

---

## Advertising academia with sponsored search: an exploratory study examining the effectiveness of Google AdWords at the local and global level

---

Don Turnbull\*

School of Information,  
University of Texas, 1 University Station D7000,  
Austin, TX 78712, USA  
E-mail: donturn@ischool.utexas.edu  
\*Corresponding author

Laura F. Bright

Department of Advertising,  
University of Texas, 1 University Station A1200,  
Austin, TX 78712, USA  
E-mail: lbright@laurabright.com

**Abstract:** An exploratory study conducted in late autumn and early winter 2006–2007 investigates the purchasing of sponsored search advertising for a major US university's academic department. The ad campaign used Google's AdWord service with the goal of increasing awareness of the academic department and encouraging potential graduate admissions or admissions inquiries. A behavioural model of information seeking is suggested that could be applied for selecting appropriate types of online advertising for awareness and other advertising goals. The study found little overlap between traditional, commerce-oriented online advertising methods and a general awareness campaign, as evidenced by a low click-through rate to the targeted site. Insights for future studies include increased integration with server logs, targeted site query terms and alternative awareness strategies.

**Keywords:** sponsored search; online advertising; search engines; behavioural model; information seeking; electronic business; Google.

**Reference** to this paper should be made as follows: Turnbull, D. and Bright, L.F. (2008) 'Advertising academia with sponsored search: an exploratory study examining the effectiveness of Google AdWords at the local and global level', *Int. J. Electronic Business*, Vol. 6, No. 2, pp.149–171.

**Biographical notes:** Don Turnbull is an Assistant Professor in the School of Information at the University of Texas at Austin. His teaching and research focuses on designing information architectures, information retrieval, information systems analysis, the semantic web and knowledge management systems.

Laura F. Bright is currently pursuing her Doctorate in Advertising at the University of Texas at Austin, with specialities in Consumer Behaviour and Information Studies. In May 2004, she obtained her Master's Degree in Advertising from the University of Texas, Austin. Her current research focuses

on consumers' response to user-generated content, interactive media environments, and increasing levels of media control.

---

## **1 Introduction**

It is estimated that 363 million unique searches were conducted online during 2006 in the USA with roughly 44% of those searches happening through Google (Ad Age Search Marketing Fact Pack, 2006). As consumers and advertising expenditures continue to move online, sponsored search and paid search advertising on search engines have become popular mechanisms for delivering advertising messages to consumers seeking a specific type of content as indicated by their search terms. In 2006, approximately 50% of the American public, or 144.5 million users, used search engines in their search for information about a given product, service and other information. With regard to advertising expenditures in 2006, \$ 321 million was spent on paid-inclusion or sponsored search advertising, with the average advertiser paying \$ 1.61 per click (Ad Age Search Marketing Fact Pack, 2006). This number is only expected to increase as the number of search engine users is projected to reach 166.2 million by 2010; this positively indicates continued growth for sponsored search advertising (Ad Age Search Marketing Fact Pack, 2006).

For many of today's consumers, the web has become the natural starting point for information searches on anything from new commercial products to medical advice to academic material. The majority of these information searches begin at a commercial search engine like Google or Yahoo!, where a theoretically infinite number of searches may be conducted for free. To be able to offer this free service to consumers, search engine operators must also offer advertising opportunities to help finance their operating costs and drive bottom line revenue. Sponsored search advertisements generate this revenue stream while also providing benefits to both consumers and marketers. Consumers are able to conduct free information searches while, at the same time, advertisers are given the opportunity to deliver timely and relevant persuasive communication that corresponds to such searches. This type of advertising creates a subtle yet powerful connection for consumers; sponsored search advertisements put relevant, targeted information at users' fingertips when they are actively seeking information and primed for product exposure.

While the web has gained strong ground among marketers as a viable advertising medium and advertising spending on the internet has grown steadily over the past decade, today's consumers increasingly exhibit negative attitudes and scepticism towards many forms of advertising on the web. As evidenced in the recent low click-through rates of banner ads, the most common format of web advertising, more and more consumers deliberately avoid looking at banner ads or anything of similar shape (Cho and Cheon, 2004). Furthermore, highly intrusive forms of interactive advertising such as pop-up ads are perceived as annoying, distracting and disturbing by online consumers (Li et al., 2002). Sponsored search is a promising new mechanism to combat the negativity associated with interactive advertising and bring consumers advertising information that is relevant and timely instead of intrusive and annoying.

Most current research on sponsored search advertising focuses on the legal implications of click-fraud, search algorithms, the economic impact of such advertising,

and the commercial successes and failures it has elicited (Jansen, 2007; Holahan, 2006; Xing and Lin, 2004). Although much attention has been paid to the commercial success of sponsored search advertising, little light has been shed on the impacts that such techniques might have when advertising academic programmes. To help fill this gap, this research will present an analysis of how sponsored search advertising can be used to promote an academic institution, the University of Texas at Austin School of Information (UT iSchool), and the implications therein. Specifically, the Google AdWords program was used to advertise the graduate programme offerings at the UT iSchool and to generate awareness on both the local (Austin, Texas) and global level. Approximately 80% of web traffic begins at search engines, and Google commands 44% of this search market in global as well as local searches (Ad Age Search Marketing Fact Pack, 2006). As the market leader in the search category, Google AdWords was a natural choice for the implementation of this research.

The use of the web has been part of academic recruiting for more than a decade and having a website is nearly ubiquitous among academic departments today. According to Goral (2003, p.8), a significant majority (80%) of university applicants make their first contact with an academic institution via the school's website. More likely than not, these initial contacts with a university's home page were made through links from search engines. In offering sponsored search advertising, alongside traditional search results, academic departments can vie for additional name exposure amongst prospective graduate students. This research will examine whether this additional name exposure induces action (click-through) amongst web users searching for information related to graduate programs and schools in the information sciences.

## **2 Goals of the study**

The goals for this exploratory study were to investigate the mechanisms for purchasing sponsored search advertisements, focused on awareness, for a major US university's academic department and to design and evaluate a campaign designed to focus on specific information seeking behaviours. The behavioural model of information seeking should suggest that there are appropriate types of advertising for awareness in sponsored search web advertising as compared to more common web search advertising goals. The study goals specifically include dividing the advertising campaign to include both global and local Web users as well as both statement and question-based ad copy.

The basis for these goals is built upon some specific, current research in web advertising, general information seeking strategies and web information seeking behaviour. These research findings are explained, and then combined with new ideas that form elements of the goals that are evaluated in this study.

## **3 Advertising on the web**

In the domain of advertising, much attention has been devoted to the investigation of how consumers react to commonplace types of advertising on the web, ranging from banner ads to sponsorships, and pop-up ads. While dynamic and interactive advertisements were found to be more effective than static ads in producing positive consumer responses (Coyle and Thorson, 2001), recent research suggests that consumers' overall response to

advertising on the web is increasingly negative as they become more savvy and sceptical about the values of such advertisements (Cho and Cheon, 2004; Coulter et al., 2001). In fact, the online landscape has become congested with advertising in its more intrusive forms and consumers strive to avoid advertising as much as possible because such advertising is likely to interfere with the tasks or interests they are pursuing online (Cho and Cheon, 2004; Li et al., 2002). Moreover, it has been shown that while web searchers consider sponsored search advertising as less relevant than organic search results, they are essentially equally relevant (Jansen and Resnick, 2006). Taken together, the literature suggests that interactive advertising features that enhance consumers' understanding of relevance without actually interfering with their intended tasks should be successful in eliciting their favourable attitudes. Sponsored search is an overall advertising medium feature that fits this description, and due to its informative and (mostly) non-intrusive nature is not likely to be perceived as annoying or irrelevant by search engine users.

Among the variety of factors influencing consumer response to advertising on the web, congruity between the ad and the website content in which the ad is placed appears to be a significant factor in advertising perception (Cho, 2003; Moore et al., 2005; Shamdasani et al., 2001). In Cho's (2003) study of banner ads, advertising content that was congruent with the editorial content was more effective as it was less likely to interrupt the consumer's primary task or focus. Similarly, a higher level of congruity between the product category advertised in a banner ad and the context of the website in which the ad was embedded resulted in more favourable consumer responses than low relevance between the ad and the website context (Moore et al., 2005; Shamdasani et al., 2001). This bodes well for sponsored search advertisements, as their nature demands that they are relevant to the current searches being conducted.

Alternatively, research by Li et al. (2002) suggests that as online consumers become increasingly goal oriented, online advertising techniques that are interactive and non-congruent shall become substantially more intrusive because they will stand between consumers and their goal actualisation. Their research identified three causes of ad irritation:

- content
- execution
- placement.

Among these, ad placement online is considered to be the primary indicator as to whether an ad is considered intrusive or not. This focus on the location of an ad ties back to the previously discussed findings confirming that increased ad congruency in an online environment leads to a higher click through rate and more favourable consumer attitudes (Cho, 2003). Thus, content congruent advertising perceived as useful in this context should elicit less irritation amongst consumers upon exposure.

An often used model in adverting research is the Persuasion Knowledge Model (PKM) that seeks to understand how consumers use their own persuasion knowledge to cope with the over abundant persuasion techniques used in advertising and media today (Friestad and Wright, 1994). This model posits that much of the reasoning for selective exposure and understanding in advertising is due to the level of persuasion expertise each individual possesses. Persuasion knowledge 'performs schema-like functions' that help guide consumers through persuasion scenarios and contributes to developing their own

ideas of what is occurring. A consumer's persuasion coping mechanisms change over a lifetime, and more directly, over the course of a given persuasion attempt. As many online consumers have interacted with and possibly been persuaded to click on banners, pop-ups, interstitials and the like, sponsored search advertisements have proven to be a novel mechanism that consumers could be more likely to interact with than traditional advertisements during an information seeking endeavour. However, to build an understanding of a consumer's individual reactions to planning, implementing and conducting a search likely to be augmented with advertising, a specific view of the search process must be defined.

#### 4 Information seeking on the web

Any understanding of the effects of web advertising must be built on an understanding of human web information seeking behaviour, which includes both web searching and browsing activities. Marchionini (1995) defines information seeking as "a process in which humans purposefully engage in order to change their state of knowledge" and "the term *information seeking* is preferred to *information retrieval* because it is more human oriented and open ended" (Marchionini, 1995, p.5, 6). In other words, information seeking is significantly broader than web searching, and considers cognitive aspects of information usage. Even in the nascent days of the World Wide Web, Marchionini (1995) began to distinguish information seeking as a superset of activities including information retrieval and browsing. He points out that information retrieval assumes the information sought has been known at some point, while seeking information can include not only retrieval, but searching for new information as well. In the context of web advertising, it is obvious that users will be exposed to ads relevant to both types of tasks.

Information seeking, with the nominal emphasis on seeking, implies that the goal might change as more information is learned; an initial query or question can be further refined; the initial question may be realised as too broad; or the information discovered while seeking the answer changes the question altogether. With the advent of fast, accurate search engines on the web, users can move more rapidly through larger amounts of information and iteratively narrow their web interaction to suit the depth of their information needs. These two activities of information retrieval and browsing combine to cover the broad spectrum of information seeking. Information retrieval requires more planned analytical strategies, with preparation of queries and interpretation of the search results. Browsing relies more on intuitive strategies based on past browsing experiences, with unplanned, often serendipitous recognition of information and paths to follow. The web provides opportunities for both information retrieval and browsing and allows for appropriate and context relevant advertising suited to either.

Marchionini reviewed the research on browsing and observes "there seems to be agreement on three general types of browsing that may be differentiated by the object of search and by the systematicity of tactics used" (Marchionini, 1995, p.106). Directed browsing occurs when browsing is systematic, focused, and directed by a specific object or target. Examples include scanning a list for a known item and verifying information such as dates or other attributes. Semi-directed browsing occurs when browsing is predictive or generally purposeful: the target is less definite and browsing is less systematic. An example is entering a single, general term into a database and casually examining the retrieved records. Finally, undirected browsing occurs when there is no

real goal and very little focus; examples being link browsing, news site scanning and web portal usage. The traditional analogues to these activities off the web are routinely supported via advertising (browsing new sites for example being similar to watching a news TV programme or reading a news magazine) and understanding these tasks atomically may help in designing messages that suit each user's information need.

Another appropriate information seeking model is the early work by Ellis (1989), Ellis and Cox (1993) and Ellis (1997), who propose and elaborate a general model of information seeking behaviours based on studies of the information seeking patterns of social scientists, research physicists, chemists, and engineers. One version of the model describes six categories of information seeking activities: starting, chaining, browsing, differentiating, monitoring, and extracting. 'Starting' comprises those activities that form the initial search for information – identifying sources of interest that could serve as starting points of the search. Identified sources often include familiar sources that have been used before, as well as less familiar sources that are expected to provide relevant information. The likelihood of a source being selected depends on the perceived accessibility of the source, as well as the perceived quality of the information from that source. Perceived accessibility, which is the amount of effort and time needed to make contact with, and use, a source, has been found to be a strong predictor of source use for many groups of information users (Allen, 1977). However, in situations when ambiguity is high and when information reliability is especially important, less accessible sources of perceived high quality may be consulted as well (Choo et al., 1998). While searching the initial sources, these sources are likely to point to, suggest, or recommend additional sources or references. For consumers using the web for commerce, the accessibility of the browser's start-up page has a tremendous influence on the beginning of a web information seeking session.

Following up on these new leads from an initial source is the activity of 'chaining'. Chaining can be backward or forward. Backward chaining takes place when links or references from an initial source are followed, and is a well-established routine of information seeking among scientists and researchers. In the reverse direction, forward chaining identifies and follows up on other sources that refer to the initial source or document. While forward chaining can be an effective way of extending a search, it seems to be an underutilised technique. In many cases the forward chaining technique itself may not be obvious. In other cases, the syntax and interaction with tools that support forward chaining, such as search engines, have simply not been introduced.

Having located sources and documents, 'browsing' is the activity of semi-directed search in areas of potential interest. The individual often simplifies browsing by looking through tables of contents, lists of titles, subject headings, names of organisations or persons, abstracts and summaries. Browsing takes place in many situations in which related information has been grouped together and for purposes of this study – search result pages. Chang and Rice define browsing as

"the process of exposing oneself to a resource space by scanning its content (objects or representations) and/or structure, possibly resulting in awareness of unexpected or new content or paths in that resource space." (Chang and Rice, 1993, p.258)

They regard browsing as a "rich and fundamental human information behaviour" that could lead to outcomes such as serendipitous findings, modification of information needs,

learning, enjoyment, and so on (Chang and Rice, 1993, p.258). One of the great successes of the web is that it affords such opportunistic browsing.

During 'differentiating', the individual filters and selects from among the sources scanned by noticing differences between the nature and quality of the information offered. For example, social scientists were found to prioritise sources and types of sources according to three main criteria: by substantive topic, by approach or perspective, and by level, quality, or type of treatment (Ellis, 1989). The differentiation process is likely to depend on the individual's prior or initial experiences (the concept of *awareness* in this study) with the sources, recommendations from personal contacts, or reviews in published sources. Taylor (1986) points out that for information to be relevant and consequential it should address not only the subject matter of the problem but also the particular circumstances that affect the resolution of that problem. He identifies six categories of criteria by which individuals select and differentiate between sources: ease of use, noise reduction, quality, adaptability, time and cost savings. The act of bookmarking web pages or adding items to a web shopping cart can be thought of as representing differentiating in that preferred resources are purposefully selected and are then made available more immediately for future access.

'Monitoring' is the activity of keeping abreast of developments in an area by regularly following particular sources. The individual monitors by concentrating on a small number of what are perceived to be core sources, most likely sources identified in the differentiating activity. 'extracting' is the activity of systematically working through a particular source or sources in order to identify material of interest. As a form of retrospective searching, extracting may be achieved by directly consulting the source, or by indirectly looking through bibliographies, indexes, or online databases. Retrospective searching tends to be labour intensive, and is more likely when there is a need for comprehensive or historical information on a topic.

Note that although Ellis's extracting activity bears the same name as Marchionini's (1995) sub-process of 'extract information', the two processes are different. Marchionini describes extracting like this:

"There is an inextricable relationship between judging information to be relevant and extracting it for all or part of the problem's solution ... To extract information, an information seeker applies skills such as reading, scanning, listening, classifying, copying, and storing information ... As information is extracted, it is manipulated and integrated into the information seeker's knowledge of the domain." (Marchionini, 1995, p.57, 58)

In Ellis' model, 'browsing' and 'differentiating' are activities separate from 'extracting', which is "systematically working through a particular source or sources to identify material of interest" (Ellis, 1989, p.242). On the web, we expect extracting (in Ellis' sense) to mean systematically working through a selected website or set of web pages (typically using search engines) in order to search and retrieve material of interest.

Although the Ellis model is based on studies of academics and researchers, the categories of information seeking behaviours may be applicable to other groups of users as well. For example, Sutton's (1994) analysis of the information seeking behaviour of attorneys noted that the three stages of legal research he identified (base-level modelling, context sensitive exploration, and disambiguating the space) could be mapped into Ellis's categories of starting, chaining, and differentiating. The identification of categories of information seeking behaviour also suggests that information retrieval systems could increase their usefulness by including features that directly support these

activities. Ellis thought that hypertext-based systems would have the capabilities to implement these functions (Ellis, 1989). If we visualise the World Wide Web as a hyperlinked information system distributed over numerous networks, most of the information seeking behaviour categories in Ellis' model are already being supported by capabilities available in common web browser software. Thus, an individual could begin surfing the web from one of a few favourite starting pages or sites (starting); follow indexes of hyper-textual links to related information resources – in both backward and forward linking directions (chaining); scan the web pages of the sources selected (browsing); bookmark useful sources for future reference and visits (differentiating); subscribe to e-mail based services that alert the user of new information or developments (monitoring); and search a particular source or site for all information on that site on a particular topic (extracting).

In undirected viewing, the individual is exposed to information with no specific informational need in mind. The overall purpose is to scan broadly in order to detect signals of change early. Many and varied sources of information are used, and large amounts of information are screened. The granularity of information is coarse, but large chunks of information are quickly dropped from attention. The goal of broad scanning implies the use of a large number of different sources and different types of sources. These sources should supply up-to-date news and provide a variety of points of views. Information on the web appears to match these requirements well. The web is a *laissez-faire* information marketplace offering a huge diversity of sources presenting information through a wide range of perspectives. Information often becomes available on the web more quickly than through print channels. The immediacy, variety and eclecticism of the web makes it a useful medium for detecting early, weak signals about trends and phenomena that could become significant over time. Because of undirected viewing, general areas or topics may be identified as being potentially relevant to an organisation's goals or tasks, and the individual becomes sensitive to these areas.

In conditioned viewing, the individual directs viewing to information about selected topics or to certain types of information. The overall purpose is to evaluate the significance of the information encountered in order to assess the general nature of the impact on the organisation. The individual has isolated a number of areas of potential concern from undirected viewing, and is now sensitised to assess the significance of developments in those areas. The individual wishes to do this assessment in a cost-effective manner, without having to dedicate substantial time and effort in a formal search. The web can provide a number of ways of obtaining information to make initial sense of emergent phenomena. For example, market research companies, financial institutions, industry associations, and government organisations make available on web pages their reports, bulletins, and newsletters that analyse ongoing developments in areas under their scrutiny. Some academics, authors, consultants, industry observers, and knowledgeable experts use the web to share their insights and predictions, and to stimulate further discussion. If the impact is assessed to be sufficiently significant, the scanning mode changes from scanning to searching.

During informal search, the individual actively looks for information to deepen the knowledge and understanding of a specific issue. It is informal in that it involves a relatively limited and unstructured effort. The overall purpose is to gather information to elaborate an issue so as to determine the need for action by the organisation. The individual has determined the potential importance of specific developments, and embarks on a search that would build up knowledge about those developments, and



deepen understanding of their implications and consequences. In conducting an informal search, the web can address the requirement for information that is directed at specific issues, but that still does not cost a great deal of time or money to acquire. On the web, search engines can be used to locate information on web pages, newsgroups and mailing list discussions. Librarians and specialists have also compiled web-based directories and lists of focused web resources. If a need for a decision or response is perceived, the individual dedicates more time and resources to the search.

During formal search, the individual makes a deliberate or planned effort to obtain specific information or information about a specific issue. A searching activity is considered formal if it is structured according to some pre-established procedure or methodology. The granularity of information is fine, as search is suited to finding detailed information. The overall purpose is to systematically retrieve information relevant to an issue in order to provide a basis for developing a decision or course of action. Formal searches could be a part of, for example, competitor intelligence gathering, patents searching, market demographics analysis, and issues management. Formal searchers prefer information from sources that are perceived to be knowledgeable, or from information systems and services that make efforts to ensure data quality and accuracy. For web searches that involve advertising content a set of issues may affect individual perception of information, be it advertiser-driven or web page content. A more specific, subtle model may be suited to understanding these differences.

#### 4.1 A behavioural model of web info seeking

Choo et al. (1998) identified information seeking activities that combined the influences of previous information seeking models, but were tailored more for information seeking on the web via web browsers. Figure 1 identifies four main modes of information seeking on the web: undirected viewing, conditioned viewing, informal search, and formal search. For each mode, the figure indicates which information seeking activities or moves are likely to dominate, as suggested by theory.

**Figure 1** Information seeking on the web

Information Seeking on the Web						
	Starting	Chaining	Browsing	Differentiating	Monitoring	Extracting
Undirected Viewing	12 Episodes					
Conditioned Viewing			18 Episodes			
Informal Search				23 Episodes		
Formal Search						8 Episodes

Source: Choo et al. (2000a)

In the undirected viewing mode, there are broad areas of interest, while there is no particular information need that may be articulated explicitly or formally. Instead, the purpose of viewing is precisely to notice significant developments or issues that then generate new information needs. As noted earlier, typical tactics here would involve

viewing a diversity of sources, taking advantage of what's easily accessible, and including sources which may not seem at first to be directly related to the work of a given organisation (i.e., UT iSchool).

In terms of information seeking moves on the web, we may anticipate starting and chaining to dominate. Starting occurs when viewers begin their web use on pre-selected default home pages, or when they visit a favourite page or site to begin their viewing (such as news, newspaper, or magazine sites). Chaining occurs when viewers notice items of interest (often by chance) and then follow hypertext links to more information on those items. Forward chaining of the sort just described is the most typical during undirected viewing. Backward chaining is also possible, since search engines can be used to locate other web pages that point to the site that the user is currently at.

For information seeking moves on the web, we may anticipate browsing, differentiating, and monitoring to be common. Differentiating occurs as viewers select websites or pages that they expect to provide relevant information. Sites may be differentiated based on prior personal visits, or recommendations by others (such as word-of-mouth or published reviews). Differentiated sites are often bookmarked. When visiting differentiated sites, viewers browse the content by looking through tables of contents, site maps, or list of items and categories. Viewers may also monitor highly differentiated sites by returning regularly to browse, or by keeping abreast of new content (through, for example subscribing to newsletters or feeds that report new material on the site).

During informal search, the individual has amassed enough knowledge and awareness (be it from advertising or traditionally non-commercial sources) about a topic to formulate a query to learn more about a specific issue or development. An informal search query is possible because the individual is able to establish some parameters and boundaries to constrain the search. At the same time, the search is limited, as the individual does not wish to expend substantial amounts of time and effort. The purpose is to learn more about the issue in order to determine the need for action or response.

Again, informal search is likely to be attempted at a small number of websites that have been differentiated by the individual, based on the individual's knowledge about these sites' information relevance, quality, affiliation, and dependability. Extracting is relatively 'informal' in the sense that searching is localised to looking for information within the selected site(s). Extracting is also likely to make use of the basic, 'simple' search features or commands of the search engine, in order to get at the most important or most recent information without attempting to be comprehensive. Monitoring becomes more proactive if the individual sets up push channels or software agents that automatically find and deliver information based on selection of keywords or topics.

During formal search, the individual is prepared to invest substantial time and effort in order to gather information that will enable action to be taken. The search may be formal because it follows some pre-established routine or method. The search is also formal because it is now possible, with the knowledge from informal search and conditioned viewing, to elaborate the query in detail – specifying the target of inquiry or retrieval according to desired attributes (authors, institutions, dates, document types, and so on). Information gained from formal search is typically used 'formally' as well, for policy making, strategic planning, and other forms of decision-making.

In terms of activities or movements on the web, we may anticipate, primarily, extracting operations, with some complementary monitoring activity. Formal search makes use of search engines that cover the web relatively comprehensively, and that

provide a powerful set of search features that can focus retrieval. Because the individual wishes not to miss any important information, there is a willingness to spend more time interfacing with the search engine, to learn and use complex search features, and to evaluate the sources that are found in terms of quality or accuracy. Formal search may have two steps beginning with searching for a website and then a second step of searching within the website itself. This intra-site searching may involve fairly intensive foraging. Extracting may be supported by monitoring activity in an effort to stay abreast of the latest news and information trends, again through services such as website alerts, push channels, and software agents.

In Choo et al. (2000b), this model was tested by analysing significant episodes of web-based information seeking activity identified in the interview transcripts and web interaction logs of a study population of 34 participants from seven companies. Figure 1 illustrates the distribution of episodes over four modes of viewing and searching and six classes of possible web moves.

These modes and moves of information seeking can all be thought of as requiring specifically designed, persuasive advertising copy to support the specific information need of a web user, be it an ad on a popular website (supporting *undirected viewing and chaining*) or a specifically formulated web search query with a specific buying goal in mind (*formal search* with *extracting* that would be synonymous with *buying*).

Therefore, it makes sense to use this information-seeking framework to be cognizant of the various possible methods of conveying information via sponsored information and how it may suit specific, intended consumers' information needs. For example, in an initial product awareness strategy, non-intrusive yet relevant ads suited to the viewing modes might be appropriate. In cases where users are conducting a search for general information, but with a loose (informal) set of terms, search result page ads would be applicable.

Figure 2 takes the previous information seeking behavioural model and applies an overlay showing where the modes and moves of information seeking could be most served by sponsored information and advertisements. In some scenarios, it may be more effective to provide site-based sponsored content, when consumers are building awareness or gathering general information on a topic – a fit for the undirected and conditioned viewing behaviours at the start or link following (chaining and browsing) steps of the process.

**Figure 2** Sponsored search and ad targets for information seeking on the web

	Starting	Chaining	Browsing	Differentiating	Monitoring	Extracting
Undirected Viewing	Site specific, AdSense advertisements					
Conditioned Viewing						
Informal Search				Search result, AdWords advertisements		
Formal Search						

Alternatively, for more specific searching, search engine specific sponsored content may be more applicable to provide consumers with targeted information to match their own searching behaviours (both informal and formal). As for the web-based moves of the search process, it is likely that monitoring behaviour is akin to adding an item to a shopping cart or setting up a price watching event while the extracting behaviour would be akin to buying a searched for item or deciding to act on sponsored information.

The combination of these specific types of web advertising, in the context of the suggested information seeking model, provides a foundation for focusing on elements of ad content and context for both browsing and searching activities. For this initial study, we focused exclusively on search result ad sponsorships delivered through Google AdWords, which provided the most focused empirical base for experimenting with this model.

#### *4.2 Basic elements of sponsored search*

Over the last decade, businesses have realised the importance of search engine placement and optimisation and have made it a part of their marketing efforts. Sponsored search advertising is a popular and cost efficient strategy used for reaching niche markets of consumers online based upon a hand-selected set of key words and phrases associated with said consumer and information. In this capacity, advertisers have the power to deliver messages to consumers that are:

- timely
- relevant
- personal (Godin, 1999).

These sponsored search advertisements are typically placed in non-intrusive locations on search results pages (along the right hand column) and are static (i.e., they have no moving parts). In fact, sponsored search ads are text only and simply use varied font size for contextual distinction; in other words, they are unlike most interactive advertising techniques that have been used previously. Given their characteristics, sponsored search advertisements have the potential to be very popular amongst online information seekers because they do not interrupt the information flow but, rather, supplement it in a non-intrusive fashion.

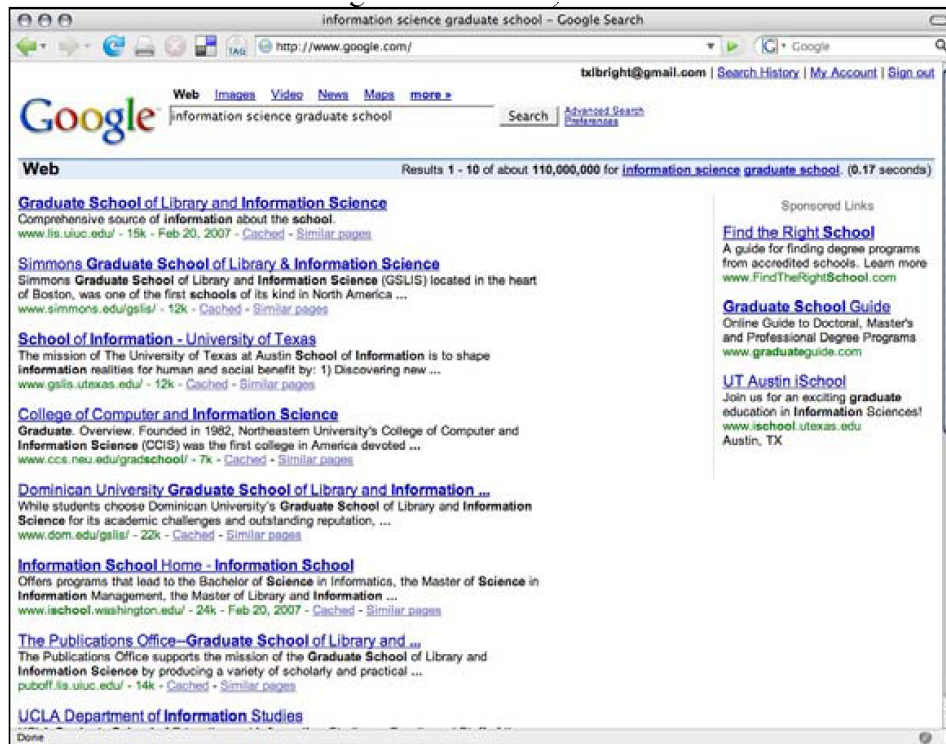
Several basic elements comprise sponsored search advertising. These elements are:

- advertiser provided content and bids
- the review of ads and matching of advertiser content to user queries
- the rank order display of advertiser data based upon cost per click limitations (set by advertiser) and other factors
- an aggregation of consumer response data affiliated with each ad, for billing and client distribution (Fain and Pedersen, 2006).

The primary mechanisms of sponsored search ad delivery are straightforward; the search engine delivers ads based upon a correlation between an advertiser's payment limit (Cost-Per-Click maximum) and the relevance to the search terms being posed by the

consumer (Feng et al., 2005). A typical sponsored search ad as displayed on Google.com is shown in Figure 3.

**Figure 3** Google AdWords screenshot containing UT iSchool Ad



captured: 02/21/07, search term: information science graduate school.

As interactive ads trend towards less obtrusive delivery methods and increasingly relevant and personal content, sponsored search will undoubtedly increase in popularity and usage (Stone, 2007). To this end, several central issues regarding ad delivery auctions are still being fleshed out. They are:

- choice of pricing and allocation scheme
- click fraud
- budget constraints
- the nature of online nature of auctions.

Resolving these issues will allow the online advertising market to move towards the delivery of more personalised and relevant ad content. The question as to whether sponsored search ads either help or hinder information seeking has yet to be answered; however, their marked rise in popularity, as indicated by ad spending, warrants further investigation. The following section will outline the execution of the Google AdWords campaign undertaken for this exploratory case study.

## 5 Design of study

This study was designed to investigate the mechanisms for purchasing sponsored search advertisements with a focus on increased awareness as the advertising goal for a major US university's academic department. The study divided the advertising campaign into global and local sponsored search results to measure differences by a web searcher's evaluation of the sponsored results. The hypothesis is that sponsored results would provide greater impact on local searchers as seen by higher Click-Through Rates (CTRs). The study also divided the sponsored search advertisements into question and statement headline ad copy to measure if one was perceived as a more relevant match to a web searcher's mode of information seeking. The hypothesis for headline types is that the CTR for the statement headline would be greater due to its similarity to most search results.

Finally, other larger questions for the study are the overall effectiveness of any kind of awareness advertising as compared to more common ads as measured in CTR. It is likely that the undirected nature of the search task in a search of a programme of study is not something normally as concise as a typical web commerce searching session to simply locate and purchase an item.

In October 2006, a Google AdWords campaign was constructed to deliver advertising to online consumers searching for information about graduate schools that specialise in information studies programmes. Since a large percentage of current UT iSchool students were residents of Austin (UT's location) before applying to graduate school at UT, a decision was made to include both global and local ad deliveries via Google AdWords. Therefore, two campaigns were constructed for:

- local (Austin, Texas) ad delivery
- global ad delivery.

Each campaign consisted of two advertisements

- an ad with a question-based headline (*"Ready for an exciting graduate education in Information Sciences?"*)
- an ad with a statement-based headline (*"Join us for an exciting graduate education in information sciences!"*).

Two landing pages were used in the ads,

- the admissions page (<http://www.ischool.utexas.edu/admissions/>)
- the about page (<http://www.ischool.utexas.edu/about/>) of the UT iSchool's website.

After creating the text ads, keywords were chosen based upon their relevance to the topic of a graduate education in information science. A total of 53 keywords or keyword phrases were used across all ad campaigns (For a complete listing of keywords see Appendix A). At this time, a daily budget of \$ 35.70 was set (\$ 17.85/campaign) as well as a maximum Cost-Per-Click (CPC) of \$ 0.75 for both campaigns. These budgets were set to allow for appropriate spending, however not to exceed \$ 500 over the course of the campaign. Sponsored search ads began running on Google on October 16th, 2006 and continued to run through February 28th, 2007. This time period was chosen because it

preceded the admissions application deadline and was considered a high traffic period on the website for students considering graduate school.

The primary objective of this Google AdWords campaign was to increase awareness of the UT iSchool programme amongst potential graduate students searching for information through Google. The ads were designed to provoke interest in the UT iSchool and its graduate programme as well as brand the school name by featuring 'UT iSchool' in the headlining link of the advertisement. The maximum CPC specified for the duration of the campaign was competitive with other advertisers on many selected keywords; however, more general terms were excluded due to high auction prices. Google AdWords tracked ad campaign metrics for the duration of the campaign, including average CPC, Click-Thru-Rate (CTR), and individual keyword specifications.

Table 1 shows the keywords used to target Google AdWords ads on search results pages. Mostly, these keywords are chosen to represent exact matches for potential students by topics of interest and by cities in Texas.

**Table 1** Keyword list from Google AdWords campaign (in alphabetical order)

Austin Grad School	Austin Graduate School
Austin Information Science	Dallas Graduate School
Digital Archive Graduate School	Grad School Austin
Grad School for Information Science	Graduate Education
Graduate Education In Information Science	Graduate Programs
Graduate School	Graduate School Information
Graduate School of Library and Information Science	Graduate Schools
Houston Graduate School	Information Architecture Schools
Information Management Graduate School	Information Management Graduate Schools
Information School	Information Schools
Information Science	Information Science Graduate School
Information Science Graduate Schools	Information Science School
Information Technology School	iSchool
Ischool Utxas	Library Graduate School
Masters Archives	Masters Degree Archives
Masters Degree Digital Archives	Masters Degree Digital Libraries
Masters Degree Information Architecture	Masters Degree Information Studies
Masters Degree Information Systems	Masters Degree Knowledge Management
Masters Degree Museums	Masters Digital Archives
Masters Digital Libraries	Masters Information Architecture
Masters Information Studies	Masters Information Systems
Masters Knowledge Management	Masters Museums
San Antonio Graduate School	School of Information
School of Library and Information Science	Texas Graduate School
University of Texas School of Information	UT Austin Grad School
UT Austin iSchool	UT iSchool
UT School of Information	

## 6 Study findings

The exploratory Google AdWords campaign undertaken to increase awareness of the UT iSchool generated few click throughs, however several interesting trends emerged (See Table 2). During the course of the campaign, a total of \$ 31.08 was spent paying for click-through actions on the four available UT iSchool advertisements, located in both the local and global areas of Google, respectively. The average CPC for ads in the local campaign was \$ 0.37, while those for the global campaign were just one cent cheaper at \$ 0.36. As noted earlier, the maximum CPC allocated for both campaigns was \$ 0.75; however, in many cases no other ads were shown as outbidding the ads used in this experiment, so no additional increase in ad bids was needed. While over 200,000 impressions were generated during the course of the campaign, only 86 clicks were completed on the advertisements available; this translates to an average CTR of 0.04%. When compared to industry standard CTRs of 1–2% for banner ads, the CTR for this campaign is considered low (Ad Age Search Marketing Fact Pack, 2006). As hypothesised, this is not surprising due to the indirect nature of the information gathering task.

**Table 2** UT iSchool Google AdWords campaign summary: October 16th, 2006 – February 28th, 2007

<i>Global campaign</i>	<i>Clicks</i>	<i>Impressions</i>	<i>CTR (%)</i>	<i>Avg. CPC (\$)</i>	<i>Avg. position</i>
Statement headline	43	108,736	0.03	0.38	4.8
Question headline	33	91,345	0.03	0.33	3
<i>Total</i>	<i>76</i>	<i>200,083</i>	<i>0.03</i>	<i>0.36</i>	<i>4</i>
<i>Local campaign</i>					
Statement headline	6	4,910	0.12	0.37	4.2
Question headline	4	3,440	0.11	0.36	4.4
<i>Total</i>	<i>10</i>	<i>8,350</i>	<i>0.11</i>	<i>0.36</i>	<i>4.3</i>
<i>Complete campaign</i>	<i>86</i>	<i>208,353</i>	<i>0.04</i>	<i>0.36</i>	<i>4.2</i>

A comparison of the performances of the local and global campaigns revealed the most definitive differences in the study. While dramatically less local searches were performed during the study period, the CTR for the local campaign was significantly higher as hypothesised (0.08%), almost four times as likely. This suggests that increasing the number of ad keywords and CPC budget for local searchers could have a large potential impact on awareness advertising for universities and their departmental programmes. As noted previously, two types of headlines were available for each campaign,

- a statement based headline
- a question based headline.

In examining the aggregate data from both campaigns, it is clear that the statement-based ad headline (“*Join us for an exciting graduate education in information sciences!*”) out-performed the question-based ad headline (“*Ready for an exciting graduate education in Information Sciences?*”) by an average of 25%, as hypothesised. While no consumer response data were collected for the different headline types, it is possible that consumers



preferred the statement-based headline due to its call to action approach. When searching for answers to their important questions, online information seekers could possibly be turned off by a question presented in an ad, leading to a non-response. This assumption may correspond with the behavioural model of information seeking and its focus on recommendations for differentiation when dealing with directed viewing tasks. In other words, it may be that brief, factual statements more closely resemble a recommendation similar to standard search results, but with a more specific message than summarised web page text (seen in standard search results on a search results page) or an evocative, inquisitive headline that may not help with differentiating a quality result, but actually only raise more questions in the mind of the searcher.

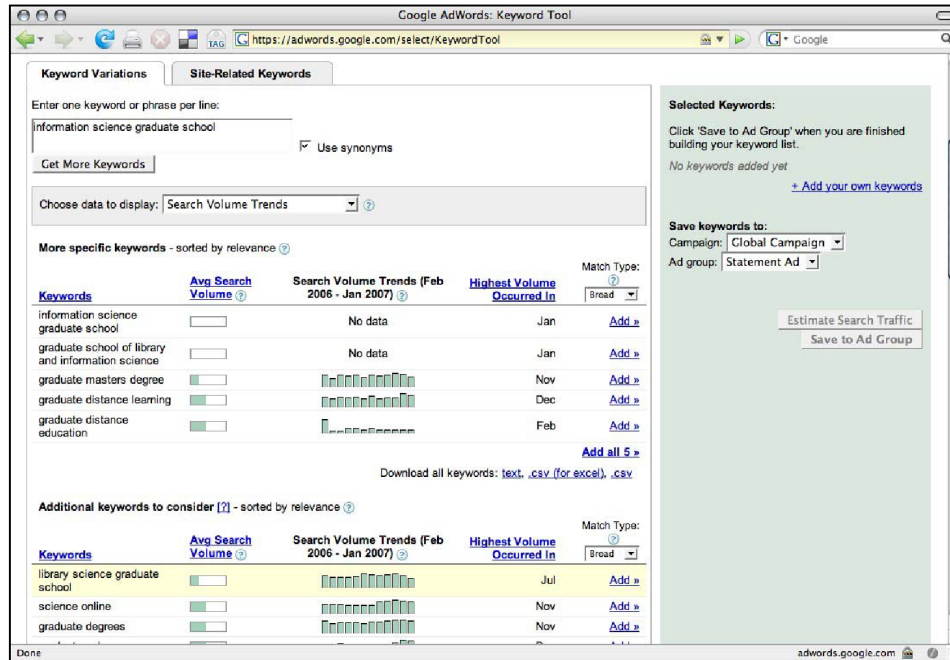
When reviewing campaign performance across the months from October to February, the curve is upward trending, with the largest amount of click-throughs occurring in November and February. October 2006 had no click-throughs as was expected since it was the first month of the campaign and ads only ran from 16–31st October.

December 2006 was the lowest performing month with only eight clicks occurring through the global campaign and no click-throughs happening at the local level. Overall, February 2007 was the highest performing month that might have been caused by prospective graduate students beginning their information search early for admissions during the academic year 2008–2009. It is assumed that ad spending declined in December because of the non-commercial nature of the advertising topics, or perhaps the break in the academic year. Traditionally, November and January are prime months for graduate school application and admission, so their monthly totals did not rise as expected.

One issue to consider in the experiment is the quality of Google AdWord suggestions and the interface of the AdWord (web-based) application itself, as shown in Figure 4. Since the majority of online advertising is eCommerce related, the application is designed with those business models in mind. It may be that for awareness building or in scenarios that do not lead to an online store for shopping and purchasing items, this interface is less effective. Monitoring ad usage was complete, but the interface was not effective at suggesting alternative keywords. In many cases when alternative keywords were input to the system, there was no current pricing or few relevant, alternative keyword suggestions supplied by the application. The few suggestions offered were mostly quite broad 'graduate degrees' that mostly matched online college preparatory testing (SAT or GRE exams) services that not only were not applicable for the intended goals of the study, but also significantly more expensive CPC ads (up to \$ 4.00 in some cases) than the project budgeted for. The budget of this initial study certainly had an impact and should be addressed and increased in future work.

It may be critical for online advertising applications to keep other intended uses in mind for sponsored information support to truly expand the possibilities for future, varied web-based information campaigns. The AdWords pricing was normalised and kept the same for all keywords. No specific set of words was adjusted to gain a higher sponsored search result ranking.

Overall, the Google AdWords interface allowed for most of the obvious viewing and tracking functions for an online ad campaign. However, more specific data to work with a larger amount of keywords, be it from a custom report or otherwise, would allow for greater depth of analysis and increased insight into keyword usage. As Figure 4 shows, the Google keyword suggestion provided context (as small bar charts) for some keywords, but in many cases, no suggestions were given.

**Figure 4** Screenshot of Google AdWords keyword suggestion tool

Non-traditional advertising or varied campaign goals may require a wider variety of views into the ad purchasing and monitoring process, even beyond the current custom reporting. It may be necessary to build from the current target site's profile to build a custom, comprehensive campaign. The integration of Google Analytics with the AdWords and AdSense interface systems may address these issues in the future.

The search terms that drove visitors to the UT iSchool website varied widely. Appendix A shows some high-frequency search terms related to this advertising campaign that were determined using Google AdWord's keyword evaluation tool.

Few of the terms used to find the UT iSchool's website were included in the set of keywords used for the ad campaign. (see Appendix A) Throughout the campaign, the AdWords system was used to look for alternate, suggested terms that did not include any of the high-frequency terms shown. This suggests that the AdWords system does not widely or deeply analyse targeted pages to find actual referred terms, and that site-specific log analysis of referring search terms may be the key to building a set of potentially attractive keywords for ad buying for this campaign.

Site characteristics at the UT iSchool webpages reveal a subtle but typical set of problems for a university departmental website. There are many constituents including potential students, current students, alumni, faculty, staff, researchers and media, all whom may or may not know of the department prior to visiting. Addressing a site's content, marketing message and search landing pages can be complex. Table 3 highlights some statistics about the UT iSchool's current website.

**Table 3** UT iSchool web highlights 10/16/2006 – 02/28/2007

Total sessions	2,066,321.00
Total pageviews	5,822,802.00
Total hits	14,782,019.00
Total bytes transferred	887,234,104,931.00
Average sessions per day	151,93.54
Average pageviews per day	42,814.72
Average hits per day	108,691.32
Average bytes transferred per day	6,523,780,183.00
Average pageviews per session	2.82
Average hits per session	7.15
Average bytes per session	429,378.00
Average length of session	325

As shown in Table 3, the main UT iSchool site has a high volume of page requests (5,822,802) that involve over two million extended sessions (> 30 minutes of continuous click-through activity on the site). While this traffic may be increased in months surrounding the admissions deadlines, there is also a considerable US holiday break when less general university-related traffic may occur. Initial analysis of clickpaths through the UT iSchool site revealed a very small amount (>0.5%) of traffic that appears to be related to admissions or departmental informational queries. It may be that if this is a decided goal of the site, some navigation and content changes are required. This would in turn, increase the AdWords landing pages to either include additional targeted information or the creation of several alternative landing pages with varied AdWord results pointing web searchers to each type of page as specified.

In retrospect, the strength of this study is that it hints at certain strategies for targeting potential graduate students for a US university. The findings suggest that local, potentially more contextually aware web searchers get more value from searches pertaining to a university in their current state of residence and that statement ad copy encourages them to click through to information on the university's website. Aside from the bulk of ads placed for university testing and financial aid information and services, it appears that online advertising for academic awareness is critically under-utilised at the moment. It seems obvious that academic institutions concerned with increasing awareness of their virtues and programmes of study will be forced to compete by using web-based resources, be they ads or more specific and prolific search content for web searchers to find when seeking academic information.

We hope to see expanding use of sponsored search for longer-term, more complex information seeking tasks be it for higher education or other indirect commerce activities. This expansion would also increase more direct commerce use of sponsored search results as well, as it would be hoped that the increased utility of finding suggested, sponsored results would then be generally universal to aid in all manner of information seeking tasks.

## 7 Conclusions

The goal of this research project was to explore the options offered by Google AdWords and its effectiveness at delivering sponsored search advertising regarding the UT iSchool's graduate programme. Several questions arise from this initial study, including a need to determine if online advertising can serve as an effective awareness tool and if so, is it worth expanding a budget to correlate to an ad campaign's expected performance. It would also be interesting to study the effect of Google and other vendor's ad buying and monitoring applications to see how they influence participants to spend more on ad campaigns, initially or over time. As this study's goals were not direct merchandise purchases, like so many online campaigns, it is also difficult to determine what a successful ad's goals may be – to encourage a student's interest in the UT iSchool programme or to increase general awareness of the department, the school, the faculty or something else? Since the nature of this study was experimental, the use of techniques common to advertising, such as competitive analysis, be it with associated keyword monitoring or specific analysis of similar academic departments, were not undertaken. It seems fitting that future studies should take all or most of these aspects and expand on them.

Moreover, significant impact may be found in future studies that apply a behavioural model to target both modes and moves web searchers may be in, but also to shape the advertisement messages themselves to fit anticipated web user's behavioural expectations. The use of such strategies may evolve over time and the abilities of ad buying and analysis applications should yield further, more specific insights into the activities of web information seekers, be they searching or browsing for information to help them solve information (and product) needs.

## References

- Ad Age Search Marketing Fact Pack (2006) *Published by eMarketer on 6th November*, Retrieved online on 01/19/07.
- Allen, T.J. (1977) 'Information needs and uses', *Annual Review of Information Science and Technology*, Vol. 4, pp.3–29.
- Chang, S. and Rice, R. (1993) 'Browsing: a multidimensional framework', *Annual Review of Information Science and Technology*, Vol. 23, p.242.
- Cho, C. (2003) 'Factors influencing the clicking of banner ads on the World Wide Web', *Cyberpsychology and Behavior*, Vol. 6, No. 2, pp.201–215.
- Cho, C-H. and Cheon, H.J. (2004) 'Why do people avoid advertising on the internet?', *Journal of Advertising*, Vol. 33, No. 4, pp.89–97.
- Choo, C.W., Detlor, B. and Turnbull, D. (1998) 'A behavioral model of information seeking on the web – preliminary results of a study of how managers and IT specialists use the web', *Proceedings of the 61st Annual Meeting of the American Society of Information Science*, Published for the American Society for Information Science by Information Today Inc., Pittsburgh, PA.
- Choo, C.W., Detlor, B. and Turnbull, D. (2000a) *Web Work: Information Seeking and Knowledge Work on the World Wide Web*, Kluwer Academic Publishers, Dordrecht, The Netherlands.

- Choo, C.W., Detlor, B. and Turnbull, D. (2000b) 'Working the web: an empirical model of web use', *33rd Hawaii International Conference on System Science (HICSS)*, Maui, HI.
- Coulter, R.A., Zaltman, G. and Coulter, K.S. (2001) 'Interpreting consumer perceptions of advertising: an application of the Zaltman metaphor elicitation technique', *Journal of Advertising*, Vol. 30, No. 4, pp.1–21.
- Coyle, J.R. and Thorson, E. (2001) 'The effects of progressive levels of interactivity and vividness in web marketing sites', *Journal of Advertising*, Vol. 30, No. 3, pp.277–289.
- Ellis, D. and Cox, D. (1993) 'A comparison of the information seeking patterns of research scientists in an industrial environment', *Journal of Documentation*, Vol. 49, No. 4, pp.356–369.
- Ellis, D. (1989) 'A behavioural approach to information retrieval systems design', *Journal of Documentation*, Vol. 45, No. 3, pp.171–212.
- Ellis, D. (1997) 'Modelling the information seeking patterns of engineers and research scientists in an industrial environment', *Journal of Documentation*, Vol. 53, No. 4, pp.384–403.
- Fain, D.C. and Pederson, J.O. (2006) 'Sponsored search: a brief history', *American Society for Information Science and Technology Bulletin*, Retrieved on 11/15/06 from <http://www.asis.org/Bulletin/Dec-05/pedersen.html>, January, Special Issue.
- Feng, J., Bhargava, H.K. and Pennock, D.M. (2005) 'Implementing sponsored search in web search engines: computational evaluation of alternative mechanisms', *Journal of Computing*, Vol. 19, No. 1, Winter 2007, pp.137–148.
- Friestad, M. and Wright, P. (1994) 'The persuasion knowledge model: how people cope with persuasion attempts', *Journal of Consumer Research*, Vol. 21, pp.1–31.
- Godin, S. (1999) *Permission Marketing*, Simon and Schuster, New York.
- Goral, T. (2003) 'Intelligent admission', *University Business*, Vol. 6, No. 3, pp.38–41.
- Holahan, C. (2006) *Click Fraud: Google Comes Clean, Sort Of*, BusinessWeek, 27 July.
- Jansen, B.J. (2007) 'Click fraud', *IEEE Computer*, Vol. 40, No. 7, pp.85–86.
- Jansen, B.J. and Resnick, M. (2006) 'An examination of searchers' perceptions of non-sponsored and sponsored links during e-commerce web searching', *Journal of the American Society of Information Science and Technology*, Vol. 57, pp.1949–1961.
- Li, H., Edwards, S. and Lee, J.-H. (2002) 'Measuring the intrusiveness of advertisements: scale development and validation', *Journal of Advertising*, Vol. 31, No. 2, pp.37–47.
- Marchionini, G. (1995) *Information Seeking in Electronic Environments*, Cambridge University Press, Cambridge.
- Moore, R.S., Stammerjohan, C.A. and Coulter, R.A. (2005) 'Banner advertiser-website context congruity and color effects on attention and attitudes', *Journal of Advertising*, Vol. 34, No. 2, pp.71–84.
- Shamdasani, P.N., Stanaland, A.J.S. and Tan, J. (2001) 'Location, location, location: insights for advertising placement on the web', *Journal of Advertising Research*, Vol. 41, No. 4, pp.7–21.
- Stone, B. (2007) 'Don't like dancing cowboys? Results say you do', *New York Times*, Media and Advertising Section, 18th January.
- Sutton, S.A. (1994) 'The role of attorney mental models of law in case relevance determinations: an exploratory analysis', *Journal of the American Society of Information Science*, Vol. 45, No. 3, pp.186–200.
- Taylor, R.S. (1986) *Value Added Processes in Information Systems*, Ablex Publishing Corp., Norwood, NJ.
- Xing, B. and Lin, Z. (2004) 'The impact of search engine optimization on online advertising market', *ACM Conference Proceedings*, Winter, pp.519–530.

## Bibliography

- Chamblee, R. and Curlo, E. (1998) 'Ad processing and persuasion: the role of brand identification', *Psychology and Marketing*, Vol. 15, pp.279–299.
- Chen, H-L. and Huang, S-C. (2004) *The Role of the Web in Student Recruitment: Design Guidelines*, Unpublished manuscript retrieved from Dr. Chen on 11/15/06.
- Choo, C.W., Detlor, B. and Turnbull, D. (1999) 'Information seeking on the web – an integrated model of browsing and searching', *Proceedings of the 62nd Annual Meeting of the American Society of Information Science*, Published for the American Society for Information Science by Information Today Inc., Washington DC.
- Ducoffe, R.H. (1995) 'How consumers assess the value of advertising', *Journal of Current Issues and Research in Advertising*, Vol. 17, No. 1, pp.1–18.
- Ellis, D. (1991) *New Horizons in Information Retrieval*, Library Association, London.
- Hoffman, D.L. and Novak, T.P. (1996) 'Marketing in hypermedia computer- mediated environments: conceptual foundations', *Journal of Marketing*, Vol. 60, pp.50–68.
- Liu, Y. and Shrum, L.J. (2002) 'What is interactivity and is it always such a good thing? Implications of definition, person, and situation for the influence of interactivity on advertising effectiveness', *Journal of Advertising*, Vol. 31, No. 4, pp.53–65.
- Petty, R.E., Priester, J.R. and Brinol, P. (2002) 'Mass media attitude change: implications of the elaboration likelihood model of persuasion', in Bryant, J. and Zillman, D. (Eds.): *Media Effects: Advances in Theory and Research*, Springer Verlag, New York, pp.155–199.
- Rodgers, S. and Thorson, E. (2000) 'The interactive advertising model: How users perceive and process online ads', *Journal of Interactive Advertising*, Retrieved online 01/25/03 from <http://jiad.org/vol1/no1/>, Vol. 1, No. 1.
- Scholten, M. (1996) 'Lost and found: the information-processing model of advertising effectiveness', *Journal of Business Research*, Vol. 37, pp.97–104.
- Severin, W.J. and Tankard Jr., J.W. (2001) *Communication Theories: Origins, Methods, and Uses in the Mass Media*, 5th ed., Addison Wesley Longman, Inc., New York.

## Appendix A

**Table 4** Selected search term referrers to the UT iSchool website with more than 80 requests

Librarian	2427	Case Study Research	1100
Information Architecture	1010	Scholarships	957
Bibliometrics	786	Research Method	762
Survey Methods	707	Survey Method	643
Case Study Methodology	468	Archivist	373
Research Methods	353	Jobs in Higher Education	343
School of Information	317	Case Study	307
Content Analysis	305	iSchool	304
University of Texas School of Information	259	Knowledge Management Systems	246
Ut Austin	240	Architecture Information	231
Information Architect	217	Structural Analysis	215
System Development Cycle	205	Knowledge Management System	203
Bibliometric	188	Case Study Methods	183

**Table 4** Selected search term referrers to the UT iSchool website with more than 80 requests (continued)

Survey Research Methods	182	Historical Research Methods	171
UT iSchool	161	Architect Info	124
UT School of Information	123	Survey Research Method	123
University of Texas Library Science	122	University of Texas at Austin	111
University of Texas Scholarships	98	Information Technology	96
Library Science	93	iSchool.utexas.edu	91
Case Study Research Methodology	91	The University of Texas at Austin	88
University of Texas	88	iSchool Utxas	83
'Information Architecture'	83	University of Texas Information	83
University of Texas Library School	83	Case Study Research Methods	81
Historical Method of Research	81	Architect Information	80