose."). In the HCI context, *usability* has predominantly been approached from the former perspective, its main purpose being "to identify a set of principles and common practices that will ensure usability is an outcome of system design" (Palmer, 2002), a view that originates from the work of Nielsen (1993) among others.

The usability characteristics of a product are alternatively expressed in terms of "goals" (Sharp, Rogers & Preece, 2007, p.20) or "attributes" (Nielsen, 1993, 2003). According to Nielsen there are five "quality attributes" that a system must possess in order to be "easy to use":

> **Learnability** – how easy is it for a novice user to learn the system?
>
> **Efficiency of use** – how quickly can expert users perform tasks?
>
> **Memorability** – how easy can intermittent users use the system after a period of not using it?
>
> **Few and non-catastrophic errors** – do users make many errors when using the system and how easily do they recover from them?
>
> **Subjective satisfaction** – how satisfied are users with the system?

The International Organization for Standardization ISO 9241-11:1998 (Bevan, 2008) for its part defines usability as:

> *"The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use".*

Effectiveness, efficiency, memorability and error tolerance are all attributes of the product that can be objectively assessed. Satisfaction on the other hand is a subjective attribute that assesses the feelings (positive or negative) of a user towards a product, and is the key element in meeting the user's goals (Bevan, 2008).

However, Hassenzahl (2002) points out that all too often it is assumed that the level of satisfaction derived from using a product is directly related to the objective attributes. He argues that this is not necessarily the case and that satisfaction should reflect the "hedonic" quality (i.e. gratification-oriented goals such as need for aesthetics, innovation, excitement, etc) as well as the "ergonomic" quality (i.e. pragmatic, task-oriented usability goals) of a product.

Hassenzahl's findings are consistent with the concept of User Experience (UX), which is seen as shifting focus from product characteristics to user satisfaction when using that product. For Baekdal (2006) UX is about "feelings" and its aim is "to make people happy before, during and after they have used your product." This is dependent on subjective perceived qualities that touch on human emotions, such as: is the product aesthetically pleasing, engaging, fun, exciting, entertaining, etc? (Sharp, Rogers & Preece, 2007, p.26). A crucial point made by Baekdal's is that the most usable product is not necessarily the one that enhances user experience and vice versa. He illustrates this point with the example of a road: compared to a twisting, narrow mountain road, a straight and wide road (such as a motorway) ticks all the usability boxes, however the mountain road is likely to result in a more satisfying user experience. Another similar comparison is that between a cork and a screw-cap as a method of closing a bottle of wine: the screw-cap will probably be seen as more usable by most users but many would argue that the pop of a cork being pulled out provides a more satisfactory experience!

This suggests that providing a satisfying user experience goes beyond product usability; it is about supporting the user's pragmatic and hedonic goals through appropriate product characteristics (Bevan, 2008).

Morville (2004) provides an alternative but concurring model of the overall user experience. His definition of UX consists of seven "facets", of which usability is one (Figure 2.1).

This model is particularly useful to help product designers decide which facets are more important to a particular project. For example an e-commerce website for a new product is likely to focus on desirability and credibility, while not necessarily

neglecting other important facets such as usability, accessibility, findability and value.

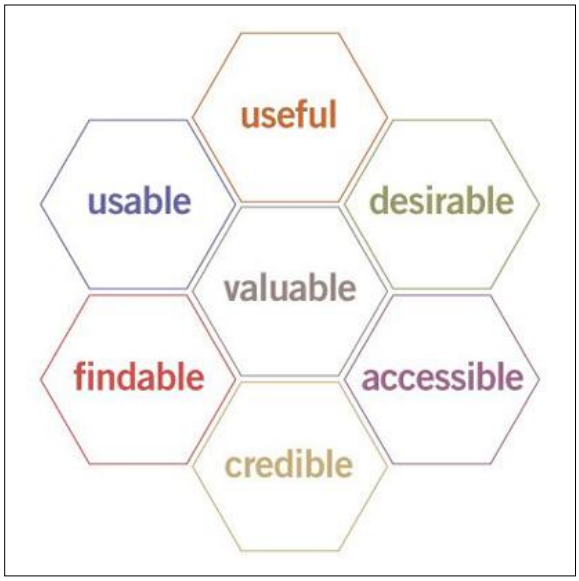


Figure 2.1. Morville's user experience honeycomb

In summary, usability defines the ease of use of a product and as such it is one of the most important aspects of a product's design. However, providing a quality user experience goes beyond meeting product usability goals alone. In particular the overall user experience needs to takes into account the pleasure needs of users when using a product as well as their more pragmatic needs for efficiency and effectiveness.

2.2.1 Usability evaluation methods

Whereas the previous section sought to clarify the difference between usability and user experience and how they complement each other, the present section looks at the methods available to evaluate them. Approaches to usability evaluation can be divided into two categories: analytic methods and empirical methods (Gray and Salzman, 1998).

The former include a range of methods carried out by expert evaluators inspecting the product's interface in an attempt to identify problems. Nielsen (1994) identifies seven such methods: Heuristic Evaluation, Cognitive Walkthroughs, Formal Usability Inspections, Pluralistic Walkthroughs, Feature Inspections, Consistency Inspections, Standards Inspections. By far the most popular is the Heuristic Evaluation, which involves a few expert evaluators assessing an interface against a set of usability

principles (the heuristics) (Nielsen, 1993). There are many others, such as GOMS (Goals, Operators, Methods and Selection rules) developed in the early 1980s by Card, Moran and Newell (Gray and Salzman, 1998).

The latter consist of a range of methods that are associated with user testing. The most common among these is "usability testing" (or "user testing"), popularised by Nielsen (1993), and which involves observing representative users perform specific tasks with the product. Apart from the direct involvement of users, the popularity of usability testing is due to its relative simplicity and flexibility: it can take place at different stages in the product design process, at varying degrees of formality and with only a few users (Nielsen, 2003). "Usability laboratories" provide a more formal method of usability testing as they involve recording what the user does (Scholtz, 2004).

However the choice of usability evaluation methods is not limited to the above. Generic research methods such as observations, questionnaires and interviews, focus groups and user feedback can also be used as part of a usability assessment strategy (Nielsen, 1993). Finally, Nielsen (1993) also cites statistical data automatically collected from computers as providing useful usability information. This is of particular relevance to assessing websites as web statistics software can track what users actually do (i.e. what pages they visit, how long they stay and how they navigate around the site).

With regard to assessing the usability of websites, the most popular methods appear to be Heuristic Evaluation (Nielsen, 2005) and user testing (Nielsen, 2003). Much research has focused on identifying principles for optimising the usability of websites, and turning these principles into guidelines that practitioners can use to carry out Heuristic Evaluations. Nielsen and Tahir (2002), for instance, identify 113 "design guidelines to ensure homepage usability", based on their 14 year experience of conducting user tests. Based on data available from previous research, Cox and Dale (2002) collated a list of key quality factors (KQFs) which they grouped into four main categories and 16 sub-categories (Table 2.1). Each KQF was then given a number of measurable criteria for scoring purposes (e.g. Links had three criteria: a)

correctly described, b) minimum number of links to information products and c) change colour once used).

1. **Ease of use**
   - 1.1. Clarity of purpose
   - 1.2. Design
     - Links
     - Consistency
     - Menu
     - Screens
     - Clicks
     - Flexibility
     - Search
     - Forms
   - 1.3. Communication
     - Text
     - Colour
     - Graphics
     - Animation
2. **Customer confidence**
   - 2.1. Order confirmation
   - 2.2. Reliability
   - 2.3. Service
   - 2.4. Feedback
   - 2.5. FAQ
   - 2.6. Accessibility
   - 2.7. Speed
3. **On-line resources**
   - 3.1. Product choice
     - Selection
     - Information
     - Availability
   - 3.2. Product quotation
     - Feedback
   - 3.3. Product purchase
     - Registration
     - Payment
     - Feedback
4. **Relationship services**
   - 4.1. Recognition
   - 4.2. Extra services
   - 4.3. Frequent buyer incentive

Table 2.1. Cox and Dale's Key Quality Factors for websites

As can be seen, this framework was greatly biased towards e-commerce websites. Agarwal and Venkatesh (2002) mention a number of earlier similar frameworks,

such as Eighmey and McCord (1998) who identified 17 factors later reduced to 9 groups (e.g. personal involvement, useful information, simplicity of organisation, etc), and Gehrke and Turban (1999) who came up with 5 main categories of criteria for business websites (page loading, content, navigation efficiency, security and consumer/marketing focus).

Although there are considerable overlaps between all of these approaches, they offer different perspectives on the dimensions that make a website successful, each with its own strengths and weaknesses.

2.2.2 Microsoft Usability Guidelines (MUG) and Repertory Grid Technique (RGT)

A key limitation with most approaches to website usability evaluation is that they are not validated by market leaders such as Microsoft (Agarwal and Venkatesh, 2002). For this reason Agarwal and Venkatesh use the Microsoft Usability Guidelines (MUG) framework developed by Keeker (1997) for Microsoft.

MUG is a widely used framework for evaluating website usability (Tung et al., 2009) which revolves around five main attributes that a website should have in order to make it appealing to users:

- it provides relevant and high-quality content,
- it is easy to use,
- it is promoted effectively, both on the site and in other media,
- it makes the experience unique to the medium,
- it evokes emotion.

Four of these five categories are broken down into 14 subcategories (Table 2.2).

Agarwal and Venkatesh (2002) concluded from their review of existing literature at the time that:

> *"... MUG provides a comprehensive range of categories and subcategories that allow users to clearly discriminate across industries and products. Further, the range and depth of detail covered by MUG provides a basis for a user to discriminate across Web sites within an industry."*

Category/Subcategory	Definition from Agarwal and Venkatesh (2002)
	Extent to which Web site…
Content	…offers informational and transactional capability
Relevance	…offers content relevant to core audience
Media use	…uses media appropriately and effectively to communicate content
Depth and breadth	…provides appropriate breadth and depth of content
Timely/current information	…provides current and timely information
Ease of use	…is free of effort when used
Goals	…offers clear and understandable goals
Structure	…is well structured and organised
Feedback	…provides clear and understandable results and feedback regarding your progress
Promotion	…is well promoted on Web and other media
Made-for-the-medium	…can be tailored to fit your specific needs
Community	…offers opportunity to be part of an on-line group or community
Personalisation	…treats you as a unique person and responds to your specific needs
Refinement	…reflects the most current trend(s) and provides the most current information
Emotion	…evokes emotional reactions from you
Challenge	…offers an element of challenge
Plot	…provides interesting story-line
Character strength	…ties to individuals, within and outside organization, who have credibility
Pace	…allows you to control pace at which you interact with it

Table 2.2. Microsoft Usability Guidelines categories, subcategories and definitions

This makes MUG suitable for comparing websites both across industries and within a particular industry. Agarwal and Venkatesh (2002) posited that the MUG criteria were unlikely to be of equal importance to different types of users and websites, for different industries. They successfully tested this hypothesis by asking users to weigh the MUG categories and subcategories according to how they perceived their relative importance, for different industries (airline, bookstore, auto manufacturer and car rental) and user roles (customer or investor). The MUG metric and instrument developed by Agarwal and Venkatesh (2002) was later used to compare the usability of web and wireless sites in Finland and the United States across four industries (banking, news, shopping, tourism) (Venkatesh and Ramesh, 2006). This study also compared the MUG instrument with the popular Technology Acceptance Model (TAM) for benchmarking purposes, and found that the former outperformed the latter in terms of richness and variance.

More recently, Tung, Xu and Tan (2009) have investigated the meanings web users assign to the MUG categories and subcategories using the Repertory Grid Technique

(RGT). The RGT – an interview technique devised by George Kelly[4] in the 50s – was used to elicit which attributes users of business-to-consumer (B2C) websites perceive as more important and what meaning they attach to these attributes. Tung et al.'s research resulted in a revised MUG that included one new subcategory (Quality) under Content, and saw Goals replaced with two new subcategories (Appearance and Convenient services) under Ease of use (Table 2.3).

Category/Subcategory	**Definition**
	Extent to which Web site…
Content	…offers informational and transactional capability
Relevance	…offers content relevant to core audience
Quality *	…offers content that is accurate and error free
Media use	…uses media appropriately and effectively to communicate content
Depth and breadth	…provides appropriate breadth and depth of content
Timely/current information	…provides current and timely information
Ease of use	…is free of effort when used
Appearance *	…reaches target audience by appealing to them in a fashion they are comfortable with and can easily understand
Convenient services *	…provides convenient services to facilitate users' on-line activities
Structure	…is well structured and organised
Feedback	…provides clear and understandable results and feedback regarding your progress
Promotion	…is well promoted on Web and other media
Made-for-the-medium	…can be tailored to fit your specific needs
Community	…offers opportunity to be part of an on-line group or community
Personalisation	…treats you as a unique person and responds to your specific needs
Refinement	…reflects the most current trend(s) and provides the most current information
Emotion	…evokes emotional reactions from you
Challenge	…offers an element of challenge
Plot	…provides interesting story-line
Character strength	…ties to individuals, within and outside organization, who have credibility
Pace	…allows you to control pace at which you interact with it

Table 2.3 – Enhanced MUG, Tung, Xu and Tan (2009); * indicates new subcategories

In an earlier study, Tan and Tung used RGT to investigate website usability from designers' perspective. They concluded that "the application of RGT yielded rich and relevant qualitative data from the interviews" (Tan and Tung, 2003).

Others have also used RGT to explore the usability of websites.

Verlinden and Coenders (2000) used it to measure "the subjective or qualitative aspects of websites." In doing so they evaluated RGT as a research technique and

[4] See Wikipedia entry on George Kelly at http://en.wikipedia.org/wiki/George_Kelly_(psychologist)

concluded that it could be a valuable addition to the panoply of methods used in web usability testing and user-centred design. They noted that it was particularly useful for capturing users' mental models relating to aesthetic aspects of websites. They also highlighted some limitations, among which the fact that RGT interviews do not provide information on the paths users might want to follow on a website.

Hassenzahl and Trautmann (2001) investigated how users perceive the appeal and character of website designs using RGT. According to them, the most important benefit of RGT lies in its ability to elicit website characteristics that are meaningful and relevant to users.

Kelly's Personal Construct Theory and RGT have long been at the core of Crudge and Johnson's (2004, 2007) methodology for researching the usability of search engines. They too concluded that RGT was suitable for eliciting the dimensions of website usability that matter most to users, while minimising interviewer bias.

Finally, Hinkle (2009) conducted a pilot study using RGT as a method for evaluating aspects of website usability. In this particular case she used it to capture users' first impressions of homepages. She too was positive about the value of RGT interviews in gaining in-depth qualitative information on the features of a website that matter most to users.

2.3 Research in university websites user experience and usability

Although the body of research into the usability of, and the user experience offered by, university website is relatively scarce, a number of empirical studies have been conducted over the last ten years or so.

Olsina et al. (1999) devised the Web-site Quality Evaluation Methodology (QEM), a quantitative evaluation approach for assessing the quality of websites. The QEM consists of over one hundred required quality characteristics and attributes (i.e. usability, functionality, reliability, efficiency and derived sub-characteristics) for academic websites, from the standpoint of prospective and current students. As part of the study, the methodology was used to assess the quality of six typical academic websites. The authors concluded that the quality of the websites evaluated was rather high from the perspective of current and prospective students (54% to 80% of

the specified requirements were satisfied). However they highlighted areas of improvements for all websites.

In a study investigating the usability and accessibility of the top 50 American universities using two popular automated evaluation tools available at the time (Bobby and LIFT for Dreamweaver), Zaphiris and Ellis (2001) found low compliance with the W3C Web Content Accessibility Guidelines (WCAG) and a low usability rating for most of the websites under scrutiny. They also found that there was a significant correlation between the accessibility and usability ratings of the websites.

Ruwoldt and Spencer (2004) evaluated the homepages of 68 universities in Australia, Canada, the USA, south-east Asia and Europe, with a double aim: a) to identify emerging industry standards; b) to make recommendations for improving the quality and usability of the University of Melbourne's own homepage. This study focused primarily on the information architecture of university websites' homepages.

Alexander (2005) tested the usability of fifteen university websites on 39 prospective students who were asked to find a course they were interested in and related information (e.g. cost, entry requirements, etc). They found that only 62% of tasks were completed successfully, which could be explained by five key usability failures: poor information architecture, poor content, poor search results and/or search interface, assuming that many prospective students have domain knowledge about the higher education sector and overuse of PDF documents.

Bao and Ellis (2007) examined the homepages of 21 universities and 10 business schools from around the world using a range of survey methods and drawing on web standards, usability (a subset of Nielsen and Tahir's usability list from 2002) and information architecture criteria. They found that about 45% of the homepages tested had high usability.

In 2008, Precedent (a new media communications consultancy based in the UK) published a report into the websites of traditional universities in the UK (Precedent, 2008). The study involved expert evaluators examining 74 websites using 50 questions (heuristics) divided into four categories: 'Getting the basics right' (15 questions), 'Communicating your propositions' (10 questions), 'Meeting your objectives' (15 questions) and 'Use of technology' (10 questions). In terms of

findings, the average scores for the first three categories came to around 70%, which shows that a majority of universities are getting things right, but that for many there is room for improvement. However the average score for 'Use of technology' was only 33%, suggesting that most universities have not as yet began to embrace Web 2.0 technologies in a significant way.

In summary – although the list of studies presented here does not claim to be exhaustive – it is surprising that only one of the studies mentioned (Alexander, 2005) involved actual users, with the majority employing analytic methods such as heuristic evaluation by expert evaluators. While this approach has its strengths, the lack of formal usability evaluation involving users seems to be a considerable drawback.

2.4 Web 2.0 and social media

Over the last few years, Web 2.0 has become a ubiquitous feature of the World Wide Web. However there is still considerable debate around its meaning. This section will attempt to define what Web 2.0 is, starting with a brief history followed by its main principles, characteristics and typical applications, and finally future developments.

The origin of the term 'Web 2.0' is usually attributed to Dale Dougherty who mentioned it during a conference planning session with Tim O'Reilly and MediaLive International (O'Reilly, 2005a). It then came to public attention the following year, at the first Web 2.0 conference. However, according to Wikipedia[5] the term was first coined by Darcy DiNucci in an article entitled 'Fragmented Future' back in 1999.

For both DiNucci and O'Reilly et al. 'Web 2.0' captures the next generation of web development after the emergence of Web 1.0 throughout the 90s and up to the dot-com burst. Tim O'Reilly (2005b) defines Web 2.0 as:

> *"...the network as platform, spanning all connected devices; Web 2.0 applications are those that make the most of the intrinsic advantages of that platform: delivering software as a continually-updated service that gets better the more people use it, consuming and remixing data from multiple sources, including individual users, while providing their own data and services in a form*

[5] http://en.wikipedia.org/wiki/Web_2.0

that allows remixing by others, creating network effects through an "architecture of participation," and going beyond the page metaphor of Web 1.0 to deliver rich user experiences."

As the term Web 2.0 garnered popularity from 2004 onwards, it also attracted a considerable amount of controversy. Tim Berners-Lee for example described it as a "piece of jargon" and for him it is "what the web was supposed to be all along"[6]. The main reservation concerning the term Web 2.0 is that it is misleading, as it suggests a new version of the World Wide Web, whereas in reality it is an extension of existing (i.e. Web 1.0) technologies. Therefore it has to be seen as a concept or attitude rather than a new technology which "comprises equal parts of evolution and revolution [and whereas] Web 1.0 took people to information, Web 2.0 will take information to people." (Miller, 2005). This view is supported by Bombosch (2007) who sees Web 1.0 communication as mainly "unidirectional, static and 'pushed'" whereas Web 2.0 communication is multidirectional, dynamic and 'pulled' to the user and "corporate publishers no longer have a monopoly over public discourse."

So what are the principles and characteristics of Web 2.0? In a seminal article, O'Reilly (2005a) outlines 7 key principles of Web 2.0 applications, later reordered by Jaokar (2006) to create a clearer model:

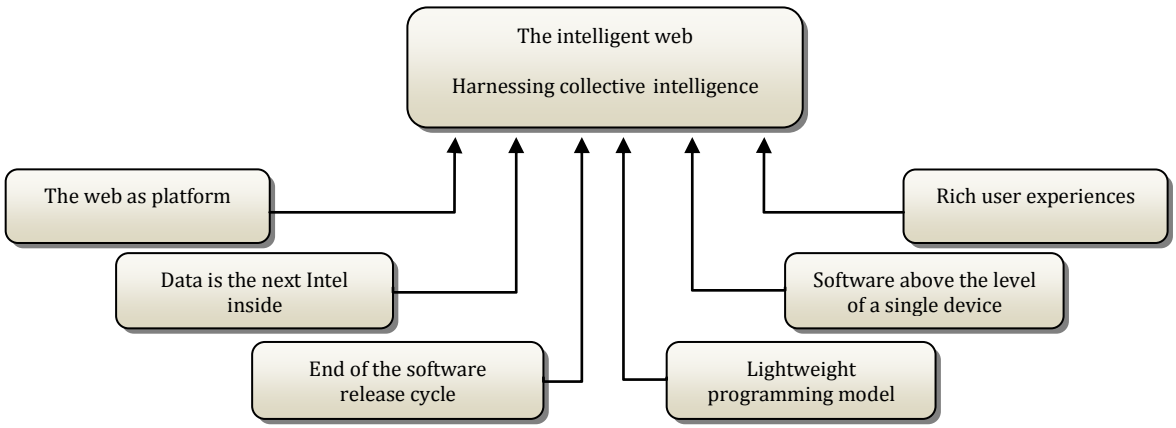


Figure 2.2. Jaokar's reordering of O'Reilly's Web 2.0 principles

Jaokar's view of the 'harnessing collective intelligence' principle as the central theme of Web 2.0 with the others feeding into (and drawing from) it is supported by O'Reilly himself (2006). These features have now become associated with the

[6] A transcript of the podcast is available at http://www-128.ibm.com/developerworks/podcast/dwi/cm-int082206.txt [last accessed 11/01/2010]

concept of 'social media' (Anderson, 2007), an alternative term to Web 2.0 which refocuses on what the technology can do rather than on the technology itself. Therefore the critical idea of Web 2.0 is to transform the World Wide Web into a truly participatory medium and whereas Web 1.0 was mostly read-only, Web 2.0 has fulfilled Berners-Lee's original vision of the web as a read-write medium (Anderson, 2007). Since then social media has come to be associated with such concepts as user-generated content, communities of interest, social networking, tagging, mashups and technologies such as AJAX, Open Source, micro-formats, social software, and many more.

The common thread throughout is the user-centred nature of Web 2.0 and how it has transformed the role of users from passive consumers of information to active content creators, or as Kristaly et al. (2008) put it "from spectator to actor." However, this assertion should be moderated by the fact that the vast majority of users of social media sites are merely readers. A report published by Forrester Research showed that in 2009 73% of US online adults were spectators (i.e. consumers) of social media content, while only 24% were creators and 37% were critics (Bernoff, 2009).

A better understanding of Web 2.0 can be gained by looking at specific examples. O'Reilly *et al.* (2005a) contrasted Web 1.0 applications and concepts with what they considered to be typical Web 2.0 ones to illustrate their point. Their list included Britannica Online, personal websites and directories as Web 1.0 applications compared to, respectively, Wikipedia, blogs and tagging as Web 2.0 alternatives among others.

Bruns (2007) outlines seven key domains of applications that he sees as "driving the development of user-led online environments." These are:

- **Social Networking:** includes typical social networking sites such as Facebook, MySpace and LinkedIn, but also social bookmarking (e.g. delicious), geo-mapping (e.g. Google Maps) and personal blogs.
- **Knowledge Management:** includes collaborative knowledge management sites such as Wikipedia and domain-specific wikis, and user-annotated maps and satellite images (e.g. Google Earth)

- **Creative Practice:** includes image, video and audio sharing sites such as Flickr, YouTube and ccMixter, but also blogs. This is underpinned by Creative Commons, a legal framework which allows for easier re-using and remixing of existing content into new artworks.
- **Multi-User Online Gaming:** includes The Sims (90% of whose content is created by its users).
- **Citizen Journalism:** includes IndyMedia, Slashdots and individually published news and political blogs.
- **Collaborative Filtering:** examples include Amazon's product recommendations (based on users' purchasing patterns) and Google' PageRank system.
- **Open Source Software Development:** includes products such as Linux, OpenOffice, Django, but also application programming interfaces (APIs).

Giving the World Wide Web version numbers inevitably raises the question of "What next?" There is already ample speculation about Web 3.0, however if the meaning of Web 2.0 was fiercely debated, trying to define Web 3.0 is even more confusing. For many however it will be the realisation of the Semantic Web (i.e. a web that is better equipped to read, understand, and process data in order to better satisfy users' requests) envisioned by Berners-Lee. Supporting this idea, Nova Spivack, CEO of Radar Networks (and inventor of the term Web 3.0) says that "Web 3.0 will combine the Semantic Web with social media, enabling a new generation of richer, more shareable, mashable content."

2.5 Universities and the social web

Probably because Web 2.0 is a fairly recent phenomenon, there does not appear to be much research available on its use for marketing purposes in Higher Education and on its impact on recruitment and how it affects how they are perceived by their core audiences.

However there is some evidence that universities are already making use of social media for promotional purposes, even though this is not necessarily uniform and widespread across the HE sector. As the Precedent report concluded, "universities

have not as yet began to embrace Web 2.0 technologies in a way that reinforces their offering at the higher level of their sites." (Precedent, 2008) More specifically, it found that beyond having profiles on Wikipedia (96%) and Facebook or MySpace (71%) UK university engagement with social media was rather limited: if an honourable 47% made use of multimedia (videos, podcasts) and 32% RSS feeds, very few used blogs (7%) or other applications. The authors of the report attribute this mixed result to a certain nervousness on the part of universities who are as yet unsure of how these technologies can enhance their web presence, or at least complement it.

A recent survey of over one thousand US high school seniors (Noel-Levitz et al., 2009) concluded that "social networking is certainly no replacement for a solid, well-designed Web site, but it can support your other e-recruitment efforts." When asked about the kinds of content items they would like to see on a university social network, they listed discussions about courses and academics, discussions about student activities and extracurricular options, insight into school culture and diversity, communication with current students and faculty and communication with prospective students.

Another recent report (Copeland and Lee, 2009) found that universities tend to apply the same recruitment marketing rules as in the past in their use of social media; i.e. they use it as a one-way channel for broadcasting a corporate message rather than genuinely engaging with their young audience.

2.6 Students and the social web

A considerable body of research has been carried out over the last few years to assess the use of Web 2.0 technologies by the so-called 'Digital Natives' (Prensky, 2001) also referred to as the 'Net Generation' or 'Generation Y' (Olsson, 2007) – all of which define the generation of children born in the 80s and 90s, who have grown up with computers, mobile devices, video games, the Internet and the World Wide Web. It is usually assumed that this generation is highly conversant with the latest technologies. A study commissioned by the Joint Information Systems Committee (JISC) (Ipsos-MORI, 2007) suggested that only 65% of participants – British 16 to 18 year olds intending to go to university regularly used social networking sites (SNS)

like Facebook (a further 22% used SNS sometimes). It also found that 39% regularly watched videos or live TV online (another 41% sometimes), but only 27% regularly uploaded video or photo content on media websites such as Flickr or YouTube, or used wikis and blogs (another 35% sometimes). These findings on the use of SNS echo the results of a survey of all students at the University of Bristol (2007), which found that 76% of students used Facebook, by far the most popular SNS (only 26% used MySpace and 15% other SNS). Interestingly, only 2% of respondents in the Bristol survey said they used virtual worlds like Second Life. In a recent study of the impact of the Facebook phenomenon on the student experience, Madge *et al.* (2009) found that "over half of the respondents (55%) had used Facebook to make new 'virtual' friends prior to starting university."

These studies reveal the popularity of Facebook among students; however they also indicate that not all students make extensive use of other Web 2.0 technologies. This is supported by a number of studies (Kennedy et al., 2008); (Caruso and Kvavik, 2005), which have found that while a large majority of students are familiar with core technologies (e.g. basic computer skills, web search, email, mobile telephony and SMS messaging), few are regular and sophisticated users of newer technologies (e.g. blogs, wikis, Second Life, etc), and many are not as digitally literate as might be expected. Sandars and Schroter (2007) also found that although there was high familiarity with Web 2.0 technologies among a group of undergraduate and postgraduate medical students, usage was low except for use of instant messaging and social networking (mainly for personal use) which was high.

Finally, students tend to be divided regarding university lecturers and administrators using Facebook, either for educational or administrative purposes, and particularly for aggressive marketing purposes (Madge et al., 2009); (Mazer et al., 2007).

3 Research methodology

3.1 Introduction

Whereas the two preceding chapters set out to provide the background to the study, the aim of the following three is to present the research itself. The present chapter, the first of the three devoted to the research, focuses on the methodology used to gather the data.

3.2 Survey

The online survey was conducted between the 19th April and the 21st May 2010 using the Bristol Online Survey (BOS) service (http://www.survey.bris.ac.uk/). Its purpose was to gain some valuable quantitative data from prospective university students focusing on the following three areas:

1. The factors that influence their choice of a university and course, and the sources of information do they use to find out about it.
2. Their use of Social Networking Sites (SNSs) and how they view SNSs as a source of information when researching a university and course.
3. The usability criteria (or quality factors) they value most and least in a university-managed website.

3.2.1 Subject recruitment and profiling

Initially, there were two main target audiences for this survey: post-16 students currently preparing for their A-levels and intending to go to university and international students considering studying at a UK university. Introductory letters were sent to the Heads of Sixth Form in 25 schools and to 9 English language schools in the Bristol area, inviting them to promote the survey to their students. Although the letter was followed up by a telephone call ten days later, the response rate was somewhat disappointingly low. However, in anticipation of the possible low response rate from schools, the survey was also promoted to University of Bristol first year undergraduate students and postgraduate students, via the University's student

portal. These students were deemed a suitable target audience on the premise that their experience of choosing and applying for a university course was still fresh in their minds.

In the end it was completed by 102 respondents, 57 (55.9%) of which were female and 45 (44.1%) male, with over 90% in the 16-21 age range. However, only just over one third (37.2%) were A-level students, one of the two initial target groups for the survey. Unfortunately, the low response rate from international students (17.8%) – the second initial target group – compared to British students (82.2%) precluded the validity of comparing results between the two groups, which was one of the original aims of the study. A full summary of the respondents' demographic profile is shown in Table 3.1 below.

	Response percentage	**Response count**
Base: All survey responses	*100%*	*102*
Gender		
Male	44.1%	45
Female	55.9%	57
Age range *		
16-17	19.7%	20
18-21	73.6%	74
22-25	3.0%	3
26-29	3.9%	4
Nationality *		
British	82.2%	83
Other	17.8%	18
Current situation		
Preparing A-levels	37.2%	38
In 1st year of university degree	52.9%	54
Doing a Masters degree	6.7%	7
Other	2.9%	3

Table 3.1. Summary of demographic profile of respondents

***** one respondent did not give her age

3.2.2 Online survey design

The online survey took the form of a questionnaire divided into three main sections corresponding to the three areas already identified, plus a fourth section to collect the demographic information presented in 3.2.1.

The question types used were wide ranging and included multiple-choice, selection lists, numeric point distribution, Likert Scales, filter questions and open-ended questions to give respondents an opportunity to provide their own answer if they wished. Likert Scales were of particular value to the purpose of the survey. They are a commonly used rating scale in which respondents are asked to indicate the extent to which they disagree or agree with a given statement. Another benefit of this method is that a number of options for a particular question can be presented as a list, which "is simple for the respondent to complete and simple for the researcher to code and analyse." (Collis and Hussey, 2003) However, there are two issues to consider when using Likert Scales: how many points to include on the scale and should the scale have an even or odd number of points? (Sharpe *et al.*, 2007) They suggest using a medium-sized range (e.g. 4 or 5 points) for questions that invite respondents to make judgements in terms of likely/unlikely, agree/disagree, etc. As for the number of points on a Likert Scale, there are pros and cons to both approaches. However it was felt that in the context of the survey a neutral opinion was legitimate. Therefore for this questionnaire, a five-point scale was chosen for all Likert Scale questions, with a neutral point (e.g. unsure, neither agree nor disagree, etc) in the middle.

The first section – relating to the factors that influence prospective students in their choice of a university and course, and the sources of information they use to find out about it – contained four questions consisting of several statements that the students had to grade on a five-point Likert Scale. The factors used for question 2 (*When looking for a university course, what factors are most and least likely to influence your choice?*) were the seven factor categories used by Maringe (2006): i.e. Programme, Price, Promotion, People, Prospectus, Prominence and Place. However whereas Maringe asked sixth form students to rank the thirty key constituent factors that made up these categories on a 1-10 scale, in the present survey students were asked to indicate the likeliness of each category influencing their choice on a five point

Likert Scale. This was deemed to provide a sufficient granularity of information for the purpose of the survey.

The second section contained three questions that sought to find out about the respondents' use of technology and SNSs, and elicit their attitude towards universities presence on SNSs. Each question was presented in a grid and consisted of several statements using a range of answer types, including MCQs, Yes/No, selection lists and Likert Scales.

The third section – focusing on the usability criteria (or quality factors) they value most and least in a university-managed website – required the respondents to rate the MUG categories and sub-categories (Keeker, 1997) enhanced by Tung *et al.* (2009), following the weighting method used by Agarwal and Venkatesh (2002). First the respondents had to distribute 100 points between the five usability categories (i.e. Content, Ease of use, Promotion, Made-for-the-medium and Emotion) according to the relative importance that they accorded to each. Then they had to distribute the points allocated to four of the categories (all except Promotion which does not have sub-categories) to their corresponding sub-categories. All data entry was done manually. This, combined with the inability of the BOS system to do calculations, meant that the total scores given to the categories and sub-categories could not be checked automatically. As a consequence, a few responses (particularly those for the sub-categories) were entered incorrectly (i.e. out of 100 instead of the score allocated to the corresponding category) and had to be recalculated.

3.3 Interviews

The interviews were conducted between the 11th and 22nd June 2010 using the Repertory Grid Technique and the Enquire Within (http://www.enquirewithin.co.nz) to conduct the interview process and record the interviewees answers. Each interview lasted up to one hour.

The purpose of the interviews was to elicit bipolar constructs that prospective students attach to university websites and assess how six such websites measure against these constructs.

3.3.1 Subject sampling

Eight students (five female and three male) aged between 18 and 20 were recruited from the pool of 102 who had completed the survey. Four were first year undergraduate students, two postgraduate masters' students and two A-level students. They were offered a £10 incentive in compensation for taking part plus reimbursement of their travel expenses if applicable (and reasonable!).

Although the initial intention was to interview twenty students – ten UK students and ten international students – this number was revised due to the low number of international students who responded to the survey. As a result one of the aims of the project, which was to compare results between UK and international students, had to be abandoned. Also, existing research literature in the use of RGT as a perception elicitation technique in user interface design indicates that a sample of between 6 and 10 interviewees is often sufficient in eliciting a comprehensive list of constructs for a given study(Crudge and Johnson, 2004).

3.3.2 Repertory Grid interview process

RGT was devised in the mid-50s by George Kelly, an American psychologist and educator, father of the Personal Construct Theory (PCT). PCT posits that people make sense of their own experiences with the world through a system of personal constructs (i.e. views that individuals construct about the world as a result of their experience of it). This system also reveals how individuals are likely to interpret this world as they continue to experience it. Kelly then created the RGT as a means of eliciting people's mental map of constructs whilst minimising 'interviewer biases during the interview.

The Repertory Grid Technique consists of three successive steps:

1. Element selection
2. Construct elicitation
3. Element rating against the elicited constructs

The interviews were conducted using Enquire Within (EW), an interactive software tool based on the RGT and designed to support researchers with the entire interview process. It contains all the necessary functions to develop a new session (e.g. capture

the elements, generate random triads, elicit constructs, rate the elements, etc) and analyse the results afterwards. EW is flexible (it is easy to modify options along the way) and quick to learn, which makes it an invaluable tool when working with RGT. A session template was created and then used to create the session for each individual interview.

3.3.2.1 Element selection

Step one of the RGT process consists in selecting the elements that will be used for the interviews. Elements are concrete examples of the domain of investigation – in this case university websites – used to stimulate the interviewees and help them identify a number of constructs (i.e. what they perceive to be important to them) relevant to that domain. It is usually accepted (Hunter and Beck, 2000, Hinkle, 2009) that a minimum of six elements is required to provide a sufficient number of triads (i.e. sets of three elements). The element set should carry the same weight and be equally representative of the domain of investigation. For this study the websites of six UK research-intensive universities were selected as the elements: Kings College London (KCL), London School of Economics (LSE), University of Bristol, University College London (UCL), University of Southampton, University of Warwick. The reason for choosing these universities is that they are all members of the Russell Group and they have a similar ranking in The Sunday Times University Guide[7], and therefore they are in direct competition with each other. Of particular interest was how the University of Bristol compared to the other universities selected in terms of its web presence, hence the choice of three Russell Group universities ranked immediately above and two below.

Approximately one week before the interviews, the students were sent details of the interview and a consent form, and asked to familiarise themselves with the six websites before the interview. On the day of the interview, they were given 10 minutes to look at the websites again if they wished. In addition, screenshots of the homepages of the six websites were available and used as a prompt during the construct elicitation stage. At the start of the interview, the participants were reminded of its purpose and of the RGT procedure. They were also told not to worry if they could not think of a new construct for a particular triad (in such cases a new

[7] http://extras.timesonline.co.uk/stug/universityguide.php [accessed on 30/06/2010]

triad would be generated), and that they could create more than one construct per triad if they were inspired to do so.

3.3.2.2 Construct elicitation

Step two of the process aims to get interviewees to express the characteristics that they attached to the elements in terms of bipolar constructs. This is achieved through two complementing interviewing techniques: triading and laddering.

Triading consists in randomly generating sets of three elements (websites). Triads are automatically generated using EW and interviewees asked to think of something that two of them have in common (similarity) that makes them different from the third. The resulting contrasting poles form a bipolar construct, for example *appealing design* vs. *dull design*. This process is repeated with different triads, until the interviewee runs out of new ideas. The RGT methodology also encourages interviewers to use a qualifier of the type "in terms of" in order to focus the interviewee's attention on a specific aspect of the elements. For example, in the context of the present study, a typical question for eliciting new constructs looked like: "Considering the KING'S COLLEGE LONDON WEBSITE, the LONDON SCHOOL OF ECONOMICS WEBSITE and the UNIVERSITY OF WARWICK WEBSITE - think of something that two of them have in common that makes them different from the third, in terms of what you would consider important as a prospective student."

Optionally, laddering can then be used to clarify and refine the elicited constructs. It consists in asking the interviewee about their deeper values and preferences through a series of prompting questions (e.g. whether and why a particular construct is important to them, which pole of the construct their prefer). For the purpose of the present study, participants were systematically asked to identify which pole of each elicited construct they thought was preferable for a university website. In some cases, this process generated new constructs.

In order not to influence the interviewee's views or responses, care was taken not to ask biased or misleading questions. An Enquire Within session was created for each interviewee and all new constructs were recorded in the EW software.

3.3.2.3 Element rating

Once the interviewee had run out of new constructs, they were asked to rate the six websites (elements) against their own constructs. They were showed how to operate the EW software for this particular purpose and left alone to rate each site against each construct on a 5-point scale. Finally EW provides a means of differentiating elements and constructs on the basis of their correlation level. For example if two elements have a high correlation (e.g. above 85%), the interviewee can be asked to confirm whether they really see these two elements as similar. If they don't, then a new construct can be elaborated on the basis of what differentiates them. This process was applied in some cases, depending on the time available.

3.4 Data analysis

3.4.1 Survey

The raw data from the survey were imported from BOS into Microsoft Excel where statistical information (e.g. means, standard deviations, percentages and total scores) was extracted in the form of tables and charts. A certain amount of 'tidying up' had to be done to compensate for missing or incorrectly entered data.

When data was missing, the means and standard deviations were recalculated to exclude the missing response(s). So although there were 102 responses overall, on the rare occasion when data was missing for a particular question, these values were calculated out of the actual number of responses for that question (the number of responses for a question was never below 99).

Incorrectly entered data occurred mainly in section 3 of the questionnaire, for those questions (15 to 18) that required respondents to weigh the MUG sub-categories on the basis of the number of points (out of 100) they had allocated to the parent category. On a few occasions respondents allocated points to sub-categories out of 100 (i.e. as a percentage) rather than using the number of points allocated to the parent category. The problem was due to the limitations of BOS as it cannot handle number calculations. On those rare occurrences, the data was manually corrected.

3.4.2 Interviews

In order to analyse the ratings given to the websites by each interviewee on the constructs they identified, the rating points (1 to 5) where converted to a score that reflected how much the rating differed from neutral (i.e. 3 on the 5-point scale) (Hinkle, 2009). So 1 on the 5-point scale (by default the construct pole) was converted to 2 points and 5 (the contrast pole) to -2 points (Table 3.2).

Construct scale	Score point conversion
1	+2
2	+1
3	0
4	-1
5	-2

Table 3.2. Construct rating scale to score point conversion

It has to be noted that in some cases the point conversion had to be reversed, because the interviewee had indicated preference for the contrast pole, so a ranking of 1 on the Likert Scale was allocated -2 points and a ranking of 5 +2 points. Once this process was completed, the points allocated by an interviewee to a website were added and divided by the number of constructs to obtain a mean value representing their overall perception of that website. This process was repeated for all interviewees and websites (the results can be seen in section 4.3.2), and the mean of the difference scores were calculated.

4 Analysis of research findings

4.1 Introduction

Whereas the previous chapter explained *how* the research was conducted, the present chapter sets out to provide a detailed account of the data in a structured manner. The data was extracted and statistically analysed using Microsoft Excel, and the results presented in the form of tables and charts.

4.2 Survey results

4.2.1 Section 1 – Choosing a university and course

This section consisted of four key questions designed to gain an understanding of how prospective students go about finding information on the university and course they are interested in.

4.2.1.1 When looking for a university course, what factors are most and least likely to influence your choice?

This question proposed a list of seven categories of factors – as explained in section 3.2.2, these categories were borrowed from Maringe (2006) – which the students had to rank on a 5-point Likert Scale. This question was designed to find out whether website related factors were likely to be of importance to prospective students.

The results (Table 4.1) suggest that programme, place and prominence (among which institutional website is one factor) factors are by far the most important to prospective students in determining their choice of a university course (well over 80% of respondents said they were likely or very likely to be influenced by these three factors).

In addition two thirds of respondents said they were likely or very likely to be influenced by prospectus factors. It is also worth noting that promotional activities were not perceived to be significantly influential by a majority of respondents.

	Very unlikely	Unlikely	Possibly	Likely	Very likely
Programme (field of study, courses, majors, course structure and degree organisation)	0%	0%	4%	**29%**	**67%**
Price (fees, flexibility in payment, effort needed to qualify, opportunities sacrificed, distance from home, transport and living costs, opportunities for part time work)	19%	16%	26%	23%	16%
Promotion (advertising in local and national press, publicity about academic research, publicity about teaching excellence, electronic media and marketing communications)	9%	28%	34%	25%	4%
People (gender composition, tutors credentials, alumni and personal contacts, graduate profiles)	4%	17%	29%	**38%**	**12%**
Prospectus (the university prospectus, programme booklets)	1%	1%	31%	**43%**	**24%**
Prominence (institutional reputation, staff reputation, press reviews by national newspapers, institutional websites, league tables)	0%	2%	14%	**30%**	**54%**
Place (campus accommodation, degree credits, facilities, racial diversity, residential requirements, class sizes)	0%	5%	9%	**48%**	**38%**

Table 4.1. Factors influencing choice of university course

4.2.1.2 When researching a university's academic credentials and/or a course you are considering, what sources of information are you most and least likely to use?

This question was designed to determine the importance of web related resources in the search for a university course.

The results (Table 4.2) suggest that while a vast majority (85%) of prospective students are likely or very likely to visit universities in person, an equally high number (87%) are likely or very likely to visit universities official websites as part of their research. Slightly fewer (78%) are likely or very likely to ask friends or relations. Finally, while just over half (58%) are likely or very likely to use a student community / university comparison website, very few said they were likely or very

likely to look at universities official SNSs profiles or SNSs groups related to universities as part of their research.

Several respondents also mentioned UCAS and newspapers as additional sources of information.

	Very unlikely	Unlikely	Possibly	Likely	Very likely
The university's official website	2%	3%	8%	**20%**	**67%**
The university's official profile on SNSs	**24%**	**27%**	33%	11%	5%
Groups related to the university on SNSs	**20%**	**33%**	34%	11%	2%
Student community / University comparison website (e.g. Whatuni.com, The Student Room, Good University Guide, etc)	5%	10%	27%	**36%**	**22%**
Phoning or emailing the university	19%	20%	**27%**	23%	11%
Visiting in person (e.g. Open Day)	3%	4%	8%	**27%**	**58%**
Asking friends or other people for their opinions or experiences	2%	6%	14%	**53%**	**25%**

Table 4.2. Sources of information used when researching a university's academic credentials

4.2.1.3 When researching the social life surrounding a university you are considering, what sources of information are you most and least likely to use?

This question was designed to determine the importance of web related resources in the search for a university in terms of the social life around it rather than its academic credentials.

The results (Table 4.3) contrast with those of the previous question. Only a small majority of respondents (56%) see a university's official website as a definite source of information on the social life surrounding it. About two thirds are likely or very likely to use a student community / University comparison website and about three quarters will rely on a visit in person or friends' opinions or experiences. Interestingly only a minority (28% and 38% respectively) said they would use a university-created SNSs or a university-related SNSs group.

	Very unlikely	Unlikely	Possibly	Likely	Very likely
The university's official website	5%	15%	24%	**32%**	**24%**
The university's official profile on SNSs	21%	20%	**31%**	22%	6%
Groups related to the university on SNSs	20%	17%	25%	25%	13%
Student community / University comparison website (e.g. Whatuni.com, The Student Room, Good University Guide, etc)	6%	10%	20%	**36%**	**28%**
Phoning or emailing the university	**40%**	**30%**	22%	6%	2%
Visiting in person (e.g. Open Day)	3%	5%	19%	**35%**	**38%**
Asking friends or other people for their opinions or experiences	2%	6%	14%	**53%**	**25%**

Table 4.3. Sources of information used when researching the social life around universities

4.2.1.4 Among these sources of information, which are you most or least likely to trust when researching a university or course?

This question sought to assess the perceived trustworthiness of the various sources of information referred to in the previous questions.

	Definitely not	Probably not	Unsure	Probably yes	Most definitely
What the university says about itself through its official channels (e.g. website, course prospectus, SNSs profiles, etc)	2%	8%	19%	**50%**	**21%**
What is said about it on SNSs	8%	17%	34%	37%	4%
What is said about it on student community / university comparison websites (e.g. Whatuni.com, The Student Room, Good University Guide, etc)	3%	9%	18%	**57%**	**13%**
What my teachers tell me about it	2%	11%	24%	**53%**	**10%**
What friends tell me about it	1%	5%	27%	**49%**	**18%**

Table 4.4. Sources of information most and least likely to trust when researching a university or course

The results (Table 4.4) suggest that the most trusted sources of information are official university channels, such as institutional websites and SNSs profiles (71% said they were likely to trust such sources) and what is said about universities on student community / university comparison websites (70%). Friends and teachers are only trusted by small majorities (57% and 53% respectively), which may come as

a surprise. However, what is said on university-related (but not created) SNSs groups is not seen as trustworthy by a majority (59% said they were unsure at best).

4.2.2 Section 2 – Use of social networking websites

This section contained three key questions designed to gain an understanding:

a) of how prospective students access the internet and of their SNSs use habits,

b) of their attitude towards universities having a formal presence on popular SNSs, and the role SNSs play in their search for a university course.

As discussed in section 2.5 universities have started to embrace the social web to supplement their web presence. However, many are yet to find a way to harness its possibilities in a meaningful way. It was also suggested in section 2.6 that students for their part have adopted these technologies wholeheartedly and have made them a ubiquitous part of their life.

4.2.2.1 Which device(s) do you use to access the Internet?

This question sought to uncover what is the most common device used by students to access the Internet, and in particular their use of mobile devices.

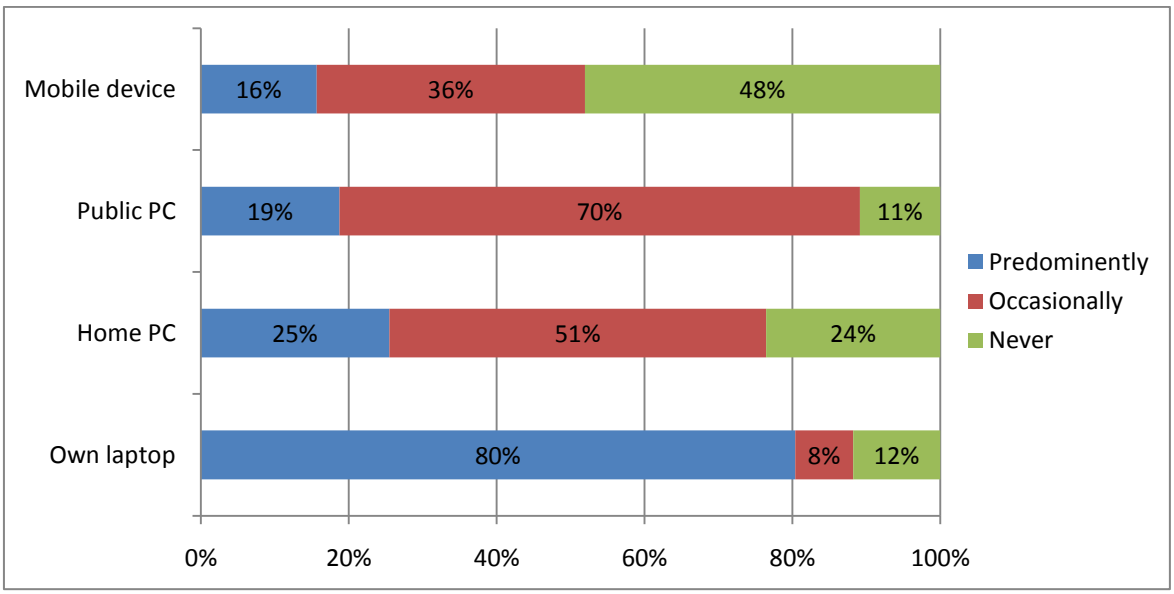


Figure 4.1. Devices used to access the internet

Figure 4.1 shows that an overwhelming majority (80%) of respondents have their own laptop and use it as their preferred means of accessing the Internet. Also of interest is the fact that only 16% said they use a mobile device regularly (e.g. iPhone) to access the Internet. This suggests that either the penetration of mobile devices in

this age range may not be as high as is sometimes assumed, or that the convenience of using such devices for regularly accessing the Internet is not entirely satisfying. Whatever the reason, and despite talks of a "mobile internet revolution" for some time (O'Nolan, 2010), for most people mobile devices are a secondary means of accessing the web.

4.2.2.2 Do you have an account with the following social networking sites?

This question contained two follow-on questions (*"10i. If yes, for what purpose"* and *"10ii. How often do you use the sites you are registered with?"*). The aim was to capture a snapshot of the respondents' use of SNSs, in particular what SNSs are the most popular with prospective students, how often they use them and for what purpose.

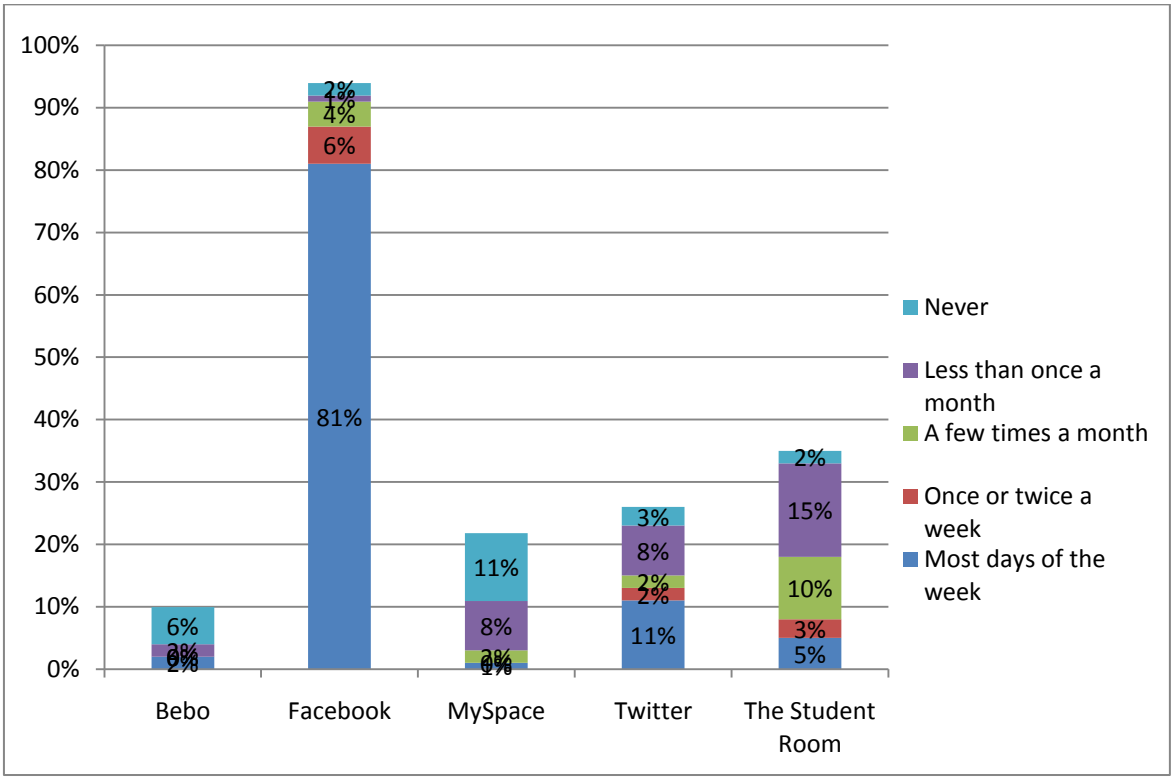


Figure 4.2. Percentage of students with SNS profiles and frequency of use

As Figure 2.1 shows, by far the most popular SNS is Facebook, with over 90% of respondents saying they have a Facebook profile. Significantly, the chart also shows that an overwhelming majority of respondents with a Facebook profile are active users (87% or respondents said they use Facebook at least once a week with many using it most days of the week). Perhaps surprisingly, the second most popular SNS in terms of membership is The Student Room (TSR)– a free student discussion forum – with over a third of respondents having a TSR profile. However few seem to be

using it regularly (only about 20% of those with a TSR profile said they use it a least once a week). Although Twitter only comes third in terms of membership (26% said they have a Twitter account), it comes second after Facebook in terms of active users (half of those with a Twitter profile said they use it a least once a week). Active use of other major SNSs (i.e. Bebo and MySpace) is negligible.

Figure 4.3 for its part shows that the respondents who said they have an SNS profile with one or more of the five SNSs under scrutiny use them primarily for social / fun purposes. Almost all Facebook users (98%) use it for socialising and fun, while 14% said they use it for study purposes. The exception is TSR which a majority of students with a TSR profile (86%) seem to use primarily for study purposes.

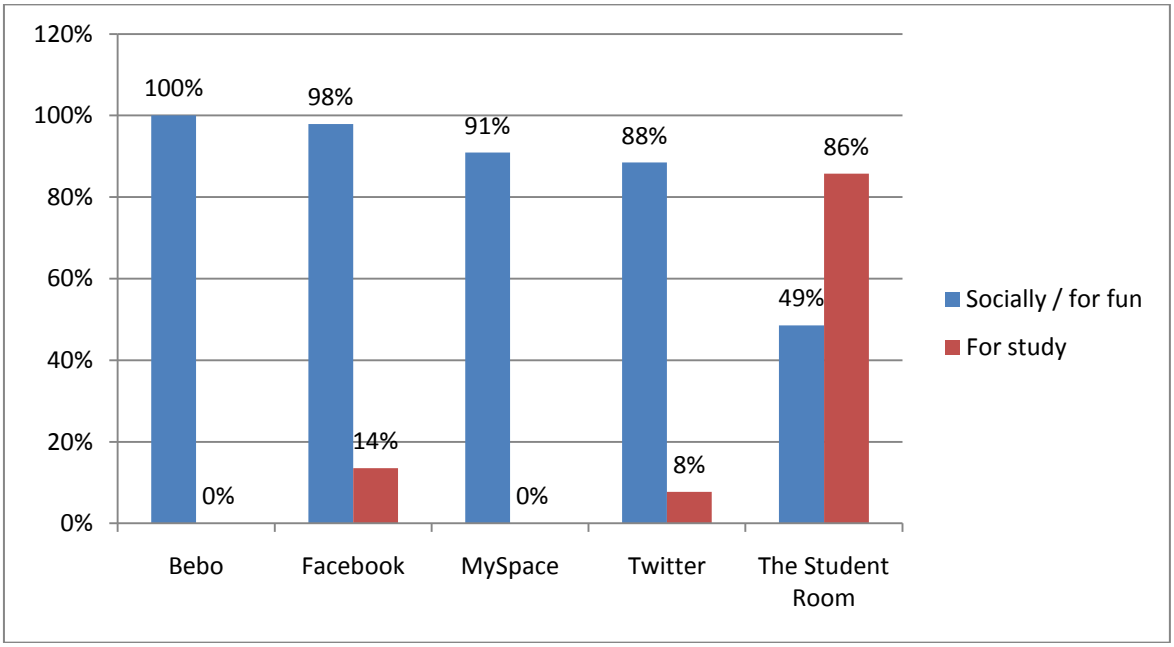


Figure 4.3. Purpose of use for students with SNS profiles

In addition to the above, several students said they used YouTube, mainly for fun and almost every day.

4.2.2.3 To what extent do you agree or disagree with the following statements?"

This question contained 12 statements which the respondents had to rate on a 5-point Likert Scale according to their level of agreement or disagreement. The aim was to elicit their attitude towards universities using SNSs as part of their promotional strategies, and towards using SNSs as part of their information seeking behaviour when researching a university.

Table 4.5 sums up the responses to these 12 statements.

	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
Q12a. It's a good idea for universities to create an official profile on SNSs.	3%	7%	35%	**39%**	**16%**
Q12b. I dislike it when organisations like universities are present on SNSs.	10%	32%	**39%**	16%	3%
Q12c. I can't see any use for a university to create an official profile on SNSs.	**10%**	**39%**	27%	17%	7%
Q12d. I would never join a university-created SNS group.	**15%**	**49%**	24%	9%	4%
Q12e. I would use a university-created SNS group to find out about what it's like to study at that university.	9%	21%	25%	**41%**	**5%**
Q12f. I would use a university-created SNS profile to meet other students going to the same university as me.	5%	13%	22%	**42%**	**19%**
Q12g. I would use a university-created SNS profile to find out about what the social life is like at that university.	5%	14%	28%	**48%**	**5%**
Q12h. I would use a student-created SNS group to find out about what it's like to study at that university.	8%	18%	24%	**38%**	**13%**
Q12i. I would use a student-created SNS profile to meet other students going to the same university as me.	6%	11%	18%	**43%**	**23%**
Q12j. I would use a student-created SNS group to find out about what the social life is like at that university.	5%	13%	17%	**47%**	**19%**

Table 4.5. Respondents views on their and universities' use of SNSs

Q12a to Q12d suggest that if respondents are not overwhelmingly supportive of universities being present on the SNSs they use, they are not either strongly opposed to it. For example, just over half (55%) of respondents agreed or strongly agreed that it is a good idea for universities to have an official profile on SNSs, and just over a third (35%) expressed a neutral view, leaving only 10% disagreeing. Likewise, relatively few respondents (19%) agreed with statement Q12b (I dislike it when organisations like universities are present on SNSs), however no clear majority disagreed either (49% said they disagreed) and almost 40% expressed a neutral

opinion. Finally, statement Q12d suggests that about two thirds (65%) of respondents would be prepared to join a university-created SNS group, with a further 24% being unsure and only 13% who would probably not consider it.

Q12e to Q12j intimate that on the whole a majority of respondents agreed they would use a SNS group (either university-created or student-created) as part of their information seeking strategy when researching a university. The one exception is Q12e (I would use a university-created SNS group to find out about what it's like to study at that university.), a statement which less than half (46%) of respondents said they agreed with (only 5% strongly agreed). Otherwise, between 51% and 66% said they agreed or strongly agreed with statements Q12f to Q12j. However similar the responses to these statements are, it is possible to discern some subtle trends. First of all, when asked about using a university-created group (Q12e to Q12g), it seems that the most popular use for such a group is meeting other students going to the same university (61%). Secondly, it seems that using a SNS group (whether university-created or student-created) to find out about what it's like to study at that university is the least popular use (barely 50% agreed that they would use a student-created group for this purpose, hardly more than those who agreed they would use a university-created group for the same purpose).

Some of the more representative free comments for this section included:

> *"I would probably assume that a student created group/profile is not necessarily representative but more authentic." (Female, 20, non-British, 1st year student)*
>
> *"When I started the university, there was a SNS for the residence I was in, and this was very useful to gain extra information about what to bring and to find out who I was living with before I started" (Female, 19, British, 1st year student)*
>
> *"Visiting the university itself gave me an idea of what types of people go there and how good the social life is. Using SNSs didn't help at all so I don't use them to look into unis." (Female, 18, British, preparing A-levels)*
>
> *"I think an official YouTube presence is more effective than the other SNSs mentioned; Facebook is entirely social in my opinion and The Student Room should be left as a forum for students to chat to each other. But I think a*

university YouTube channel might be a good idea." (Male, 20, British, 1st year student)

"I would strongly recommend that a university should have an official weblog, where selected authentic general articles from both students and faculty are published. [...] Facebook and other SNNs are too informal and unreliable to maintain 'quality'." (Male, 26, non-British, postgraduate)

"If a university is present on SNS sites (excluding YouTube but including Facebook, Myspace, Bebo) it shows that the particular university does not have any academic reputation and wants to attract students, whoever they may be either with good or bad qualifications, to come and study only for the purpose of making money." (Male, 21, British, 1st year student)

These comments underline the ambivalent attitudes of prospective students towards universities using popular SNSs like Facebook, and the potential negative impact it may have on some students.

4.2.3 Section 3 – Weighing of the Microsoft Usability Guidelines

This section differed from the previous two in that it required respondents to numerically rate the MUG categories and sub-categories as revised by Tung et al. (2009). First the respondents were asked to weigh the five MUG categories by distributing 100 between them, and then to distribute the points allocated to each category between all its sub-categories. The aim was to evaluate the relative importance of these usability criteria to prospective students when they visit university websites.

MUG categories	Mean	Standard Deviation
Content	38	14
Ease of use	28	11
Promotion	11	7
Made-for-the-medium	13	9
Emotion	10	9

Table 4.6. Relative importance of MUG categories for university websites from the viewpoint of prospective students

Means and standard deviations of the weights of the different MUG categories are shown in Table 4.6. The results reveal a number of interesting findings:

- Content was by far the most important category. However there was considerable variance across responses, as the Standard Deviation (14) suggests. Among the sub-categories, relevance and quality were seen as the most important factors of good content, followed by depth and breadth, and current and timely information. Media use was perceived as the least important content sub-category.

- Ease of use was seen as the second most important criteria of a usable university website, with convenient services and structure scoring slightly higher than appearance. Feedback gathered the lowest score.

- The other three criteria (Promotion, Made-for-the-medium and Emotion) were all perceived as relatively unimportant by prospective student for university websites.

4.3 Interview results

As explained in section 3.3, interviews using the Repertory Grid Technique (RGT) provided the other source of data collection for this project.

4.3.1 Construct elicitation and classification in MUG

Table 4.7 presents the number of comments in each of the revised MUG categories and sub-categories out of a total of 119 comments from the eight interviews.

The results show that the overwhelming majority of comments concerned two major categories: almost two thirds (62%) of comments related to ease of use issues, and a further 30% to content issues. Emotion only gathered just under 7% of comments, while made-for-the-medium gathered just 1 comment (relating to refinement) and none of the comments related to promotion.

Within the ease of use category, comments were split between three sub-categories. Convenient services was the most commented on (42% of comments relating to ease of use, and 26% of all comments), followed by structure (32% of comments relating to ease of use, and 20% of all comments) and appearance (26% of comments relating

to ease of use, and 16% of all comments). There were no comments relating to feedback.

MUG categories & sub-categories	No of comments	Percentage
Content	**36**	30.3%
Relevance	10	
Quality	0	
Media use	23	
Depth and breadth	2	
Current/timely information	1	
Ease of use	**74**	62.2%
Appearance	19	
Convenient services	31	
Structure	24	
Feedback	0	
Promotion	0	0.0%
Made-for-the-medium	**1**	0.8%
Community	0	
Personalisation	0	
Refinement	1	
Emotion	**8**	6.7%
Challenge	0	
Plot	1	
Character strength	7	
Pace	0	
Total	**119**	100.0%

Table 4.7. Number of comments in each MUG category

Comments for the content category were split between four sub-categories. Media use attracted the most comments (64% of comments relating to content, and 19% of all comments), followed by relevance (28% of comments relating to content, and 8% of all comments). The comments relating to depth and breadth, and current and timely information were negligible (2 and 1 respectively).

A summary of the constructs elicited during the interviews and classified into the MUG categories and sub-categories is presented in Table 4.8.

MUG categories	Interview comments
Content	
Relevance	News and events headlines on the homepage say a lot about the university (what research it does, awards it gets); it can inspire to go there.
	An emphasis on people associated with the university showcases what the university does and the quality of its people.
	Clear focus on prospective students.
	Outgoing ('We are here for you').
Quality	No comments
Media use	Colourful websites are more appealing.
	Use more vibrant colours
	Interesting pictures make it a more pleasant experience.
	A single, eye-catching larger image like Warwick and Southampton is more striking and engaging. / Prefer several smaller pictures on homepage.
	Dynamic content makes the website seem more modern, and more interesting to use.
	Sites that offer new media stuff (e.g. podcasts, videos) are more interesting.
	Photos related to the university (e.g. students, buildings, etc) give a sense of what the university and the city is like.
	Photos of students on the homepage give an idea of the type of students who go there in context.
	Equal mix of images and text. / More visual and graphic.
	Big, easy to read logo.
	Larger font size is easier to read.
Depth and breadth	Website offers a good variety of information on the homepage.
	A minimalist homepage like Warwick does not give enough information about the university
Timely/current information	Content seems to be changing and updated regularly.
Ease of use	
Appearance	A website that looks fresh and original is more appealing.
	A homepage with an eye-catching image and less text is more attractive.
	It is more stimulating to use a more modern-looking website, not so interesting to use a dull-looking website.
	More likely to find the relevant links if they are highlighted.
	Homepage looks clear and uncluttered
	A site that looks modern is more appealing to a younger person.
	Pleasant, inviting design.
	Most people are visual so important to use relevant images that showcase the university.
	A fixed, centred layout that does not stretch across the browser looks better on large screens.

Convenient services	I prefer a left hand side navigation menu, it's easier to read down the list than across.
	Navigation uses a combination of horizontal tabs and contextual vertical link menus
	A clear link for prospective students on the homepage makes it easier to find relevant info, especially if new to website.
	Useful to have a separate link for current students.
	It is easier to find what you want on a homepage with an eye catching image and fewer links.
	Easy to navigate around. Simple navigation menu
	An obvious alphabetical search function (A-Z index) makes it easier to find what you want if you know what you want.
	Obvious contact link. Clear link to alumni
	Better to have a limited choice of links on homepage.
	Pages come up fast.
	Obvious search box in the top left corner (better than on the right)
Structure	Single column layout is less confusing as you don't have to choose between information.
	A consistent page layout makes the site easier to navigate and use.
	Just want to find what you are looking for, so more text to read is more distracting.
	Less information, more focussed.
	Less time consuming, can find things more easily, not so frustrating.
	Don't want to be bombarded with irrelevant information.
	More text makes it harder to navigate, need to scroll down.
	Don't want to have to navigate through irrelevant links, want to go quickly were you want to go.
	Important not to be dazzled by information on homepage.
	Consistent formatting between pages.
	Well spaced layout looks better thought out, designed; gives a better impression, shows that they care.
	The better use of space gives more information. Looks more serious and updated.
	Prefer more complex, because simpler design is not so interesting and does not give enough information.
	If too cluttered, more likely to miss what one is looking for.
Feedback	No comments
Promotion	
Made-for-the-medium	
Community	No comments
Personalisation	No comments
Refinement	Interactive prospectuses are more interesting.
Emotion	

Challenge	No comments
Plot	Emphasis on their achievements.
Character strength	A well thought-out tagline gives a flavour of the kind of university they are; important for first impression. The convention is to put the logo on the left, so putting it on the right shows that you are different. More traditional colours are valued and timeless, says 'this is what I am'. A less intimidating look and feel is more inviting than a more business-like one. Research establishes the university research credentials.
Pace	No comments

Table 4.8. Classification of interviewee comments into MUG categories

4.3.2 Websites ratings

Table 4.9 presents the mean of the difference scores that each interviewee allocated to the six university websites, on the basis of the personal constructs that they identified during their interview, and the cumulated score for each website.

Interviewee	Soton	Bristol	Warwick	UCL	LSE	KCL
int01	0.89	1.00	0.89	0.56	-0.22	0.11
int02	1.31	-0.54	1.62	0.46	-0.92	-1.08
int03	1.25	-0.31	1.31	0.75	-1.13	-1.25
int04	-1.33	2.00	-1.53	1.33	1.33	1.53
int05	0.87	0.20	0.93	1.33	-0.73	-1.27
int06	-0.33	0.27	-0.47	-0.07	-1.00	0.07
int07	0.59	-0.76	0.12	-0.06	-0.18	0.29
int08	0.32	-0.95	-0.58	0.05	0.74	-1.00
Total score	**3.55**	**0.90**	**2.29**	**4.36**	**-2.11**	**-2.59**

Table 4.9. Mean score by interviewee and total score for each website

Based on these results, it is possible to establish a subjective ranking of the six websites in order of preference:

1. University College London
2. University of Southampton
3. University of Warwick
4. University of Bristol
5. London School of Economics
6. King's College London

However, the results do not indicate an overwhelming preference for any one of the websites. This is substantiated by the fact that the highest scoring website (UCL) scored 4.36 out of a possible maximum total score of 16. Looking at individual rankings also suggests that interviewees differed quite widely in their preferences. For example one interviewee (int04) placed Bristol as her favourite site with maximum points (2) and KCL as her second choice with 1.53 points, whereas all other interviewees rated these two sites considerably lower.

Table 4.10 shows the means and standard deviations of the difference scores for each MUG category/sub-category by website. In other words, it presents how each website scored across all interviewees on the MUG categories and sub-categories.

Category	Soton	Bristol	Warwick	UCL	LSE	KCL
Content	**0.06**	**-0.06**	**-025**	**0.56**	**0.14**	**-0.25**
	(1.51)	**(1.41)**	**(1.73)**	**(1.30)**	**(1.57)**	**(1.46)**
Relevance	0.20	-0.10	-1.10	0.40	1.30	-0.30
	(1.23)	(1.60)	(0.99)	(1.35)	(0.95)	(1.42)
Media use	0.17	-0.26	0.35	0.57	-0.61	-0.39
	(1.64)	(1.29)	(1.80)	(1.38)	(1.37)	(1.50)
Depth and breadth	-1.50	1.50	-2.00	1.00	2.00	1.00
	(0.71)	(0.71)	(0.00)	(0.00)	(0.00)	(1.41)
Current/timely information	-1.00	2.00	-2.00	1.00	2.00	1.00
	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
Ease of use	**0.61**	**-0.05**	**0.50**	**0.46**	**-0.36**	**-0.43**
	(1.57)	**(1.47)**	**(1.60)**	**(1.29)**	**(1.40)**	**(1.45)**
Appearance	0.74	-0.26	0.42	1.00	-0.16	-0.84
	(1.37)	(1.37)	(1.39)	(1.20)	(1.57)	(1.54)
Convenient services	0.26	-0.10	0.16	0.16	-0.32	-0.26
	(1.77)	(1.64)	(1.77)	(1.39)	(1.38)	(1.53)
Structure	0.96	0.17	1.00	0.42	-0.58	-0.33
	(1.40)	(1.34)	(1.44)	(1.14)	(1.32)	(1.27)
Made-for-the-medium	**1.00**	**2.00**	**2.00**	**2.00**	**0.00**	**0.00**
	(N/A)	**(N/A)**	**(N/A)**	**(N/A)**	**(N/A)**	**(N/A)**
Refinement	1.00	2.00	2.00	2.00	0.00	0.00
	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
Emotion	**0.13**	**0.88**	**-0.63**	**0.75**	**-0.63**	**-0.13**
	(1.64)	**(1.55)**	**(1.69)**	**(1.16)**	**(0.92)**	**(1.36)**
Plot	-1.00	1.00	1.00	0.00	-1.00	1.00
	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)	(N/A)
Character strength	0.29	0.86	-0.86	0.86	-0.57	-0.29
	(1.70)	(1.68)	(1.68)	(1.21)	(0.98)	(1.38)

Table 4.10. Means (SD) for each of the MUG sub-categories

Looking first at content, it can be seen that the site that scored highest overall was UCL (0.56), which got positive mean score on all four sub-categories commented on (although too few constructs related to depth and breadth, and current and timely information to provide meaningful results on these two sub-categories). However, when looking at specific sub-categories, LSE scored highest (1.30) on relevance, but below average on media use. Bristol came 4th on both criteria, but with only a slightly below average score.

When it comes to ease of use, three sites stand out: Southampton (0.61) followed by Warwick (0.50) and UCL (0.46); all three other sites scored negatively. UCL scored highest (1) on appearance followed by Southampton (0.74), and Warwick (1) scored highest on structure (1) closely followed by Southampton (0.96). Again the interviewees' perception of Bristol on ease of use was close to average.

Not enough comments related to refinement in the category made-for-the-medium, or to plot in the category emotion to provide significant statistical information. However character strength in emotion attracted 7 comments, with Bristol and UCL enjoying the highest score (0.86) on this criteria.

5 Analysis of the research findings and methodology

5.1 Introduction

The aim of this chapter is to discuss the research questions that motivated this study by bringing together the research findings presented in chapter 4 and the theories and previous findings introduced in chapter 2.

As a reminder, those key research questions were:

1. What is the role of SNSs on the information seeking behaviour of prospective students when researching a university course?
2. How does a university's presence on SNSs affect how it is perceived by prospective home and international students?
3. What usability attributes do prospective students consider most important in research-led university websites?
4. How does the University of Bristol's web presence rate compared with that of five other universities in the same competing bracket?
5. What is the value of MUG and RGT as usability evaluation methods for websites?

5.2 Role of Social Networking Sites when researching a university course.

One of the objectives of the present project was to assess the impact of a university's presence on SNSs in relation to its official website, and to what extent it affects prospective students' information seeking behaviour when researching a university course, as well as their perception of that university. The survey results provided some clues as to how this question might be answered.

First of all, it confirmed that a vast majority of prospective students (87% of survey respondents) visit the official websites of universities they are considering applying to when searching for academic related information. This merely supports what others have suggested (Noel-Levitz, 2009): i.e. that a solid, well designed and user-centred website is the cornerstone of an institution's web presence.

Secondly, the survey results confirmed the absolute supremacy of Facebook as the most popular social networking website. Also, and contrary to the results of previous studies (Madge et al., 2009) and (Mazer et al., 2007), the survey did not suggest that prospective students were strongly polarised on the issue of universities having a presence on SNSs such as Facebook. In fact the vast majority are at worst indifferent, and at best quite positive. However, when it comes to using SNSs for researching universities on their shortlist, prospective students are more likely to use student-created SNSs groups, particularly for finding out about a university's social life. The exception to this is that almost two-thirds indicated that they would use a university-created SNS profile for meeting other students going to the same university (almost as much as for a student-created SNS profile).

Thirdly, the survey showed that the most popular sources of web information after institutional websites are student community groups and/or university comparison websites (e.g. Whatuni.com, The Student Room). This suggests that prospective students may not see generic SNSs like Facebook as an entirely trustworthy source of information when researching universities (particularly in regard to the study experience they offer).

Finally – although the survey questionnaire did not prompt them – it is interesting that a number of respondents freely commented that they would welcome an official university blog and a university YouTube channel.

In summary, and in view of these findings, universities should concentrate their efforts on creating well-designed websites focusing on the information needs of prospective students. SNSs can support their online presence, but for purposes that will genuinely add value to the student experience (e.g. to put new students into contact with each other and with current students, to initiate communication with the institution) rather than purely for promotional purposes. Authentic weblogs from

staff and students as well as a YouTube channel offering a genuine insight into the university can also provide ways to engage meaningfully with prospective students.

5.3 Assessment of usability criteria for university websites

Having established that the website is the most important aspect of a university's web presence, the next logical step is to focus on the key quality factors that make a successful website not only from the point of view of prospective students, but also, from the university's perspective with regard to student recruitment. Both the survey and the interview provided some elements of answer.

The survey invited respondents to weigh Tung et al.'s (2009) enhanced MUG categories and sub-categories following a procedure similar to that used by Agarwal and Venkatesh (2002) for comparing weights between websites in four industries (airline, bookstore, auto manufacturer and car rental) from the points of view of customers and investors. The weighing of MUG categories for university websites revealed that two aspects of a university website are particularly valued by prospective students:

1. Content, the most valued category by far, and whose rating of 38 is remarkably consistent with Agarwal and Venkatesh's findings (those ranged between 32.8 and 38.1 for customers and 40.2 and 46.6 for investors).

2. Ease of use, the second most valued category and a result that differs considerably from Agarwal and Venkatesh's findings (in their study, ease of use consistently ranked 3rd behind made-for-the-medium and, in the case of auto manufacturers websites, behind emotion for customers, and 4th behind made-for-the-medium and promotion for investors).

This suggests that as far as prospective students are concerned, content is still king: what they want from a university website is quality and relevant content that is easy to find.

This was not entirely supported by the interviews though, at least judging by the number of comments relating to content and ease of use, which suggest that prospective students value the latter (62.2% of the comments) more than the former (30.3% of the comments) by a factor of 2. However this may be misleading and due

to the interview process which by its very nature emphasised ease of use above all. Indeed interview participants had only a few minutes to look at each website, which gave them enough time to assess whether they could easily find something, but not enough to evaluate it once they had found it. In other words, the interviewees focused on the design of the sites they looked at rather than on the content. This is substantiated by the fact that almost two-thirds of the comments in the content category were related to media use (i.e. use of colours and font, graphics, new media) sub-category (under a third were related to relevance and none to quality, the two content sub-categories given the greatest weight in the survey). For the same reason, the interviewees tended to focus heavily on the homepage and ignore sub-pages.

Finally, it would also seem wise to interpret the categorisation of comments with caution as they did not always fall neatly in one of the MUG sub-categories, particularly when it came to deciding between media use (a content sub-category) and appearance (an ease of use sub-category). For example, a comment like 'Colourful websites are more appealing' could equally go in both. However, the fuzzy boundary between these two sub-categories may arise from the fact that both relate to aesthetics aspects of websites. It is interesting that together they attracted about a third (42 out of 119) of the comments. This would indicate that the aesthetics (i.e. the 'look and feel') of university websites is an important usability factor for prospective students. This finding is consistent with research done by others, for example Nathan and Yeow (2008) who found that use of colour and font was "the most important predictor of OWU (overall web usability) for SIUs (student internet users)."

5.4 Comparative evaluation of the six university sites under scrutiny

Another important aim of this project was to perform a comparative evaluation of six research-intensive university websites in terms of their usability from the point of view of prospective students. It was hoped that this comparative evaluation would result in a set of recommendations for the redesign of the University of Bristol website. As suggested in the previous section, the interviews focused heavily on design and the presentation of content rather than the content itself, and on the

homepage rather than the whole site; therefore the results should be interpreted in this light.

If anything the evaluation revealed that none of the websites under scrutiny was a clear winner in the eyes of the eight interviewees. In fact they were often split in their views on what makes for good design for a university website. On the whole though, interviewees expressed a preference for a more modern and eye-catching design. Three websites seemed to embody this preference: Southampton, Warwick and UCL (although a couple of interviewee attributed this quality to websites that were generally perceived as 'more traditional' looking (Bristol and KCL). Unarguably these three universities are those that have taken a more original and bolder approach to the design of their website. Southampton and Warwick have taken the bold step of breaking away from the ubiquitous information for / information about approach and adopted a similar layout which provides a simplified interface with a single, large image that occupies the best part of the screen and fewer links contained in a familiar left hand side menu. This 'less is more' approach was often commented on positively by interviewees who tended to favour fewer but clearer choices on the homepage. However it also attracted some negative comments from some interviewees who thought it was too minimalist. Some also criticised their choice of media (particularly the single photograph on the homepage) for being unrepresentative of the university.

The UCL website drew the highest consensus. It was perceived as being modern and eye-catching while at the same time providing the right amount of information (at least on the homepage).

The more traditional appearance of the LSE and KCL websites was generally perceived (by all interviewees bar one) as lacking in appeal and being too text-heavy.

The University of Bristol for its part fell somewhere in between. It was often singled out for offering too many choices on its homepage and looking a little uninspiring, but it was also praised for incorporating many of the features that prospective students value, such as a clear link for prospective students, a clear search box, a clear A to Z index, news and events headlines.

5.5 Evaluation of MUG/RGT for website usability assessment

Finally, this project was also an opportunity to experience and evaluate two complementary techniques used for website usability evaluation. One a set of heuristic criteria developed for Microsoft and unimaginatively called Microsoft Usability Guidelines (MUG), the other an interview technique known as Repertory Grid Technique (RGT). Whereas the former was specifically developed to help designers create websites offering greater usability and appeal, the latter is an interview technique that has its roots in psychology.

It was found through this study that MUG provides a valuable framework for evaluating websites. First the weighing of MUG categories and sub-categories in the context of university websites from the perspective of prospective students revealed considerable differences with other industries. Whereas all users across all industries seem to value content most, ease of use is clearly more valued by users of university websites than by users of airline, bookstore, auto manufacturer and car rental websites in Agarwal and Venkatesh's 2002 study. However, this method only provides a superficial assessment of what usability factors users really value in a website. First users are asked to reflect on their preferences out of context and secondly – and more importantly as pointed out by Tung et al. (2003)– they may attach different meaning to the same criteria. Indeed, two different users may say they highly value media use for example, yet they may have radically different opinions of what makes for good media use in a website.

This is where RGT comes useful. Such differences of views can be elicited during the RGT interviews through the laddering process, and then verified at the website rating stage. For example most interviewees said that they found modern looking university websites more appealing than traditional looking one (comments relating to appearance in the enhanced MUG), however the websites ratings showed that what looked traditional to one person could look modern to another! It was felt throughout the interviews that RGT was a powerful tool to capture certain mental models held by users about what characteristics they valued most in university websites. Some of these characteristics might have been missed otherwise. It is particularly suited to comparing websites, whether from competing organisations in a particular industry (as in the case of this study) at the research stage of a project, or

for comparing different proposed versions (prototypes) of a website at the design stage, as suggested by Hassenzahl and Trautmann (2001). Another benefit of RGT is that it is very flexible and can be adapted to different situations and projects.

On the minus side, RGT can be quite time consuming and requires considerable experience and skill on the part of the interviewer to make the most of it. In the case of the present study, interviews were limited to one hour and this proved too short; an extra 30mn would have been necessary to pursue a more thorough questioning line. As a result most of the time available was spent eliciting new constructs, which left little time to explore them in depth through laddering. For this reason, the constructs obtained and related comments were often duplicated and superficial.

Finally, this method seems more suited to evaluating the design aspects of websites (e.g. appearance, media use, ease of navigation) rather than the quality and relevance of content.

6 Conclusions and recommendations

6.1 Overall project evaluation

The overarching focus of this study has been the online information seeking behaviour of prospective students when researching a university course. The first objective was to find out what sources prospective students use to fulfil their information needs. As anticipated, the results confirmed the key role of a university's official website in its overall web presence, and provided some answers as to how SNSs can be used to support it, for example by providing a platform where students can meet other students before coming to university. The second objective was to evaluate the usability factors most valued by prospective students in a university's official website. In this respect, the study identified factors relating to content and ease of use as the most important in a university website.

The initial intention was to compare responses between home (i.e. British) and international prospective students. However, this aim could not be fulfilled due to the small sample of international students who took part. This is unfortunate, because differences can reasonably be expected between the two groups because of cultural and language differences.

In parallel to the above, a secondary aim of this project was to investigate the value of MUG and RGT as research methods for website usability evaluation. The results obtained are proof that these two tools can complement each other by focussing on different aspects of website usability. MUG as used by Agarwal and Venkatesh (2002) can provide some valuable statistical information on an individual's perception of what usability factors are more important to them. RGT on the other hand provides more qualitative information that allows the researcher to cross-check the results of both methods. However it was found that both methods have their limitations: the main criticism addressed at Agarwal and Venkatesh (2002) is that the MUG criteria may not have the same meaning for different individuals. This criticism has to some extent been addressed by Tung and Tan (2009) and their use of RGT to elicit individual constructs that can then be mapped to MUG. However it was found that

assigning individual constructs to MUG criteria could sometimes be problematic because the boundary between their enhanced MUG categories and sub-categories was not always found to be clear – e.g. media use(content) and appearance (ease of use).

On the whole, the project achieved most of its objectives, although not as comprehensively as intended. The scope was possibly too broad for a project of this type, which means that some aspects may have been covered too superficially. For example the investigation into how SNSs could be used to better effect by universities would deserve more in-depth investigation.

6.2 Limitations and further research

Apart from being wide ranging, the study was limited in a number of other ways. For one the sample surveyed was small, with just over a hundred respondents to the survey and eight interviewees. The survey suffered from the relatively low response rate which, as already mentioned, did not allow for a comparison between British and international students, and weakens the findings. As far as the interviews are concerned, they are open to the same criticism, as the findings from eight interviewees can hardly be generalised to a wider population. Also, the relative inexperience of the author with RGT and time constraints meant that the interviews probably did not yield data as rich as could have been.

Therefore further research could seek to remedy these limitations. For example future research could focus on comparing the perception and needs of British and international prospective students, using a greater sample. Ideally such research should be longitudinal, in order to assess what prospective students need and expect from university websites, particularly as their profile is likely to change in the years to come. In terms of methodology, more research could be done to assess the value of MUG and particularly RGT as tools for measuring website usability, for example by comparing them to other methods, such as expert evaluations. Also, similar studies could be done with other important university websites audiences, such as the business and research communities. Finally, future research should focus on those specific usability aspects that seem to matter most to prospective students, i.e.

content and ease of use, and in particular those neglected by the present study, i.e. content quality and relevance.

6.3 Lessons for the University of Bristol

What implications does this research have for universities' recruitment efforts? As stated at the beginning, one of the projected deliverables for this study was to produce a set of recommendations for the redevelopment of the University of Bristol web presence. If anything, the research shows that prospective students rely heavily on the web when researching a suitable university and course, therefore it is crucial for a university like Bristol to get its web strategy right. Following are six recommendations that have emerged from the study:

1. **The website must focus on providing the information and services that meet the needs of prospective students.**
   Content is paramount to prospective students, therefore the University needs to ensure that the information and services offered throughout its public website (i.e. starting from the homepage, down to school and department level) meet the needs of its key audiences. In order to achieve this, the University needs to research these audiences, to find out what they need from the website and how best it can meet these needs. Also, interactive services like a cost calculator and the ability to create a customised prospectus could greatly enhance the experience of prospective students.

2. **This content must be easy to access on the website.**
   Ease of use is crucial to the success of the website. Prospective students recognise themselves in those terms and expressed a liking for a clear link labelled 'Prospective students' on the homepage. They also expressed a preference for fewer links on the homepage, although the minimalism of Southampton and Warwick was seen by some as providing too little information. Of the sites under scrutiny, only UCL seemed to strike the right balance. Finally, they liked features that facilitate searching, like an A to Z index and a clear search box.

3. **The site design should be fresh and modern, while reflecting the University values.**
   The aesthetics (general appearance and media use) of university websites are

also an important factor for prospective students. Most expressed a preference for modern looking sites (i.e. with vibrant colours, eye-catching graphics, etc) with clear and uncluttered layouts. However, these should also fit in with the values and brand image of the institution. Again, some audience research would be needed to ensure that the design matches the expectations of the type of prospective students the University is targeting.

4. **Make sure the homepage has a clear focus.**
   The current University of Bristol homepage lacks a clear focus. By trying to cater for all audience – including internal ones (e.g. staff and current students) – equally, its message is diluted. Audiences need to be prioritised and the homepage should be tailored to key audiences, of which prospective students is one. The homepage would also benefit from a clear positioning statement to establish what it stands for and to distinguish it from its competitors.

5. **Provide an insight into the University academic and social life through news and social media (e.g. blogs, videos, etc)**
   As part of their research, prospective students like to get an idea of what the university is like, both from an academic and social point of view. For example they like to see who the academics who will be teaching them are, what research they do, etc. News are a good way for them to find out about the University, but in the social media age, tools such as blogs, podcasts and videos, both by academics and current students, would provide rich and authentic voices.

6. **Use social networking sites like Facebook to genuinely add value to the prospective student experience.**
   The University has to be cautious in its use of social networking site like Facebook. On the whole prospective students do not view it negatively, although it can be seen by some as a desperate attempt to attract students (particularly if it is used for blatant marketing purposes). In any case they do not seem to have much time for a university-created profile either. Instead the University should use them for specific purposes that will genuinely add value to their experience and help them making connection with other students, and give them timely and relevant information.

Bibliography

AGARWAL, R. & VENKATESH, V. 2002. Assessing a firm's web presence: a heuristic evaluation procedure for the measurement of usability. Information Systems Research, 13, 168-186.

ALEXANDER, D. 2005. Howusable are university websites? A report on the prospective student experience. AusWeb 05. Gold Coast, Australia.

ANDERSON, P. 2007. What is Web 2.0? Ideas, technologies and implications for education.

BAO, T. Q. & ALLAN, E. Year. Assessing University Homepages from Web standard and usability perspectives. In: AusWeb 2007, 30th June - 4th July 2007 Pacific Bay Resort.

BERNOFF, J. 2009. Social technology growth marches on in 2009, led by social network sites. Available: http://www.forrester.com/rb/Research/broad_reach_of_social_technologies/q/id/55132/t/2 [Accessed 11/01/2010].

BOMBOSCH, T. 2007. Mashups and wikis and blogs? Oh my! What does Web 2.0 mean for technical communications? Professional Communication Conference. IEEE International.

BRISTOL, U. O. 2007. Student IT Services Survey 2007.

BRUNS, A. Year. Produsage: Towards a broader framework for user-led content creation. In: SIGCHI conference on Creativity and Cognition, 13-15 June 2007 Washington, New York. ACM.

CARUSO, J. B. & KVAVIK, R. 2005. ECAR Study of Students and Information Technology, 2005: Convenience, Connection, Control, and Learning. EDUCAUSE.

COLLIS, J. & HUSSEY, R. 2003. Business Research: A practical guide for undergraduate and postgraduate students, Palgrave MacMillan.

COPELAND, J. & LEE, A. 2009. How to lose friends and alienate students: Using Facebook in college and university recruitment. DemandEngine.

COX, J. & DALE, B. G. 2002. Key quality factors in Web site design and use: an examination. International Journal of Quality & Reliability Management, 19, 862-888.

CRUDGE, S. E. & JOHNSON, F. C. 2004. Using the information seeker to elicit construct models for search engine evaluation. J. Am. Soc. Inf. Sci. Technol., 55, 794-806.

GRAY, W. D. & SALZMAN, M. C. 1998. Damaged merchandise? a review of experiments that compare usability evaluation methods. Human-Computer Interaction, 13, 203-261.

HASSENZAHL, M. & TRAUTMANN, T. 2001. Analysis of web sites with the Repertory Grid Technique. CHI 2001 Conference on Human Factors in Computing Systems. Seattle: ACM.

HINKLE, V. 2009. Using Repertory Grid interviews to capture first impressions of homepages. Usability News, 11.

HUNTER, M. G. & BECK, J. E. 2000. Using Repertory Grids to Conduct Cross-Cultural Information Systems Research. Info. Sys. Research, 11, 93-101.

IPSOS-MORI 2007. Student expectations study. Joint Information Systems Committee.

JAOKAR, A. 2006. Tim O'Reilly'□ ™s seven principles of web 2.0 make alot more sense if you change the order. Available: http://opengardensblog.futuretext.com/archives/2006/04/tim_o_reillys_s.html [Accessed 10/01/2010].

KEEKER, K. 1997. Improving Web site usability and appeal: Guidelines compiled by MSN Usability Research.

KENNEDY, G. E., JUDD, T. S., CHURCHWARD, A., GRAY, K. & KRAUSE, K.-L. 2008. First year students' experiences with technology: Are they really digital natives? Australasian Journal of Educational Technology, 24, 108-122.

KRISTALY, D. M., SISAK, F., TRUICAN, I., MORARY, S.-A. & SANDU, F. Year. Web 2.0 technologies in web application development. In: Proceedings of the 1st international conference on PErvasive Technologies Related to Assistive Environments, 16-18 July 2008 Athens, Greece. ACM.

MADGE, C., MEEK, J., WELLENS, J. & HOOLEY, T. 2009. Facebook, social integration and informal learning at university: 'It is more for socialising and talking to friends about work than for actually doing work'. Learning Media and Technology, 34, 141-155.

MAZER, J. P., MURPHY, R. E. & SIMONDS, C. J. 2007. I'll See You On Facebook: The Effects of Computer-Mediated Teacher Self-Disclosure on Student Motivation, Affective Learning, and Classroom Climate. Communication Education, 56, 1-17.

MILLER, P. 2005. Web 2.0: Building the New Library. Available: http://www.ariadne.ac.uk/issue45/miller/ [Accessed 10/01/2010].

NATHAN, R. J. & YEOW, P. H. P. 2008. Key usability factors of service-oriented web sites for students: an empirical study. Online Information Review, 32, 302-324.

NIELSEN, J. 1993. Usability engineering, Morgan Kaufmann.

NIELSEN, J. 1994. Usability inspection methods. Conference companion on Human factors in computing systems. Boston, Massachusetts, United States: ACM New York, NY, USA.

NIELSEN, J. 2003. Usability 101: Introduction to usability. Available: http://www.useit.com/alertbox/20030825.html [Accessed 15/12/2009].

NIELSEN, J. 2005. Heuristic Evaluation. Available: http://www.useit.com/papers/heuristic/.

NIELSEN, J. & TAHIR, M. 2002. Homepage usability: 50 websites deconstructed, New Riders.

NOEL-LEVITZ, TOWER, J., OMNIUPDATE, &, N. R. C. F. C., AMP & ADMISSIONS, U. 2009. Scrolling Toward Enrollment: Web Site Content and the E-Expectations of College-Bound Seniors. Noel-Levitz.

NOEL-LEVITZ, I. 2009. Scrolling Toward Enrollment: Web Site Content and the E-Expectations of College-Bound Seniors. Noel-Levitz, Inc.

O'NOLAN, J. 2010. The mobile is NOT the next big thing. John O'Nolan, a personal account of running a web design business [Online]. Available from: http://john.onolan.org/the-mobile-web-is-not-the-next-big-thing/].

O'REILLY, T. 2005a. What Is Web 2.0 - Design Patterns and Business Models for the Next Generation of Software. Available: http://oreilly.com/web2/archive/what-is-web-20.html [Accessed 10/01/2010].

O'REILLY, T. 2005b. Web 2.0: Compact Definition? Available: http://radar.oreilly.com/archives/2005/10/web-20-compact-definition.html [Accessed 10/01/2010].

O'REILLY, T. 2006. Principles of Web 2.0 Make More Sense if You Change the Order - O'Reilly Radar. Available: http://radar.oreilly.com/2006/04/principles-of-web-20-make-more.html [Accessed 10/01/2010].

OLSINA, L., GODOY, D., LAFUENTE, G. & ROSSI, G. 1999. Assessing the quality of academic websites: a case study - New Review of Hypermedia and Multimedia. New Review of Hypermedia and Multimedia, 5, 81-103.

OLSSON, M. 2007. Net generation comes of age. Available: http://news.cnet.com/Net-generation-comes-of-age/2008-1022_3-6195553.html [Accessed 15/01/2010].

PALMER, J. W. 2002. Web Site Usability, Design, and Performance Metrics -- Palmer 13 (2): 151 -- Information Systems Research. Information Systems Research, 13, 151-167.

PRECEDENT 2008. Traditional universities' websites.

PRENSKY, M. 2001. Digital Natives, Digital Immigrants. On the Horizon, 9.

RUWOLDT, M. & SPENCER, C. 2004. Navigation and content on university home pages. University of Melbourne.

SANDARS, J. & SCHROTER, S. 2007. Web 2.0 technologies for undergraduate and postgraduate medical education: an online survey. Postgraduate Medical Journal, 83, 759-762.

SCHOLTZ, J. 2004. Usability evaluation. In: NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY, I. A. D. (ed.). Gaithersburg.

SHARPE, H., ROGERS, Y. & PREECE, J. 2007. Interaction design: beyond human-computer interaction 2nd ed, John Wiley & Sons Ltd.

TAN, F. B. & TUNG, L. L. Year. Exploring website evaluation criteria using the Repertory Grid Technique: A web designers' perspective. In: Second Annual Workshop on HCI Research in MIS, 2003 Seattle. 65-69.

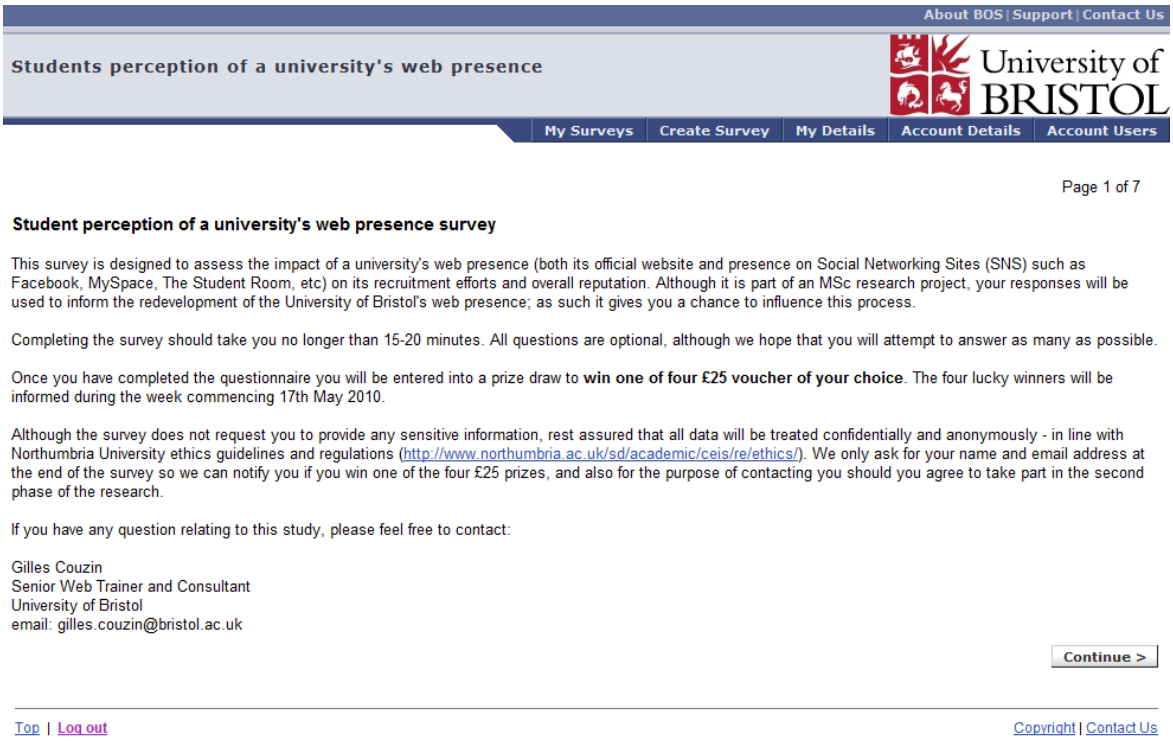
TUNG, L., XU, Y. & TAN, F. 2009. Attributes of Web Site Usability: A Study of Web Users with the Repertory Grid Technique. International Journal of Electronic Commerce, 13, 97-126.

VENKATESH, V. & RAMESH, V. 2006. Web and wireless site usability: Understanding differences and modeling use. Management Information Systems Quarterly, 30, 11.

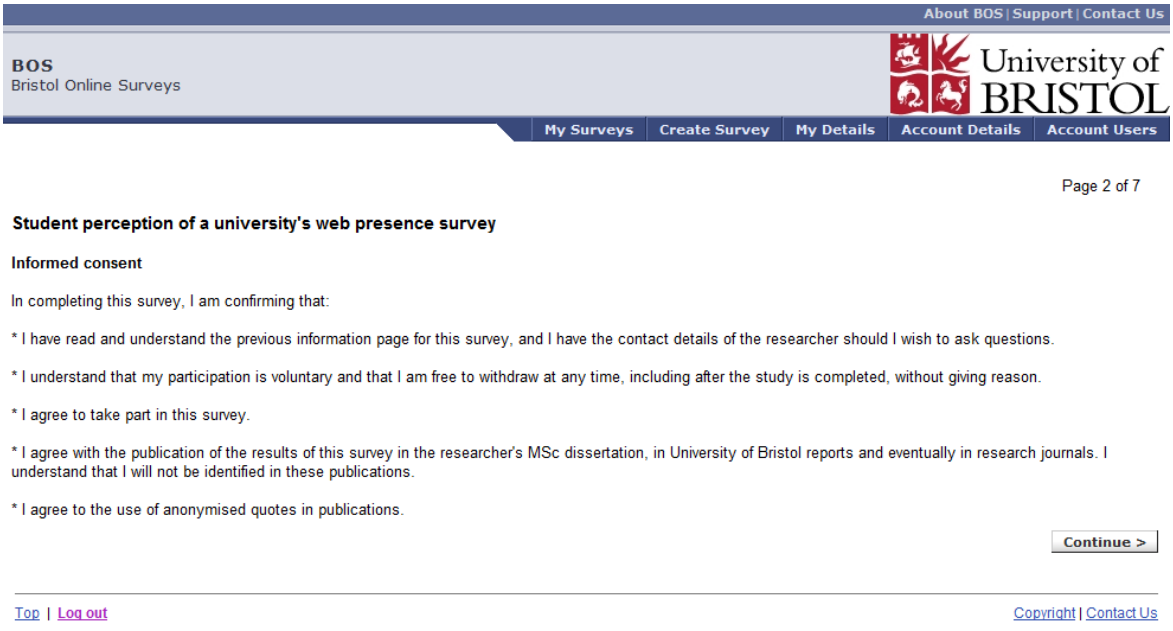
ZAPHIRIS, P. & ELLIS, R. D. Year. Website usability and content accessibility of the top USA universities. In: WebNet 2001 Conference, October 23-27 2001 Orlando, Florida.

Appendix A. Online questionnaire

Page 1



Page 2



Page 3

Students perception of a university's web presence survey

Note that once you've clicked on the **Continue** button your answers are submitted and you can not return to review or amend that page.

Choosing a university and course:

In this section we would like you to tell us how you go about finding information about a university and/or course, and what factors influence your choice of university and/or course.

1. What is your area of study (or what area of study do you hope to follow once at university)?

Select an answer

If you selected Other, please specify:

2. When looking for a university course, what factors are most and least likely to influence your choice?

	Very unlikely	Unlikely	Possibly	Likely	Very likely
a. Programme (field of study, courses, majors, course structure and degree organisation)	○	○	○	○	○
b. Price (fees, flexibility in payment, effort needed to qualify, opportunities sacrificed, distance from home, transport and living costs, opportunities for part time work)	○	○	○	○	○
c. Promotion (advertising in local and national press, publicity about academic research, publicity about teaching excellence, electronic media and marketing communications)	○	○	○	○	○
d. People (gender composition, tutors credentials, alumni and personal contacts, graduate profiles)	○	○	○	○	○
e. Prospectus (the university prospectus, programme booklets)	○	○	○	○	○
f. Prominence (institutional reputation, staff reputation, press reviews by national newspapers, institutional websites, league tables)	○	○	○	○	○
g. Place (campus accommodation, degree credits, facilities, racial diversity, residential requirements, class sizes)	○	○	○	○	○

3. Are there any other considerations likely to influence your choice of university course? If so, what are they?

4. When researching **a university's academic credentials and/or a course** you are considering, what sources of information are you most and least likely to use?
Note: *Social Networking Sites (SNSs) include sites like Facebook, YouTube, etc.*

	Very unlikely	Unlikely	Possibly	Likely	Very likely
a. The university's official website	○	○	○	○	○
b. The university's official profile on SNSs	○	○	○	○	○
c. Groups related to the university on SNSs	○	○	○	○	○
d. Student community / University comparison website (e.g. Whatuni.com, The Student Room, Good University Guide, etc)	○	○	○	○	○
e. Phoning or emailing the university	○	○	○	○	○
f. Visiting in person (e.g. Open Day)	○	○	○	○	○
g. Asking friends or other people for their opinions or experiences	○	○	○	○	○

5. Please enter any other sources of information that you might use to find out about the academic credentials of a university and/or course you are considering.

Page 3 (continue)

6. When researching the **social life** surrounding a university you are considering, what sources of information are you most and least likely to use?
Note: *Social Networking Sites (SNSs) include sites like Facebook, YouTube, etc.*

	Very unlikely	Unlikely	Possibly	Likely	Very likely
a. The university's official website	○	○	○	○	○
b. The university's official profile on SNSs	○	○	○	○	○
c. Groups related to the university on SNSs	○	○	○	○	○
d. Student community / University comparison website (e.g. Whatuni.com, The Student Room, Good University Guide, etc)	○	○	○	○	○
e. Phoning or emailing the university	○	○	○	○	○
f. Visiting in person (e.g. Open Day)	○	○	○	○	○
g. Asking friends or other people for their opinions or experiences	○	○	○	○	○

7. Please enter any other sources of information that you might use to find out about the social life surrounding a university you are considering.

8. Among these sources of information, which are you most or least likely to trust when researching a university or course?
Note: *Social Networking Sites (SNSs) include sites like Facebook, YouTube, etc.*

	Definitely not	Probably not	Unsure	Probably yes	Most definitely
a. What the university says about itself through its official channels (e.g. website, course prospectus, SNSs profiles, etc)	○	○	○	○	○
b. What is said about it on SNSs	○	○	○	○	○
c. What is said about it on student community / university comparison websites (e.g. Whatuni.com, The Student Room, Good University Guide, etc)	○	○	○	○	○
d. What my teachers tell me about it	○	○	○	○	○
e. What friends tell me about it	○	○	○	○	○

Continue > | Check Answers & Continue >

Page 4

Students perception of a university's web presence survey

Your use of social networking websites:

In this section we would like you to provide information on your use of Social Networking Sites (SNSs) such as Facebook, and your opinion about the use of these SNSs by universities.

9. Which device(s) do you use to access the Internet?

	Predominantly	Occasionally	Never
a. Own laptop	○	○	○
b. Home PC	○	○	○
c. Public PC (e.g. school/university, library, etc)	○	○	○
d. Mobile device (e.g. phone, PDA, etc)	○	○	○

10. Do you have an account with the following social networking sites?

			If Yes, for what purpose?		How often do you use the sites you are registered with?
	Yes	No	For study	Socially / for fun	
a. Bebo	○	○	☐	☐	Select an answer
b. Facebook	○	○	☐	☐	Select an answer
c. MySpace	○	○	☐	☐	Select an answer
d. Twitter	○	○	☐	☐	Select an answer
e. The Student Room	○	○	☐	☐	Select an answer

11. Do you use any other social networking sites? If so, please indicate which one(s), for what purpose and how frequently.

12. To what extent do you agree or disagree with the following statements?
Note: *Social Networking Sites (SNSs) include sites like Facebook, The Student Room, YouTube, etc.*

	Strongly disagree	Disagree	Neither agree, nor disagree	Agree	Strongly agree
a. It's a good idea for universities to create an official profile on SNSs.	○	○	○	○	○
b. I dislike it when organisations like universities are present on SNSs.	○	○	○	○	○
c. I can't see any use for a university to create an official profile on SNSs.	○	○	○	○	○
d. I would never join a university-created SNS group.	○	○	○	○	○
e. I would use a university-created SNS group to find out about what it's like to study at that university.	○	○	○	○	○
f. I would use a university-created SNS profile to meet other students going to the same university as me.	○	○	○	○	○
g. I would use a university-created SNS profile to find out about what the social life is like at that university.	○	○	○	○	○
h. I would use a student-created SNS group to find out about what it's like to study at that university.	○	○	○	○	○
i. I would use a student-created SNS profile to meet other students going to the same university as me.	○	○	○	○	○
j. I would use a student-created SNS group to find out about what the social life is like at that university.	○	○	○	○	○

13. Is there anything you would like to add relating to this section?

Page 5

Students perception of a university's web presence survey

This section asks you to weigh several website usability criteria according to *how important you believe* these criteria are in determining the usability of university websites.

Website usability criteria - weighing the main categories

First you have a 100 points to distribute across the 5 main usability categories shown below. You should allocate the points according to how important each category is to you - as a prospective UK or international student - in deciding the overall usability of a university's website. In other words, the more important a category is to you, the more points you give it.

14. Enter the number of points that you allocate to each category (remember that the total should be equal to 100)

	Weight (Total=100)
a. Content - the extent to which a website offers informational and transactional capability	
b. Ease of use - the extent to which using the website is free of effort	
c. Promotion - the extent to which a website is well promoted on the Web and other media	
d. Made-for-the-medium - the extent to which a website can be tailored to fit your specific needs	
e. Emotion - The extent to which a website evokes emotional reactions from you	

Website usability criteria - weighing the subcategories

Now distribute the points that you allocated to each category* across its subcategories, again according to how important each subcategory is to you - as a prospective UK or international student - in deciding the overall usability of a university's website. In other words, the more important a subcategory is to you, the more points you give it.
For example if you allocated 40 points to the **Ease of use** category, you might distribute these points to the 4 subcategories as follows: 15 points to **Appearance**, 10 to **Convenient services**, 10 to **Structure** and 10 to **Feedback**.

* except the **Promotion** category, which does not have subcategories

15. Distribute the points you allocated to the **Content** category across the following 5 subcategories.

	Weight (total = points allocated to 'Content' category)
a. Relevance - the extent to which website offers content relevant to core audience	
b. Quality - the extent to which website offers content that is accurate and error free	
c. Media use - the extent to which website uses media appropriately and effectively to communicate content	
d. Depth and breadth - the extent to which website provides appropriate breadth and depth of content	
e. Timely/current information - the extent to which website offers provides current and timely information	

16. Distribute the points you allocated to the **Ease of use** category across the following 4 subcategories.

	Weight (total = points allocated to 'Ease of use' category)
a. Appearance - the extent to which website reaches target users by appealing to them in a fashion they are comfortable with and can easily understand	
b. Convenient services - the extent to which website provides convenient services (e.g. navigation, search, etc) to facilitate users' online activities	
c. Structure - the extent to which website is well structured and organised	
d. Feedback - the extent to which website provides clear and understandable results and feedback regarding your progress	

Page 5 (continue)

17. Distribute the points you allocated to the **Made-for-the-medium** category across the following 3 subcategories.

	Weight ((total = points allocated to 'Made for the medium' category)
a. Community - the extent to which website offers opportunity to be part of online group or community	
b. Personalisation - the extent to which website can treat you as unique person and responds to your specific needs	
c. Refinement - the extent to which website reflects the most current trend(s) and provides the most current refinement	

18. Distribute the points you allocated to the **Emotion** category across the following 4 subcategories.

	Weight (total = points allocated to 'Emotion' category)
a. Challenge - the extent to which website offers element of challenge	
b. Plot - the extent to which website provides interesting story line	
c. Character strength - the extent to which website ties to individuals, within and outside organisation, who have credibility	
d. Pace - the extent to which website allows you to control the flow of information you interact with	

Continue > Check Answers & Continue >

Page 6

Students perception of a university's web presence survey

About you:

In this section we would like you to provide a few bits of information about yourself so that we can put your other replies in greater context.

19. How old are you?

20. What is your gender?

○ Male ○ Female

21. What is your nationality?

○ British
○ Other *(please specify)*:

If you answered **British** to question **21** above, go to the next question and then skip question **23**.
If you answered **Other** to question **21** above, skip question **22** and go to question **23**.

22. As a **British national**, which of these best describes your current situation?

○ In final year at school, preparing for my A-Levels
○ In gap year
○ In first year of university undergraduate degree
○ Studying for a taught Master's degree
○ Studying for a research Master's degree
○ Other *(please specify)*:

If still at school, do you intend to go to university after obtaining your A-levels?
○ Yes ○ No ○ Don't know

23. As a **non-British national**, which of these best describes your current situation?

○ Doing an English language course
○ In first year of university undergraduate degree
○ Studying for a taught Master's degree
○ Studying for a research Master's degree
○ Other *(please specify)*:

If you are currently doing an English language course, is this for the purpose of studying in a UK university?
○ Yes ○ No ○ Don't know

And finally...

In this section we ask you to provide basic contact details so we can enter you in the prize draw and contact you should you accept to take part in follow-up interviews.

24. If you would like to be entered in the prize draw, please enter an email address.

...and your name if you wish to.

25. We may contact a small number of respondents to see if they would be willing to take part in a follow-up interview*. Please tick the box below if you accept to be contacted for this purpose.

○ Yes, I accept to be contacted by email to take part in follow-up interviews for this study (Note that under 18s will need to get a parent or guardian to sign a consent form for them).

* These interviews will consist in looking at a number of websites and answering a few questions about them. They will last approximately one hour and take place at the University of Bristol Computer Centre (Tyndall Avenue, Bristol BS8 1UD). Participants will receive £10 as a thank you reward and any reasonable transportation costs (e.g. bus fare) will be paid.

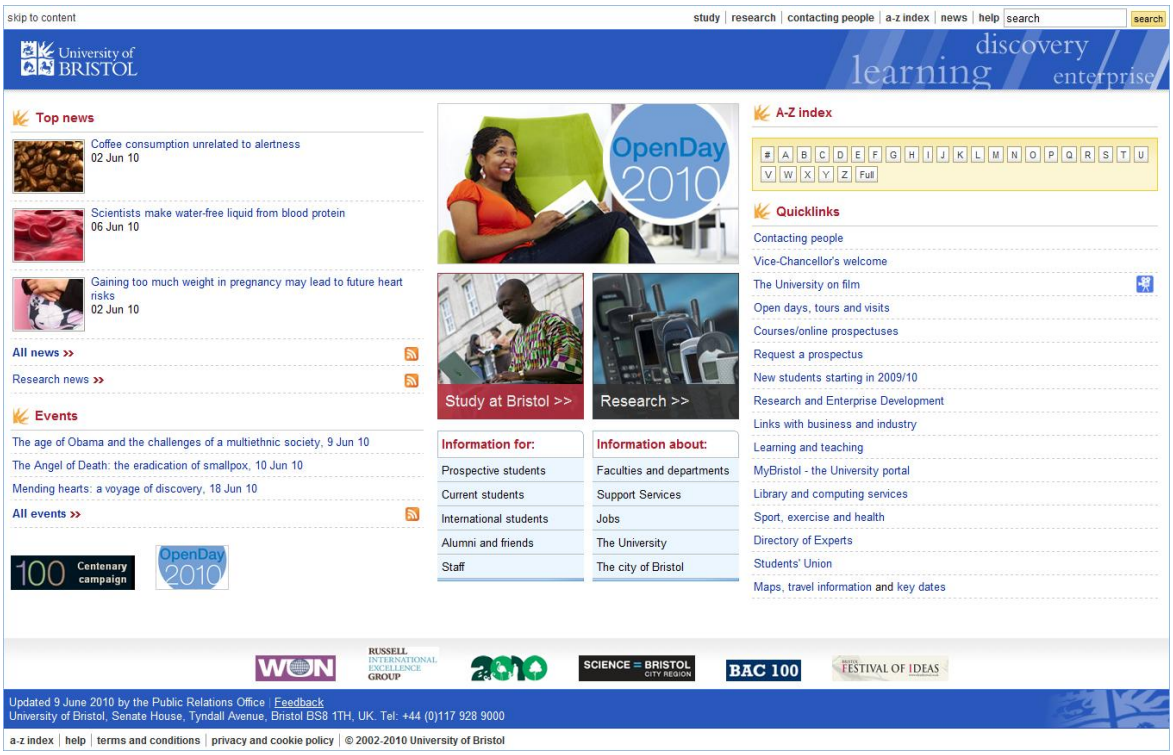
Continue > | Check Answers & Continue >

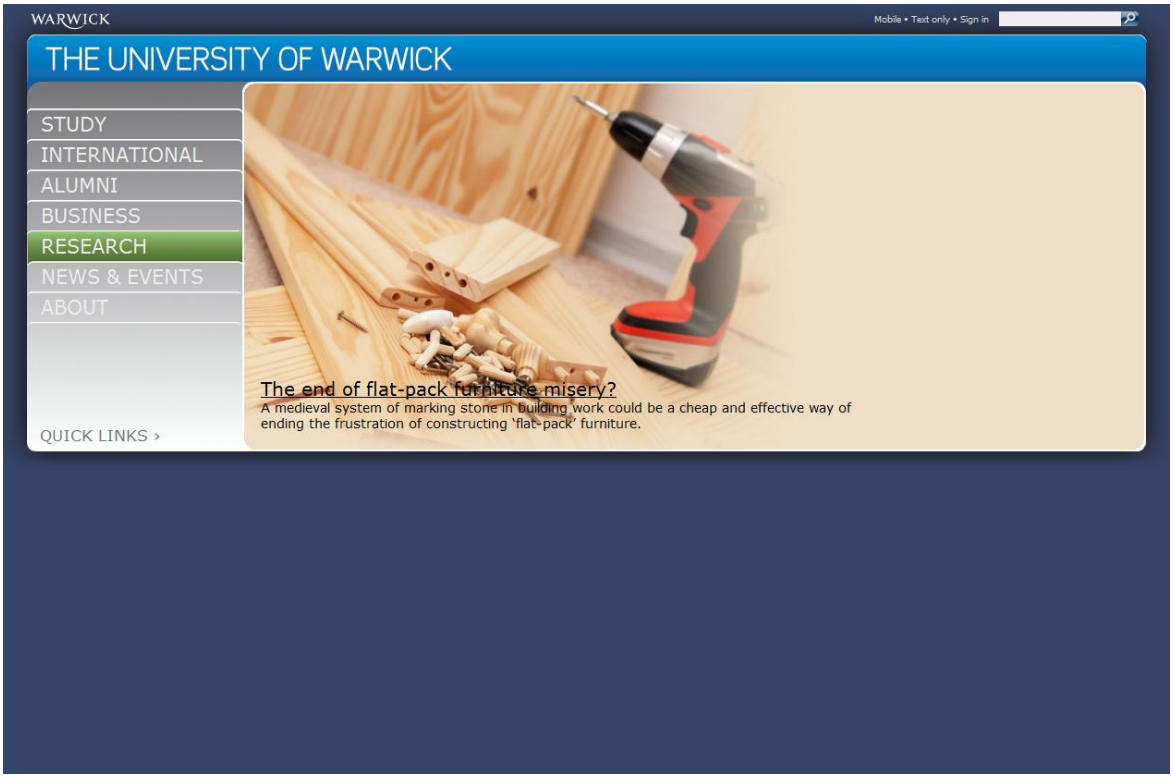
Page 7

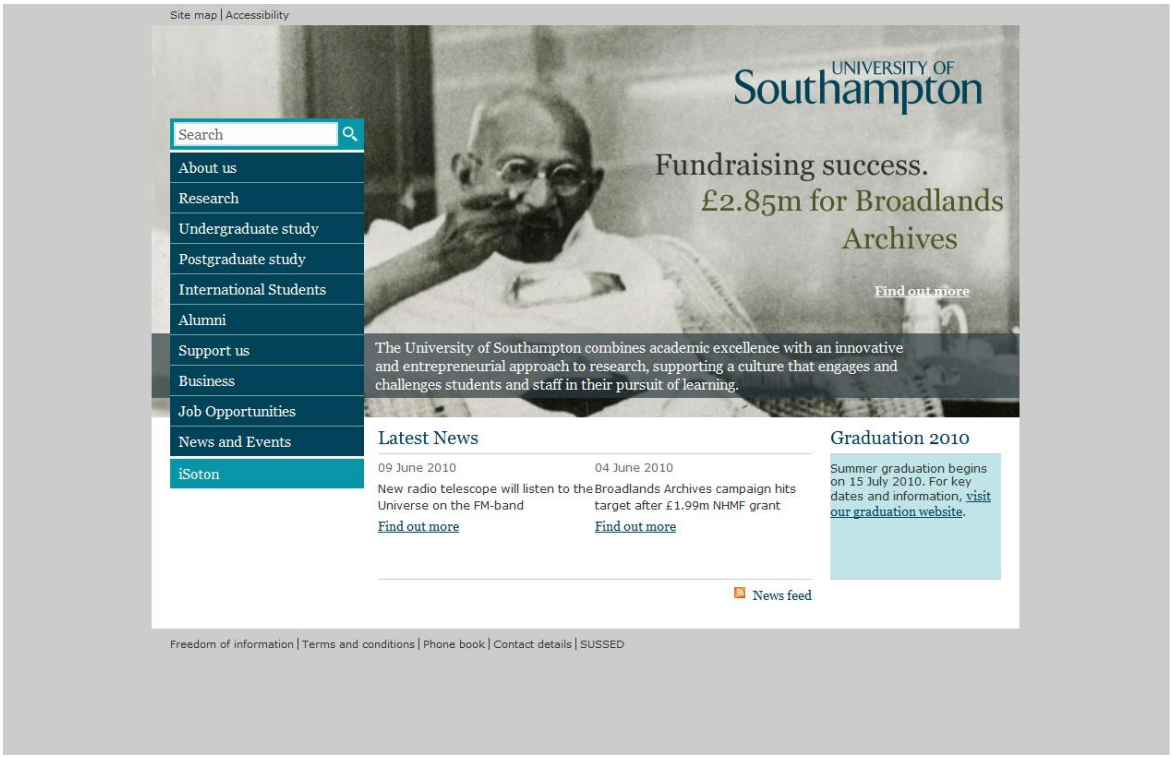
Students perception of a university's web presence survey

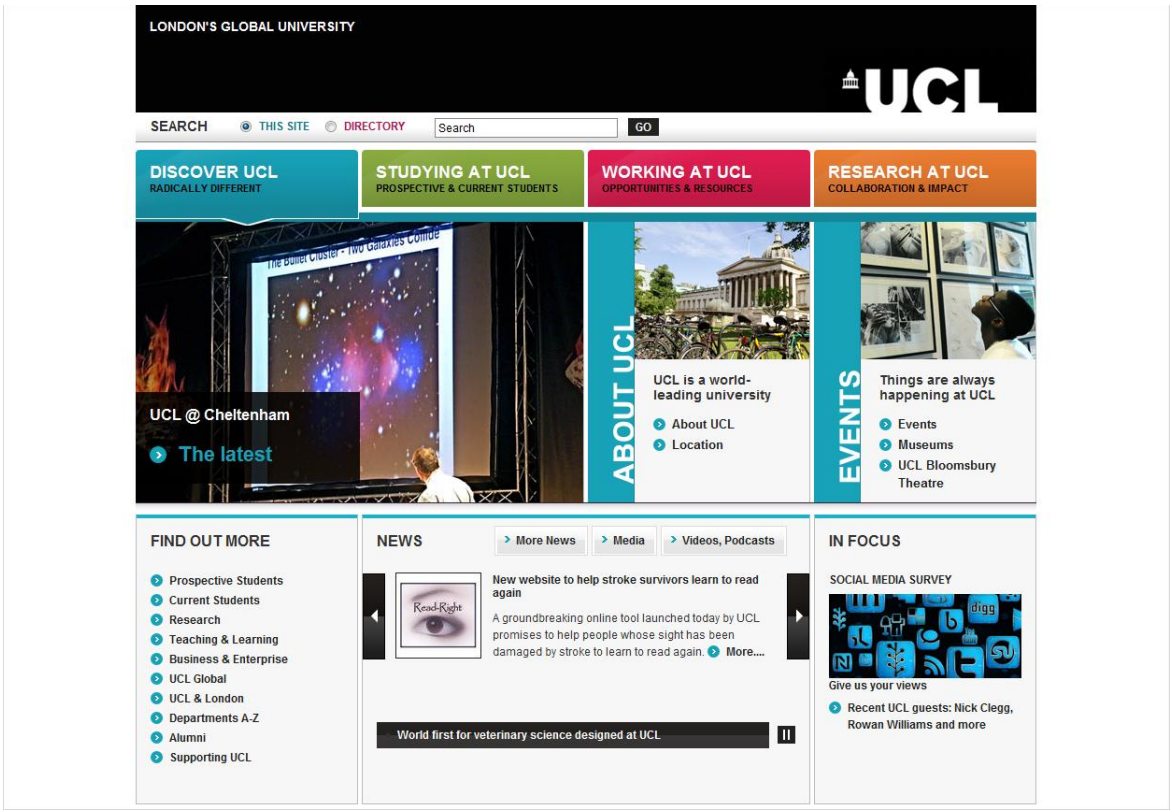
Thank you for taking the time to complete this survey, we really appreciate your help.

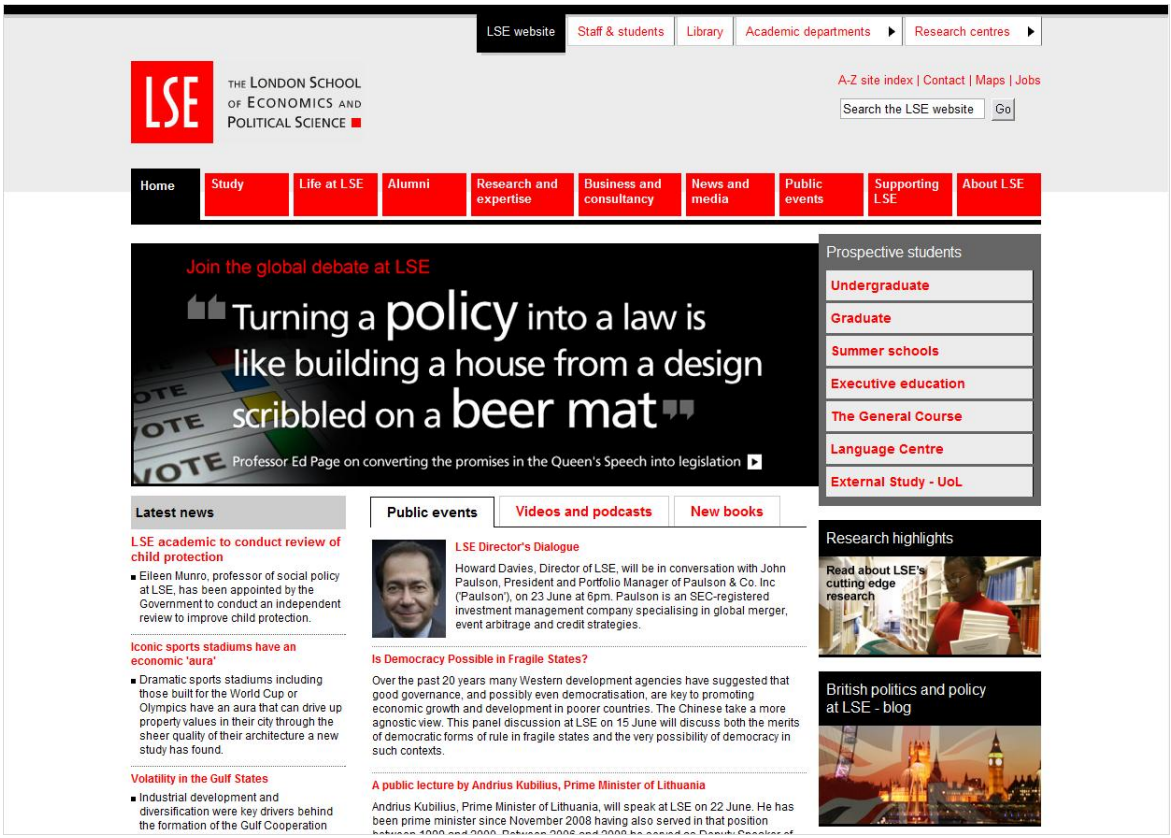
Appendix B. Homepages of websites used






Site map | Accessibility
UNIVERSITY OF Southampton
Search
About us
Research
Undergraduate study
Postgraduate study
International Students
Alumni
Support us
Business
Job Opportunities
News and Events
iSoton
Fundraising success.
£2.85m for Broadlands Archives
Find out more
The University of Southampton combines academic excellence with an innovative and entrepreneurial approach to research, supporting a culture that engages and challenges students and staff in their pursuit of learning.
Latest News
09 June 2010
New radio telescope will listen to the Universe on the FM-band
Find out more
04 June 2010
Broadlands Archives campaign hits target after £1.99m NHMF grant
Find out more
News feed
Graduation 2010
Summer graduation begins on 15 July 2010. For key dates and information, visit our graduation website.
Freedom of information | Terms and conditions | Phone book | Contact details | SUSSED


LONDON'S GLOBAL UNIVERSITY
UCL
SEARCH
THIS SITE
DIRECTORY
Search
GO
DISCOVER UCL
RADICALLY DIFFERENT
STUDYING AT UCL
PROSPECTIVE & CURRENT STUDENTS
WORKING AT UCL
OPPORTUNITIES & RESOURCES
RESEARCH AT UCL
COLLABORATION & IMPACT
UCL @ Cheltenham
The latest
ABOUT UCL
UCL is a world-leading university
About UCL
Location
EVENTS
Things are always happening at UCL
Events
Museums
UCL Bloomsbury Theatre
FIND OUT MORE
Prospective Students
Current Students
Research
Teaching & Learning
Business & Enterprise
UCL Global
UCL & London
Departments A-Z
Alumni
Supporting UCL
NEWS
More News
Media
Videos, Podcasts
New website to help stroke survivors learn to read again
A groundbreaking online tool launched today by UCL promises to help people whose sight has been damaged by stroke to learn to read again. More....
World first for veterinary science designed at UCL
IN FOCUS
SOCIAL MEDIA SURVEY
Give us your views
Recent UCL guests: Nick Clegg, Rowan Williams and more


LSE website
Staff & students
Library
Academic departments
Research centres
THE LONDON SCHOOL OF ECONOMICS AND POLITICAL SCIENCE
A-Z site index | Contact | Maps | Jobs
Search the LSE website
Go
Home
Study
Life at LSE
Alumni
Research and expertise
Business and consultancy
News and media
Public events
Supporting LSE
About LSE
Join the global debate at LSE
Turning a policy into a law is like building a house from a design scribbled on a beer mat
Professor Ed Page on converting the promises in the Queen's Speech into legislation
Prospective students
Undergraduate
Graduate
Summer schools
Executive education
The General Course
Language Centre
External Study - UoL
Latest news
LSE academic to conduct review of child protection
Eileen Munro, professor of social policy at LSE, has been appointed by the Government to conduct an independent review to improve child protection.
Iconic sports stadiums have an economic 'aura'
Dramatic sports stadiums including those built for the World Cup or Olympics have an aura that can drive up property values in their city through the sheer quality of their architecture a new study has found.
Volatility in the Gulf States
Industrial development and diversification were key drivers behind the formation of the Gulf Cooperation
Public events
Videos and podcasts
New books
LSE Director's Dialogue
Howard Davies, Director of LSE, will be in conversation with John Paulson, President and Portfolio Manager of Paulson & Co. Inc ('Paulson'), on 23 June at 6pm. Paulson is an SEC-registered investment management company specialising in global merger, event arbitrage and credit strategies.
Is Democracy Possible in Fragile States?
Over the past 20 years many Western development agencies have suggested that good governance, and possibly even democratisation, are key to promoting economic growth and development in poorer countries. The Chinese take a more agnostic view. This panel discussion at LSE on 15 June will discuss both the merits of democratic forms of rule in fragile states and the very possibility of democracy in such contexts.
A public lecture by Andrius Kubilius, Prime Minister of Lithuania
Andrius Kubilius, Prime Minister of Lithuania, will speak at LSE on 22 June. He has been prime minister since November 2008 having also served in that position
Research highlights
Read about LSE's cutting edge research
British politics and policy at LSE - blog


Internal >
OneSpace >
Contact >
Feedback >
Search site
KING'S College LONDON
About King's
Undergraduate study
Graduate study
King's Business
International
Research
Learning and teaching
Giving to King's
Schools and departments
Information Services & Systems
Media
Alumni
iKing's multimedia gateway
King's Online Prospectus
Welcome to King's College London
ONE OF THE WORLD'S TOP 25 UNIVERSITIES
Royal Geographical Society Award
Professor Chris Hamnett, Department of Geography, was presented with the Back Award of the Royal Geographical Society (with IBG) on 7 June for his work on 'policy-relevant research in housing, urban social change and inequality'. The award was presented by Michael Palin, the President of the Royal Geographical Society.Find out more about the Award
What's new
› Professor honoured by Royal Geographical Society
› Director of King's Brazil Institute appointed
› King's experts at Cheltenham Science Festival
› UK fails to recognise crucial role of grandparents
› KCLBC President honoured
More news
RSS feed
Twitter feed
Quicklinks
Prospectus/find courses
Academic departments
Research A-Z
Principal
Job opportunities
King's Health Partners
Students' Union
Discover more
Open days
Virtual tour
King's global activity
What's on
Festival: The Times Cheltenham Science Festival
Launch: Robert Fisk lecture
Fora: Principal's Forum
More events
Summer School
Study at King's this summer

Appendix C. Interview information sheet

University websites evaluation interviews

Information sheet for participants

About the study

The aim of the interview is to capture your perception of 6 university websites using an interview technique known as the Repertory Grid Technique (RGT). The RGT is used to elicit a set of constructs expressed as contrasting poles (positive / negative) on a scale. The theory is that we organise our experience with the world into such constructs, which we then use to classify the people or things we interact with. For example based on our experience with people we know that some are **approachable** and others **aloof**. Furthermore we have a pretty good idea which of these trait is positive (i.e. the most desirable in a person) – in this case most of us would probably see approachable as the most positive pole. When we meet new people, we may consciously or subconsciously categorise them according to that construct.

By comparing university websites in this way, I am hoping to identify the usability features that mater most to prospective students.

Before the interview

I would be most grateful if you could spend a few minutes familiarising yourself with each of the following websites. All you need to do is look at the homepage and browse around the site. You may set yourself a small task (e.g. find information about a specific course, finding information about accommodation, etc) to make it more purposeful.

The websites are:

- University of Southampton <http://www.soton.ac.uk>
- University of Bristol <http://www.bristol.ac.uk>
- University of Warwick <http://www2.warwick.ac.uk>
- University College London <http://www.ucl.ac.uk>
- London School of Economics <http://www2.lse.ac.uk>
- King's College London <http://www.kcl.ac.uk>

The interview process

On the day of the interview, you will get a chance to look at the 6 websites again and there will be printed screenshots of their homepages available to refresh your memory.

Then you will be presented with a triad (i.e. a set of three) of websites at a time and you will have to decide how two of them are similar to each other and different from the third in terms of what you consider important when using a university website. For example you might say that two websites have a modern look and feel and the other a

dated look and feel. These two poles will form a bipolar construct against which other websites can be rated. This step will be repeated a few times with different triads.

For each new construct, I will ask you a few probing questions to clarify the construct and elaborate if necessary. For example, which pole is preferable (e.g. modern or dated look and feel), or how and why that particular aspect affects your perception of a website.

At the end, you will rate the six websites against all the bipolar constructs that you have identified.

Finally…

This may seem a bit daunting at this stage, but it should not; in fact it should be quite fun to do! Remember that it is not you who will be tested, but the six websites under scrutiny.

Should you have any question or concern, please do not hesitate to contact me.

I look forward to meeting you and again many thanks for your help, it is much appreciated.

Gilles Couzin
Principal researcher

University of Bristol
Computer Centre
8 Tyndall Avenue
Bristol BS8 1UD

Tel: 0117 9288326
email: gilles.couzin@bristol.ac.uk