The Impact of Discovery Platforms on the Information-Seeking Behaviour of EFL Undergraduate Students

Karen Joc
Assistant Dean, Dubai Library
Zayed University
karen.joc@zu.ac.ae

Kayo Chang
Instructor & Reference/Instruction Librarian
Zayed University
kayo.chang@zu.ac.ae

Abstract:

Between September and December 2009, librarians at Zayed University undertook the first phase of a three phase randomised, semi-blind usability study focusing on four discovery platforms, to ascertain which of these discovery platforms if any best met the criteria of these EFL digital natives. Three of the platforms were vendor based (AquaBrowser, Encore, Primo) and one of the platforms is open source (VuFind). In particular the investigators were concerned with the students' browsing and searching experience; were students' provided with appropriate search options/alternatives; did students experience any dead-end searches; the relevancy of resources retrieved for search terms entered; the possibility of Arabisation; and, most importantly, the overall users' experience.

Introduction

Zayed University (ZU) was established in 1998 and named in honour of Sheikh Zayed Bin Sultan Al Nayhan the first president of the United Arab Emirates (UAE). ZU's mission seeks to prepare Emirati students for a meaningful and successful twenty-first century personal and professional life; to graduate students who will help shape the future of the UAE; to support the economic and social advancement of the UAE; to lead innovation in higher education in the UAE through teaching, learning, research, and outreach; and to do so in a culturally diverse, humane, technologically advanced, and increasingly global environment. ZU currently has three campuses in the Emirates of Dubai and Abu Dhabi with around approximately 4500 female and 300 male students. ZU is a federal government institution and offers both undergraduate and postgraduate programs.

90% of the student population at ZU are Emirati females; however, in February 2008 Emirati males were introduced to the university at the Swehan campus, which has since moved to Abu Dhabi. All students are English as a Foreign Language (EFL) learners and the medium of instruction is English, except for courses in Arabic and Islamic Studies. Many students come from non-English speaking households and have attended high school immersed in Arabic curriculum and instruction. These students also have some similarities to "Generation 1.5" students, in that they are often the first in their families to complete high school and/or attend college/university (Asher, Case, Zhong, 2009, p. 260).

Background

The current ZU student population is part of the millennial generation, members of which are often described as the 'Net Generation', the 'Google generation', 'Millennials', 'Nexters', 'Digital Natives' and 'the cut and paste generation', to name a few colloquialisms used to portray students who are web-savvy and expect a certain degree of control (Oblinger 2008, p. 1). These students have grown up in a world dominated by communication and media technologies, such as instant messaging and mobile phones, chat, blogs and the internet, and have the expectation of instant answers to their questions, 24/7 within a few key strokes or mouse clicks and zero tolerance for delays. Besides being 'digital natives', ZU library users are also English as a foreign language (EFL) students and this has significant implications on how they search for information. It does not occur to these 'EFL digital natives' that what they are looking for when searching the library's catalogue might not necessarily be how the item has been catalogued, how it has been spelt or that there is actually somewhere to search besides GoYaBi (Google, Yahoo, Bing) (Bates, 2003). These users look up a topic in the library catalogue, they do not find any information on it, and therefore assume that the library does not have what they need. ZU Library's current Online Public Access Catalogue (OPAC) is outdated and not user-centred, and is considered to be either a 2nd or 3rd generation OPAC. While on the reference desk, librarians watch as ZU students struggle to find information through the current OPAC, which they find foreign and ineffective.

In order to stay relevant to the 'Google generation' users, ZU Library is currently in the preliminary stages of evaluating next-gen OPACs, with the goal of procurement

for the 2010 academic year. As of January, 2010, 1187 libraries throughout the globe have decided to adopt more user focused, Web 2.0 technologies that enhance users' searching experiences as well as assisting their users in providing alternative search options to locate library resources (Breeding, 2010). These next-generation OPACs, which are also known as "discovery platforms," not only appear to be user friendly, intuitive and aesthetically pleasing, but also offer many user-friendly Web 2.0 enhancements that these 'Google generation' users are familiar with, such as tagging, reviews, ratings, facets, stemming and in-built spell checkers (Marcin & Morris, 2008, p.7). A study on Google generation usage of these discovery platforms (Pace, 2007) reported enhanced user experiences, due to their searching expectations being met, as well as an increase in library resource usage, as items that were previously buried in their previous OPACs have now been made available to their users, the exposition of the long tail! But will these discovery platforms meet the needs of our EFL Digital Natives? This question has motivated ZU librarians to conduct this study and the results of this study will help identify the product that is most suitable for our students.

Literature Review

The OPAC materialised as a module from the integrated library management system (ILMS) with its sole purpose of providing users with the ability to search collections of physical items held in libraries (Breeding, 2007, p.34). This once 'star of the sea' has taken a rapid fall from grace, a fall which has been assisted by the elongated time it has taken for new developments and technologies to be incorporated into new OPAC interfaces. Inopportunely, libraries have concentrated too much on technical services, and vendors have unsuccessfully monitored the changes in information-retrieval technology and as a result have not made appropriate system improvements. Most OPACs seldom have cutting edge features and in some cases not even the fundamental qualities that today's users expect from modern websites (Pattern, 2007, p. 32).

In the late 1990s new for profit search engine companies such as AltaVista, HotBot, and Excite emerged into the market and they showcased such features as full text searching and post Boolean logic, soon to follow after these comes Google. In 1995 Amazon launched its online bookstore and "the Amazon effect" quickly emerged. These technologies have given the once lovers of libraries more freedom to not only pick and choose resources but also to interact with information in ways in which they have never before been presented. The likes of Google and Amazon had radically changed users' expectations in terms of online presentation and delivery and they have, among others redefined the experience of information seeking. For many of the Google generation, the quality of the results matters less than the process of getting them. GoYaBi (Google, Yahoo and Bing) provide 'good enough' answers by relying on algorithms that include both relevancy ranking and popular culture.

Libraries OPACs and collections hold tremendously rich metadata. However, OPACs need to be able to deliver information quickly for the here and now user; these users want something of value within a couple of key strokes. Bates in 2003 concluded that "the average user identifies their search terms with the whole subject query" (p.7).

For the next-generation OPAC to regain its crown, its search methodologies will need to:

- be succinct

- have the ability to browse for information in various ways

- results will be relevancy ranked and weighted

- built data-driven spell-checking correction functionality combined with user prompts such as "did you mean" or "more like these"

- refinement of search queries though facets and tag clouds

Over the last three years several next-generation OPACs have emerged. Vendors and librarians alike have articulated that these discovery platforms are superior to 2nd or 3rd generation OPACs. These discovery interfaces allow libraries to offer alternative search interfaces to their library patrons. Many, if not all of the features and search methodologies of GoYaBi are now available via Discovery platforms such as AquaBrowser, BiblioCommons, Blacklight, Endeca, Encore, Enterprise, Primo, Scriblio, SOPAC2, Summon, Visualizer, VuFind, and WorldCat.

Between September and December 2009, ZU librarians undertook the first phase of a three-phase randomised, semi-blind usability study focusing on four discovery platforms, to ascertain which of these discovery platforms if any best met the criteria of these EFL digital natives. Three of the platforms were vendor based (AquaBrowser, Encore, Primo) and one of the platforms is open source (VuFind). In particular the investigators were concerned with the students' browsing and searching experience; were students' provided with appropriate search options/alternatives; did students' experience any dead-end searches; the relevancy of resources retrieved for search terms entered; the possibility of Arabisation; and most importantly the overall users experience.

Goals of the Research

The purpose of this study is to identify and validate if discovery platforms can potentially meet the needs of Zayed University library users, particularly in the following areas:

- Do discovery platforms enhance EFL users browsing and searching experience?

- Do discovery platforms provide EFL users with the appropriate search options/alternatives?

- Do users encounter any dead-end searches?

- Are Web 2.0 applications such as tagging, reviewing, and rating attractive to EFL students?

- Is Arabisation a priority?

- Does one platform stand out over the others in relation to user's experience of the search and discovery process?

Usability Testing Preparation Activities

Prior to the usability testing taking place, the research team needed to perform a number of tasks to ensure that the usability testing would run smoothly. These tasks included selecting the platforms to be tested, randomisation of the platforms to help reduce bias, establishing appropriate questions for the testing, and the recruitment and randomisation of students for the usability testing.

Selection of Platforms

At the time that this study took place there were ten discovery platforms on the market, which were too many to be considered for a usability testing of this nature. The research team, in collaboration with librarians from both public and technical services, established a list of features and criteria that the discovery platforms must have in order to be considered in this study; these criteria were based on extensive literature reviews, and what library faculty also considered important. (A detailed list of these criteria is available in Appendix 2). After validating each platform against the predefined criteria librarians ascertained that four discover platforms met the criteria, these discover platforms are Encore, AquaBrowser, Primo and VuFind.

Encore

ZU library currently has Millennium as their LMS and as a result of this, Encore was always going to be considered in this study as it is the Discovery Platform layer created by Innovative Interfaces the same company that sells our LMS. Over the last two and a half years, Innovative Interfaces, in collaboration with fourteen libraries, has developed their new discovery platform, Encore. Encore is promoted as a discovery services platform that finds relevant information wherever it is and presents it to users in a coherent way. In relation to the search process, once the user enters a search query, the Encore interface presents an initial set of results along with a number of 2.0 features to refine or extend the search, including facets, tag clouds, in the full record browseable virtual shelves as well as a popular choice option. (Breeding 2007, p.24; Webb and Nero, 2009 p.21). Encore, as of January 2010, is implemented in over 287 libraries across the globe, most predominately in academic and public libraries.

AquaBrowser

AquaBrowser is currently being used by more libraries than any other discovery layer, and has been implemented in over 400 libraries in the USA, UK, Germany, Belgium, Spain and Italy as well as in 80% of all public libraries in the Netherlands (Breeding 2010). Since AquaBrowser's implementation in Croydon College Library in the UK, the library has experienced an astounding 472% increase in online usage in the 2006-2007 academic year (Bowker, 2007). AquaBrowser provides libraries with a way to supplement or replace their existing library OPAC with one that includes faceted navigation, relevancy ranking and visual search (Breeding, 2007, p.15) AquaBrowser stands out as an interface with strong visual appeal, and this discovery platform also uses a unique ranking algorithm that combines many sources and automatically generates associations, spelling variations and thesaurus relations which present users with alternatives (Webb and Nero, 2009, p.22).

In 2007, "My Discoveries" was launched, a service developed by AquaBrowser with LibraryThing in order to enhance tagging and reviewing functionalities. Together, they have been seeding library catalogues with 21 million tags created by LibraryThings.com users. With the latest release of My Discoveries, users can review and rate items and view personal tag clouds. In order to facilitate easy searching, the user interface has also been enhanced based on patron comments and customer feedback. Although libraries are embracing Web 2.0 technologies, there is still a desire to monitor language that appears in the library website and catalogue. As a result, listing support for tags has been expanded and available for reviews (Advanced Technology Libraries, 2008, p. 8).

Primo
This is a fully integrated search engine with a simple intuitive interface that acts as a gateway to the high quality resources libraries subscribe to (Elsegood, 2009, p.70). Primo provides libraries with many customised choices such as search scopes, drop-down pre-filter menus, simple search, facets on either the left of right hand side of the search screen, customised icons, FRBR etc. The backend is also intuitively web-based, and appears easy to customise. Primo is currently implemented in over 150 sites throughout the globe. In July 2009, Ex Libris announced at the American Libraries Association conference their plans for the release of Primo Central, the Beta version has been launched to 14 partner institutions as of January 14, 2010. Primo Central extends the current Primo architecture to include content from external providers such as EBSCO, Project MUSE and National Academy of Sciences (Handro, 2009b, p.13). Users can simultaneously search both locally managed collections and global e-content and are then presented with a set of results that are blended into a single relevancy-ranked list. In addition, libraries are able to tailor the relevance ranking to ensure appropriate emphasis on their local collections. (Ex Libris, 2010).

VuFind
VuFind is a library resource portal designed and developed by libraries for libraries. VuFind is an open source OPAC whose interface has the ability to search not only the library's catalogue, but also electronic journal and institutional repositories. VuFind is modular in nature, so libraries can chose to implement the basic system or other components. The OPAC boasts such features as 'more like these' search alternatives; faceted navigation, saved user lists; the ability to pull content enrichment from such resources as Wikipedia, Amazon and Serials Solutions, as well as being compatible with other open source software such as the bibliographic referencing software Zoreto. VuFind has been implemented by both National and Academic Libraries with a total of 18 sites thus far (Handro, 2009a; Breeding, 2009).

The researchers would like to note that the initial analysis of these platforms was conducted in April 2009, and since this time several other discovery platforms have emerged or reached beta testing stage including BiblioCommons, Summon and EBSCO Discovery Service (EDS).

The next hurdle the research team faced was the fact that three out of four of the discovery platforms that met the criteria were not available on a trial basis. As a result of this outcome, the research team decided to identify which libraries had implementations of these platforms that met the following criteria:

(1) were located in the Middle East North Africa (MENA) region

(2) had a high ESL/EFL student population

(3) were classed as Baccalaureate Colleges according to the Carnegie Classification of Institutions of Higher Education.

After further investigation, criteria one was unable to be met, due to the reality that although several libraries in the MENA region had either purchased or selected a discovery platform, as of September 2009, none of these libraries had completed their implementation. Libraries that met criteria two and three were also proved to be a challenge, and in the end, criteria two ended up being the only tangible criteria. With this in mind the research team tasked two of its members to identify two significantly different implementations of each of the 3 vendor based platforms. These librarians also set up a test version of VuFind and determined a second implementation of VuFind for testing.

Randomisation of the Platforms

Up until March 2009, the majority of the literature on discovery platforms has been published by librarians or information specialists whom have implemented one of these platforms into their library (Stevenson, 2009), currently there is little (Webb and Nero, 2009) unbiased literature on this topic. In an effort to reduce bias in this study, members of the research team were allocated different tasks as part of the project. As previously mentioned two librarians were given the responsibility of identifying the eight sites to be tested, while the other two librarians remained blind to the identity of these sites. Once the eight sites were determined, this data was given to a third party who stripped the identification of each platform and then each platform was randomly allocated a letter; these eight sites were identified as platforms a, b, c, d, e, f, g and h. The same third party then randomised the 8 platforms into 12 envelopes. Six envelopes were marked with group A and 6 envelopes with group B, with each of these envelopes containing only one implementation of each platform. This data was then provided to the other two librarians on the research team who had not been involved in the selection process. This process was performed to reduce bias and now both the librarians conducting the usability tests and the participants were blinded to which platform they were searching.

Establishing the questions

The most crucial part of conducting formal usability tests is creating the list of tasks that the participants need to carry out (Letnikova, 2008; Campbell, 2001). As with the nature of this subject it is not surprising that a "gold standard" of usability test questions has not been established, as each list of usability questions are usually unique to the researchers conducting the study.

Interface design usability expert Jacob Nielsen, suggests three standard guidelines to consider for web-based testing that contribute to the overall success of the process:

- tasks need to be tangible and reflective of the most important elements of the interface

- tasks need to be small enough to be completed within the allocated time period, however not too small that they become insignificant.

- tasks should be presented in a way that boasts the user's confidence, and therefore the first task should be extremely simple which will help contribute to the success of the testing. (Nielsen, 2000)

Neilson's ten usability heuristics for user interface design were utilised in a recent study (Webb and Nero, 2009 p.20) when evaluating discovery platforms. With Neilson's (2005) "Ten Usability Heuristics" and guidelines; as well as the goals of the research firmly in mind, the librarians established a set of 13 questions to be used during the usability testing. The first 8 questions focused on the participants finding information, with the difficulty of each task increasing with each question, while the last 5 questions focused on the interface itself as well as the social networking features incorporated into the different discovery platforms. The complete list of questions is available in Appendix 1.

Ethical Considerations

Ethical Clearance was obtained through ZU's Office of Research. Although the identity of students would remain concealed, students were made aware that data recorded during the usability process would be published in either conference proceedings or academic journals.

Participants

Interested participants were initially screened by a circulation assistant, who garnered the participants' interest through a series of questions. Those participants who were deemed as actually interested and willing to participate in the study were then briefed about the study and the fact that each of them would be required to participate in four separate testing sessions. To help conceal the identity of the student, students were randomly allocated numbers by which they would be known as throughout the testing process, for example participant 1, participant 2, participant 3, etc. Each participant was then provided with the date and time for their first testing session.

Methodology

From August 2009 until May 2010, ZU librarians will undertake a three-phase randomised semi-blind user observation approach to usability testing of the four discovery platforms. Two implementations of each discovery platform were chosen

to be included in the testing. According to Nielsen (2000), most usability problems can be identified with five participants, and therefore librarians projected that a total twelve participants should be recruited for phase 1, 9 participants for phase 2 and 6 participants for phase 3.

> Phase one of the testing was conducted by two of the principal investigators during September and October of 2009 on the Dubai campus with 12 participants.

> Phase two of the testing will be conducted in February and March of 2010 on the Abu Dhabi South campus and will involve 9 participants.

> Phase three of the testing will be conducted on the Abu Dhabi North Campus in April, 2010 and will involve 6 participants (male).

During phase 1 of the testing, participants were asked to complete a series of 8 tasks and discuss them in 5 related questions; they were encouraged to use the "think aloud" methodology, whereby the participants spoke out loud about how they perceived the system while performing the 12 tasks (Lidstorm & Malmsten, 2008 p.7). Due to cultural sensitivities of the participants involved in the testing, the researchers decided against the use of a webcam; however, all participants' tasks were recorded utilising Adobe Captivate, which recorded both screen and mouse clicks as well as the conversations between the facilitators and the participants.

To ensure consistency in search experiences and results, each discovery platform was searched utilising Mozilla Firefox, and prior to each search session, cache and search history was cleared. To help reduce bias in the search results, where possible each participant was blinded to which discovery interface they were searching; this process was facilitated by removable cardboard and Post-it™ notes placed on the computer monitor over each library's branding of its interface.

Data collection

Prior to commencing the first test session, the facilitator explained to the participant what was going to take place during each of the four sessions. Each participant was then asked to read and sign a consent form (see Appendix 3). Participants were identified as participant 1, 2 etc and each participant was asked to select an envelope whose contents contained the platforms they would be searching throughout the testing process. These platforms had been pre-bookmarked on the facilitators' laptops by a third party and identified as platforms a, b, c, d, e, f and g.

Students opened the envelope and handed the contents to the third party, who navigated to the appropriate interface and then proceeded to apply Post-it™ notes, etc, to help keep the possibility of identifying the library to a minimum. The third party then also started the contribute recording and then handed the questions to the facilitator. These stated the participant and platform, for example participant 3, platform c. Once this process was complete, the third party left the room prior to the testing beginning. This process was repeated for each testing session.

Each usability testing session had one facilitator, who also took notes, and one participant. During the testing process, participants were asked to complete a series of 8 tasks and 5 questions, and were encouraged to use the "think aloud" methodology. Each usability testing session, including both the introduction and debrief, took between 30 and 45 minutes to complete.

Results

Do discovery platforms enhance EFL users browsing and searching experience?

100% of participants believe that each platform they tested provided them with an enhanced searching experience when compared to our current 2nd/3rd generation OPAC. All participants liked the following feature of the interfaces:

- Facets

- Book covers, particularly if they were placed on the left hand side prior to the title of the book

- Icons used to describe resource type

- Availability of the resources; many participants articulated that they analogised the colours green and red to a traffic light in that green meant available and red not available.

- Tag clouds (when available)

- Browseable shelves in platforms c and g

- Social networking features such as tagging, rating commenting and reviewing

- Platforms b, c and g had a drop-down limit box via relevancy, popularity and date.

16% of participants did not like the fact that in VuFind, AquaBrowser and Primo they sometimes had to scroll through a lot of facets before finding the one they were looking for. An example of this was when performing task 2 "Please find books written by "Charles Dickens" and then subsequently "What are some of the titles?" in platform a (Primo), participants had to scroll down to the 7th set of facets to find Charles Dickens listed as an author. In this particular platform, participants could have chosen author from the drop down menus under the search box, however this did not occur to over 75% of the participants who tested this particular implementation. Getting the order of facets correct is a high priority.

The notion that discovery platforms actually enhance EFL students' browsing and searching experience was validated by the results garnered from the combination of questions 7 and 8. Participants were asked to explore the concepts of "literacy" and "children". The task was to identify other concepts or terms that are related to "literacy" and "children" and from these results formulate a simple research question. Below are some of the research questions participants identified.

Potential research topics from platforms a and e (Primo) included:

- How does early years literacy development help children with reading and writing?
- What are some of the challenges faced when teaching children with social disabilities?

Potential research topics from platforms b and f (AquaBrowser) included:

- Does early literacy intervention help English as second language learners?
- Ways to introduce literacy and language to young children.

Potential research topics from platforms c and g (Encore) included:

- Literacy programs in the United Arab Emirates.
- Design of early literary programs for pre-school children.

Potential research topics from platforms d and h (VuFind) included:

- How to develop reading and writing skill in second language learners.
- How picture books effect development of children.

Do discovery platforms provide EFL users with the appropriate search options/alternatives?

In most cases, each platform provided participants with appropriate search options/alternatives. However, platforms c and g stood out as being the weakest in providing appropriate search alternatives to the search queries entered into the search box. In particular participants felt that these platforms' features were inferior to the other platforms' alternatives. Some examples include:

- In task 7, participants were asked to explore the concepts of "literacy" and "children". What other concepts or terms are related to "literacy" and "children"? 50% of the participants spelt literacy wrong when first entering this concept into the search box. When participants entered the search "litrecay" and children, the search alternative they were presented with was librarians and children; when participants entered the search "litercay" and children, the search alternative they were presented with was internet and children; in neither of these search examples was the correct spelling of "literacy" presented as a search alternative. When the correct search terms were entered, the search alternative presented was poetry and children.

- In task 4, participants were asked to find information about immigration and labour, and identify if anything been published within the last year. This time 84% of participants spelt immigration incorrectly; several participants entered the search terms such as "immigration", "imigration" or "imegartion" and labor and were given no hits or search alternatives. In an environment such as ours at ZU, it is essential that the platform we implement is capable of picking up on simple misspelling and returning appropriate search alternatives.

(There is also the issue with American vs. British spelling because of the mixed school curriculum in the UAE.)

- In task 5, participants were asked to find periodical titles on the topic of foreign policies in the Middle East. All of the students for this task had entered "Foreign Policies in the Middle East". While the majority of the interfaces were able to return results, platforms c and g (Encore) did not return any results.

- In task 6, participants were asked to explore the headscarf issue in Europe. This was a very interesting task and the facilitators were mostly looking at what kind of keywords would be suggested relating to this topic. When the word "headscarves" was entered, platforms a and e (Primo) and platforms b and f (AquaBrowser) were able to suggest terms such as "hijab", "veil", "human rights", and "Muslim women". Platforms c and g (Encore) were not as effective coming up with related terms.

The tag cloud features of platforms b (AquaBrowser), c and g (Encore) features proved invaluable to participants when completing task 2. In this task, participants needed to find books written by Charles Dickens; however, after entering the search terms "Charles Dickens" in platforms a, d, e, f and h, participants were presented with items about Charles Dickens rather than books written by Charles Dickens. In both platforms c and g, users clicked on "Charles Dickens" in the tag cloud and were presented with the items required, such as "A Christmas Carol", "Oliver Twist", "Hard Times", "A Tale of Two Cities", and "Great Expectations". Also in platform b, once the initial set of results were presented, 45% of participants chose "novel" while 55% of participants chose "classics' from the tag cloud. The author facet for platforms d and h was useful, and enabled participants to find books written by Charles Dickens. Although the participants were not able to locate books by entering "Charles Dickens" for many of the platforms, they were able to return much better results when prompted by the facilitator to enter "Dickens, Charles". However, this could prove to be problematic as it is not intuitive for these EFL digital natives to enter the family name of the author before the given name.

Some platforms are more aesthetically pleasing than others, which also assisted participants while they completed their tasks. Participants liked the simple and, non-cluttered display of platforms d and h (VuFind) and found it easy to use and navigate. They found the display of platforms b and f (Encore) too crowded and very difficult to work with. 85% of the participants found platforms d and h very useful, because the colour scheme helped them visually separate records. Other interfaces that the participants found aesthetically appealing are platforms a and e (Primo) and platform b (AquaBrowser with the spider).

Platforms a and e (Primo) have the "FRBRisation" feature that no other interface has. The investigators felt that It is a very useful feature that allows users to search for the same title in alternative formats. Based on the results of this study, the participants could not comprehend the usefulness of this feature, and as a result of this it is envisaged that in stage 2 of the testing that this feature be further analysed for its usefulness.

Participants also encountered the fact that they did not understand what some of the facet meant in some of the platforms. Some examples include:

- Era
- Serials
- Project Media
- Print materials
- Text
- Newspapers/journals

Do users encounter any dead-end searches?

Of the 8 tasks performed by the participants, two tasks were more problematic than the others in yielding dead-end searches; these were tasks 2 and 5.

Task 2 (author search) was problematic in most platforms except in c and g, unless the author's family name is entered first, followed by the given name.

Task 5 (periodical search) was particularly problematic in platforms c and g.

Of the eight platforms tested, two stood out as providing the most dead-end searches; these were platforms c and g (Encore). These results are conversant with the findings of Stevenson (2009), in which users at the University of Glasgow reported that they too could not easily find journals via Encore. Besides being unable to locate periodical titles on a particular topic, the Encore platform was also weak in suggesting alternative keywords for a topic.

Are Web 2.0 applications such as tagging, reviewing, and rating attractive to EFL students?

Although the researchers were only able to show participants the Web 2.0 features, of tagging, reviewing and rating, in one out of the four platforms, researchers persisted by citing other examples of tagging, reviewing and rating that student may be familiar with such as Amazon.com. A study by Li, Guo and Zhao (2008) reports, that user-generated tags are effective in representing users interests since the tags reflect human judgements and are closer to human understanding. These findings are comparable to how the participants believe these Web 2.0 applications could be utilised at ZU:

- Rating of books would assist students in making decisions about which books were more relevant to the topic they were researching. Participants articulated that their fellow students would be more likely to borrow an item which had received a 5-star rating from fellow students than items with a 3 or 4-star rating.
- 20% of participants felt that rating would be more relevant for the fiction, graded reader, DVD/video collections, whilst 80% believed the application to be relevant to all resources in ZU library.

All participants were extremely enthusiastic about the possibility of being able to tag items in the catalogue. Community tags could be used for a genre of applications as long as they were searchable from the catalogue.

Web 2.0 applications that facilitate community tagging are very beneficial to EFL students because they allow students to participate in the process of enriching the library holdings to their specific cultural and local contexts. Innovative Interfaces (2009) conducted a survey on how local tagging can be beneficial for local collections and this finding is also applicable to the ZU context. For instance, all students at ZU are required to complete several compulsory courses prior to choosing their major. Participants thought that if resources could be tagged to be representative of these courses, this would be extremely beneficial to the students undertaking them. Some tag suggestions were the names of the course, such as COL120, COL150, COL250 etc. Participants also expressed that these tags could be relevant for all courses offered at ZU. They also thought that this feature could contribute to fewer dead-end search options for students. Interface changes can transform students' searching success rates, and libraries such as Scottsdale Public Library, Michigan State University and Glasgow University have all reported that since implementing the ability for patrons to contribute to the knowledge base via tagging, their patrons have had enhanced search experiences (Sanders, 2008, p.54).

The Web 2.0 applications are not only limited for searching academic resources. 91% of participants believed that the opportunity to both write and read reviews would be extremely helpful for searching course/assignment resources as well as for personal interest reading.

Higher College of Technology, Dubai Men's campus, utilised the tagging, rating and review features of LibraryThing for Libraries and incorporated these aspects into their reading program; these features contributed to a 35% increase in circulation to their graded reading collection. (O'Connell and Ross, 2008). ZU Library has also recently implemented LibraryThing into its current OPAC, with the view to introducing the benefits of the tagging and reviewing functions to students in the library setting prior to implementing a discovery platform in the 2010 academic year.

Is Arabisation a priority?

80% of the participants felt that Arabisation of the interface was not a priority. Participants expressed that Arabisation would be nice for Arabic language resources, which is how our current OPAC presents them. However, Arabisation of the whole interface including search box, facets, tags, tag clouds, ratings, reviews, etc was not necessary. Participants articulated that if an Arabic interface option was available then it would need to read from right to left with facets also being place on the left had side of the screen.

Of the four platforms that were tested, Encore have made the most significant inroads in the area of Arabisation. King Abdulla University of Science and Technology have been working with Innovative Interfaces on their Encore Arabic interface, and in early January 2009 American University of Sharjah went live with Encore 3.3 with Arabic script. Bowker the vendor who distributes AquaBrowser have

also indicated that they would be open to working with ZU Library on a project of this nature. Arabic language follows a right to left writing direction, and the way in which it is read in both print and electronic formats is to start from the top right-hand corner. This characteristic of the Arabic language continues to be problematic for many standard applications, as they have principally been designed for Latin based character sets, which start from the top left-hand corner (Portaneri and Amara, 1996).

Does one platform stand out over the others in relation to users' experience of the search and discovery process?

Out of the 8 platforms searched, 5 stood out as being superior to the other 3, and 3 of these stood out as the best of the best. The 5 which stood out were platforms a, b, d, e and h. These platforms consist of two implementations of VuFind (d and h), two implementations of Primo (a and e) and one implementation of AquaBrowser. This particular implementation of AquaBrowser has the aesthetically pleasing 'constellation', spider or 'tag cloud' on the left-hand side of the display, which students found useful. The two discovery platforms in which both implementations met with favourable search results were VuFind and Primo.

Discussion

During the testing process, the researchers found that the participants' behaviours mimicked those identified by a recent CIBER research study on millennial generation students, which reported that these students "bounce" and 'flick' their way through sites as they 'power-browse' to find 'answers' to their research questions (CIBER Research, 2008 p.9). Participants used a scanning-like behaviour in their search processes, and appeared to search both horizontally and vertically through the platforms, and participants power-browsed facets and tag clouds in their search for answers. All but two of the discovery platforms provided appropriate search alternatives for our EFL digital natives who sometimes find spelling in English to be a problem.

The second phase of usability testing was initially planned to take place in October and November, 2009. Unfortunately, due to a 45% increase in teaching load for the library faculty as well as changes within the university in relation to formalisation of ethical clearance proceeding, the investigating librarians had to postpone the 2nd phase of the testing until February, 2010. Even though several improvements have been made in release(s) 3.3 and 4.0 of Encore, based on the overall results of the testing research team has decided to eliminate platforms c and g (Encore) from the future testing schedule. In addition to this, the research team would like in the second phase of testing to have the participants test two implementations of AquaBrowser that have the constellation', spider or 'tag cloud' on the left hand side, to ascertain if this platform is actually as useful to the students as Primo and VuFind have been shown. Summon and WorldCat will all be reinvestigation against our pre-determined criteria

Conclusion

ZU Students, as digital natives, are a fascinating group with specific distinctiveness, expectations and information-seeking and searching behaviours. These issues are further compounded when we consider the enormous challenges these students face as EFL learners. The usability testing process has provided ZU librarians with a better understanding of the preferences, traits, and needs of these EFL digital natives. It is encouraging to see that discovery platforms are meeting the challenges of these students in many ways, in particular in the areas of searching and seeking behaviours, answers to questions within a couple of key strokes, students presented with appropriate search alternatives for search terms entered, while still being aesthetically pleasing and encouraging the students to want to flick, bounce or power- browse further on topics of interest.

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Appendix 1 - List of Tasks

1. Please search for the book "The Golden Compass".

    a. Does the library hold a copy? If so, how many copies?

    b. In what format are they available?

    c. Who is the author?

2. Please find books written by "Charles Dickens".

    a. What are some of the titles?

3. Please find a documentary film about "global warming".

4. Please find information about immigration and labour.   Has anything been published within the last year?

5. Please find a periodical/magazine about foreign policy in the Middle east.

    a. Is it available online?

6. Please find information about the headscarf debate in Europe. What keywords would you use and why?   Which words in the tag clouds would you click on?

7. Please explore the concepts of "literacy" and "children". What other concepts or terms are related to "literacy" and "children"?

8. Please formulate a simple research question based on what you've found so far on the topics of literacy and children. What are some of the potential topics for your paper?

9. What do you like the most about this interface?

10. What do you like the least about this interface?

11. How did it help/not help with your searches?

12. How do you feel about having social networking features, such as tagging, ranking and commenting?

13. Did you notice any reviews or ratings of materials? Did they help you decide whether or not the material is useful?

Appendix 2 - List of Requirements and Validation

Requirements	Encore	Primo	WorldCat	VuFind	AquaBrowser	LibraryFind	Evergreen	Endeca	Koha	Polaris
Content Enrichment	X	X	X	X	X	X	X	X	X	X
Bookcovers	X	X	X	X	X	X	X	X	X	X
Tocs	X	X	X	X	X	X	X	X	X	X
Social Tools	X	X	X	X	X	X	X	X	X	X
Tags	X	X	X	X	X	X	X	X	X	X
Community Reviews	X	X	X	X	X	X	X	X	X	X
Ratings	X	X	X	X	X	X	X	X	X	X
Open URL Integration	X	X	X	X	X	?	?	X	?	?
Facets	X	X	X	X	X	X	X	X	X	X
RSS	X	X	X	X	X	X	X	X	X	X
Relevancy Ranking	X	X	X	X	X	X	X	X	X	X
Federating Searching	X	X	X	X	X	?	?	X	X	X
Browse	X	X	X	X	X	X	X	X	X	X
Tag clouds	X	X	X	X	X	?	X	X	X	X
Did you Mean	X	X	X	X	X		X	X	?	?
Real time integration with circulation data	X	X	X	X	X	?	?	X	?	?
FRBR	X	X	X	X	X	X	X	X	X	X
Item availability	X	X	X	X	X	X	X	X	X	X
Arabization	X	X	X	X	X	X	X	X	X	X
Browse surrounding shelves easily	X	X	X	X	X	?	X	X	X	X
Virtual shelves	X	X	X	X	X	X	X	X	X	X
Sort by drop down	x	x	X	x	x	X	X	x	X	x
ILL Integration	X	x	x	x	X	X	?	X	?	?

Appendix 3 – Consent Form

Zayed University Library
Library Discovery Platform Study
CONSENT FORM

Aim of the Research
To identify which discovery platform will best meet the needs of the students at Zayed University by asking volunteers to complete tasks and answer questions.

Consent:

I _____ agree/disagree to participate in the study being conducted by librarians at Zayed University Library:

I understand that my participation is entirely voluntary.

I understand that I am free to stop my participation in the study at any time without penalty.

I understand that the personal information supplied by me during the study will be kept confidential and that I will remain anonymous. Within these restrictions, results of the study will be made available by my request.

I understand that the information contained in this research will be stored safely for five years, and after that time the information will be destroyed. I understand that the information will not be given to any other researcher or agency without my written permission.

I understand that, if I want it, I can receive additional explanation of the study at any time.

I understand that the results of this study may be submitted for publication to national and international journal(s

_____ Signature

_____ _____Date

through words and behaviours; seek. approval for their hard work. Closure-oriented / judging – seek Timed activities and tests. Our teaching experience is not limited to working with undergraduate and graduate students; over the last four years we have been involved in professional development courses, training more mature learners – professors, scholars, and administrative staff. Compared with the younger learners, the latter group has several psychological advantages, but they are also rather inflexible about being taught. to more in-depth understanding of the EFL-related learning styles and helps to. elaborate more relevant strategies for effective work with adult learners as different. from young adults. undergraduate students. Information Overload 7. heuristics in seeking information, or chronic cognizers, who seek and evaluate. information on their own (1996). Cacioppo et al. have also found several studies. which have shown a positive correlation between ACT scores and need for cognition, as well as between grade point averages and need for cognition (1996).When. behaviors that had a significant correlation directly with the frequency of feeling. information overload. This disproved both aspects of Hypothesis 1, as neither the. frequency, duration (hours per week), nor intensity (profile changes and messages) of. students' usage of SNSs were significantly correlated with the frequency of feeling. information overload. For the complete statistics, see Table 12 in the Appendix. This study sought to investigate the attitudinal behavior and perceptions of undergraduate students in University of Fort Hare and Rhodes, towards their utilization of e-information resources (EIRs). The essence was to ascertain whether their attitude and perception have a positive or negative impact on e-resource use in selected universities in Eastern Cape, South Africa. Information resources provide students in HEIs with several prospects compared to their forerunners. This explains further that the negligence of the undergraduate students on the utilization of e-information resources depends on their perception and attitudes to the use of the e-resources, which is still centered on. Figure 1. Adopted framework for the chapter (Source: Rogers, 1983).