

# Dual Language Information Seeking in Digital Libraries

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## ABSTRACT

Digital libraries, especially academic digital libraries, are more important than ever. With the increase in the utilization of technology in educational institutions and online courses and degrees, academic digital libraries have become a necessity. In 2010, Saudi Arabia invested in the development of a digital library, called the Saudi Digital Library (SDL), to serve the needs of all university staff and students, offering resources in both Arabic and English. The purpose of this study is to investigate how successfully Saudi Digital Library users are able to find Arabic resources using the SDL database and whether or not they face challenges in their search. The research will utilize a qualitative method, Stimulated Recall Interviews, to evaluate whether or not the SDL meets its users' needs. This study aims to address these challenges and find ways to overcome them. Information should be accessible to Arabic-speaking information-seekers and indeed to many other information-seekers in different languages and cultures around the world.

## General Terms

Digital libraries, Information-seeking Behavior

## Keywords

Information-seeking; information behavior; Saudi Digital Library; dual-language information-seeking; Arabic search, digital libraries

## 1. INTRODUCTION

It is difficult to imagine an educational institution, e.g. a college or university, without a library because of the important role that academic libraries have played in supporting education institutions over the past two centuries.

For centuries, academic libraries have been viewed as the heart of colleges and universities, but nowadays, academic libraries are valued as places where the internet is available [20, 21]. "The academic library, an entity that has modest roots in the nineteenth century and was professionalized during the twentieth century, is extending its traditional services, both technical and public, into the digital domain in the twenty-first century" [26].

In response to the development of technologies and the Web, academic libraries' roles and services have changed. The main

reason is that many users are accessing the library remotely using their own computers, smartphones, and other devices to find the information they need. For example, users now search through Google, Yahoo, and other search engines from their homes, offices, or even internet cafes instead of using the academic libraries to find information. Also, In the U.S., library catalogs and databases can be accessed remotely. According to the results of an OCLC 2006 study of user perceptions, 89% of users use search engines to begin a search whereas only 2% use a library website. Academic librarians realized the challenge and started to change their rules and services to meet their users' needs [7, 20].

Users have also changed the way they find, receive, and share information and resources with the development of recent technology. Today's students from K through college are accustomed to using technology in almost every aspect of their lives. "[They] have spent their entire lives surrounded by and using computers, videogames, digital music players, video cams, cellphones, and all other toys and tools of the digital age" [20]. In addition to the use of technology for entertainment, [18] states that the number of online students increased twofold between 2002 and 2006. 3.5 million students are currently enrolled in online classes. "Online students approach their learning environments primarily via the web, and the academic libraries must meet them there" [18].

Academic libraries have expanded their web-based online digital libraries to supplement traditional library services to support research, teaching, and learning. For instance, academic digital library services such as electronic journal access, online catalogs, and virtual academic references have become important information resources that are reliable and easy to access. Therefore, in order for academic libraries to cater to the increasing number of students, they must transform their content and services into digital format, for learners; they must become academic digital libraries [32].

It is vital to not only rely on the technologies implemented in the information retrieval system alone but also the behavior of users on the receiving end, which is key to providing effective information access. Since the information retrieval systems are used by people, it becomes impossible to design effective information retrieval systems without knowing how users interact with them [27].

In 2010, Saudi Arabia invested in the development of the Saudi Digital Library to serve the needs of all university staff and students, offering resources in both Arabic and English [1]. The SDL, however, is not a digital library per se; it is more of a consortium of academic libraries than a digital library in the common sense of that term. The Saudi Digital Library (SDL) has announced that its management “has been discussing and addressing the issues of its member libraries at the annual meetings of the Deans of Saudi university libraries and at the meetings held by the Saudi Ministry of Higher Education, now The Ministry of Education. Some of the important issues raised during these meetings by the member libraries were: “subscriptions to appropriate scholarly sources; customization and authentication problems; statistical reporting mechanisms; and strong communication and customer support from vendors”[29].

## 2. RESEARCH SIGNIFICANCE

One of the main goals of studying the dual-language information-seeking behavior of Arabic-language speakers is to identify the different approaches Arabic-language speakers take when searching both in the English and Arabic and what strategies or tactics they use to fulfill their information-seeking needs [5, 14].

The significance of the research problem is that it affects a huge number of students in Saudi Arabia and abroad, including the researcher. There are approximately 200,000 Saudi students studying abroad around the world who may benefit from the SDL service, with 60,000 students in the U.S.A. as of 2015 [28]. In November 2017, the Saudi Minister of Education declared that the total number of Saudi students studying abroad is 114,700, thirty-one percent of which are females. 67,000 of these Saudi students reside in the U.S.A., 13752 in the U.K, 8067 in Canada, and 6045 in Australia [6].

Notably, the number of students in the U.S.A alone increased by nearly 7,000 in the last two years since the Kottasova’s [28] report and the Saudi minister of education’s estimate reported by the Arabian Business Newspaper [6]. With a growing number of students granted access to the Saudi Digital Library services, it is more important than ever to ensure the efficiency and effectiveness of the SDL. Investigating the information behavior of the SDL users will directly help these students to improve their search patterns and help the SDL administration improve the Arabic search. It may also help other institutions in the Arabic region, including twenty-one other Arabic countries.

Due to the limited amount of resources written in Arabic, people who only speak Arabic will face difficulty finding resources, both in academic settings and in their daily pursuit of information. This work will potentially help Arabic-speaking people find Arabic electronic resources. According to Elayeb and Bounhas [13], the number of Arabic-speaking Internet users in 2011 was about 86 million, and this number represents 23.9% of the Arab world population. Indeed, the number of Arabic-speaking internet users may have increased since 2011.

The Saudi Digital Library (SDL) must live up to the challenge of meeting and satisfying its users’ needs. The more accessible, usable, and useful the SDL will be, the greater the chance for students both inland and abroad to succeed. “User satisfaction can be achieved only if a library website conforms to the concept of usability” [24].

## 3. PROPOSED RESEARCH QUESTIONS

These questions are proposed for my dissertation.

RQ1: How do Saudi Digital Library users perform their search in Arabic and English?

RQ2: Are these SDL users successful in their search for the resources they need?

RQ3: How would they react if they do or do not successfully find the resources?

## 4. RELATED WORK

Little research has been done on dual-language information-seeking behavior. Focusing on the Arabic-English information-seeking behavior, there are a handful of studies conducted on this topic. Al-Wreikat, Rafferty, and Foster [5] took a grounded theory approach to investigate the information seeking behavior of social scientists in Jordanian universities, identifying and comparing the information-seeking behavior of the social scientists when searching within Arabic and English databases. Al-Wreikat et al. [5] examined the behavior of the academic staff of social sciences faculty when they were assigned two academic databases: one in Arabic (E-marefa) and one English language database (Science direct).

Similarly, in Elglab and Shehata’s [14] study, they explored the information-seeking behavior of scholars at Shagra University in Saudi Arabia, in Arabic and English languages. Their study results identified users’ challenges while seeking information and investigated the possible differences in the way scholars seek information while using Arabic and English languages. This study concluded that participants used the first results they received from their queries to find keywords to use for further resources. Although this finding may have been true for these participants since they are faculty members, assuming high or moderate knowledge of information-seeking literacy, if this study had included student participants, it may not have produced the same results. The participants of these studies were faculty members and most of them are Arabic-speakers but had different backgrounds and cultures.

Some researchers have suggested dual-language information-seeking behavior models in Arabic-English information-seeking behavior studies, [5], [4], [2], and Chinese-English information-seeking studies [19]. These models have suggested applicability to different dual-language information-seeking studies with the hope they will help the researchers in conducting their studies. However, all of the authors the aforementioned studies declared some limitations in the models suggested and that further research can be done to improve their models.

Models of information-seeking behavior are based almost entirely on research conducted in Western countries and were generated at a time when electronic methods of information-seeking were still uncommon. These studies' findings may not be applicable in other countries and cultures where the languages, cultures, environments, and information systems are not necessarily similar and, potentially, do not exist in the first place [4].

Several information-seeking theories have also been posed in different studies. Radical Change, for example, is based on the digital age principles of interactivity, connectivity, and access, and has been applied to explain both some information resources and some information behaviors [12]. In her study, Dresang [12] applied Radical Change theory in her study to reexamine the existing research conducted on youth information-seeking behavior in the digital environment. Also, she found out that many researchers applied the Radical Change theory not only to information-seeking behavior but also to information and communication technologies and literacy development relationship in and out of schools. Radical Change "is a theoretical concept that applies digital age principles to explain both some information resources and some information behaviors" [12].

Information overload and information anxiety arise due to the effect of language barriers on the information-seeking behaviors of users when searching for multilingual resources, especially with lack of librarian assistance, lack of textual information, lack of information-seeking literacy, and lack of article recommendations in the information systems [2], [4], [3], [19]. Language and culture barriers impede communication between information seekers and librarians. Liao, Finn, and Lu [22] estimated that the average reading speed and comprehension of an international student is only 50% compared to the American native English speaker, and the same is true of their oral comprehension.

In agreement with information load and information anxiety, researchers [8] concluded that many children experienced anxiety, uncertainty, and fear before using the International Children's Digital Library, suggesting that information systems should address the difficulties that children may face. Also, the authors emphasized that affective support should be provided to minimize children's negative feelings [8]. "Researchers who involve children of similar backgrounds and/or experiences should develop effective strategies to assist children to cope with negative emotions or feelings in order to sustain an environment that is supportive of children's information-seeking" [8].

## 5. THEORETICAL FRAMEWORK

This study will utilize Kuhlthau's Information Search Process (ISP) model as a theoretical framework. The Information Search Process (ISP) model is a "conceptual framework that depicts information seeking as a process of construction" [15]. The ISP model aims to show the formulation of feelings and thoughts

while searching for information and actions taken in the process. "The ISP describes users' experience as learning progresses over time and shows the formulation of focused ideas from information as the turning point in the learning process" [31].

The ISP model originated as a research idea by Carol Kuhlthau, inspired by her observation of students' behaviors as a teacher in the early 1980s. She taught students how to locate resources and retrieve information for a research assignment they were given. She observed that when students came to the library for their first research tasks, they were confused and uncertain and were annoyed by the assignment and library [31].

## 6. PROPOSED METHOD

The study will use a qualitative method, Stimulated Recall, with short semi-structured interviews. Stimulated Recall is "an introspective method that can be used to elicit people's thought processes and strategies when carrying out a task or activity" [17]. Introspection is an approach for enhancing the use of the memory [17], [16]. Stimulated Recall is used to prompt participants to recall thoughts had while performing a task using some type of reminder (i.e. videotapes or audiotapes) to stimulate recall of the mental process during that event. The method relies on the information processing of individuals whereby their memory structure is enhanced by reminders that help them recall information. "Stimulated recall methodology generally appeals to cognitive psychologists and researchers who are interested in information processing" [16].

An example that best illustrates the idea of Stimulated Recall is the attempt to recall at age thirty-five a memorable event such as one's twelfth birthday. Little recall is present until one is reminded of such cues as: this was the birthday when he received a large, red bicycle; it was the day when Aunt Emma came to visit; it was the day when the neighbor's barn burned down. With cues such as these to furnish the framework, a great many associations will return many with great vividness [9]. In studies that use Stimulated Recall as a method, [9], [10], [11], [30], [25], participants performed a task within the timeframe of an event and their actions and behaviors were recorded via video or audio to reflect upon once the event ended. The researchers, usually within a forty-eight-hour timeframe, played or displayed the recordings and asked participants questions based on their actions and behaviors.

### 6.1. Participants

The sample will be a convenience sample where participants have the right to participate if they desire to do so. The target number is 20. An email invitation will be sent to the students' community for recruitment. Once the participants agreed to participate, they will be offered an informed consent that states their participation is voluntary and their information will be kept confidential. The informed consent will also indicate that there is going to be a screen recording of their performed search tasks as well as an audio recording of the semi-structured interview.

## 6.2. Procedures

The stimulated recall interviews will take place in a study room located in the university main library with a computer and screencasting software installed on it. Participants will log in with their usernames and passwords into the Saudi Digital Library (SDL) and do two query tasks on the SDL basic search, one task is given and other is by their choices. The participants will be given a search term in Arabic and a translated version of it in English. Participants will perform a search for each language term.

After that, the researcher will display the screen recording to each participant. Then, a semi-structured interview will take place in which participant(s) answer questions based on their search and reactions to it, having performed the task. Questions might include what they think about the ease of using the SDL; how they evaluate its effectiveness; the difficulty in finding the desired information or resources; and lastly their overall evaluation and explanation of what made them search for the information the way they have done.

## 7. DATA COLLECTION AND ANALYSIS

The data collection will be mainly by the memo notes taking while participants perform the tasks, screen recordings, and interview scripts. The data analysis will be a content analysis approach of the data collected and the coding process will mainly be looking for patterns that participants have in common and how these patterns align with Kuhlthau's information process model. Also, comparing both the patterns and challenges, if any, to what has been discussed in the literature.

## 8. EXPECTED CONTRIBUTIONS

The Saudi Digital Library (SDL) must live up to the challenge of meeting and satisfying its users' needs. The more accessible, usable, and useful the SDL will be, the greater the chance for students both inland and abroad to succeed. "User satisfaction can be achieved only if a library website conforms to the concept of usability" [24].

Dual-language research, especially on Arabic language, search functions, is insufficient due to the complexity of the Arabic language and the lack of resources on dual-language information-seeking behavior in general and especially for Arabic-English. The research gap must be filled to overcome the obstacles mentioned in the articles in order for researchers to study the dual-language (English-Arabic) information-seeking behavior. In the process of preparing for an information-seeking behavior study of Saudi Digital Library (SDL) users, exploring the existing literature has illuminated the language complexity that is a major culprit behind the failure of many Arabic information retrieval systems. This study aims to address these challenges and find ways to overcome them. Information should be accessible to Arabic-speaking information-seekers and indeed to many other information-seekers in different languages and cultures around the world. As a doctoral student and an Arabic-speaker, I find myself obliged to help solve this issue and

provide easier information access to Saudi Digital Library users and to all users of Arabic platforms around the world.

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