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Closing the Gap: Investigating the Search Skills of International and US Students: An Exploratory Study

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Introduction

Academic librarians are increasingly concerned about students' information literacy. The ability to effectively search academic resources is critical to academic success. In the past 10 to 20 years, the most significant change in patrons' library skills is related to the introduction of new technologies. Rapidly changing technology affects how students search for information and, in turn, influences how academic libraries serve students. International students, especially those who learned English as a second language, often struggle to use the library more than their American counterparts. To help international students understand the many facets of academic libraries (such as the academic culture, services, and resources), library programs and services have been developed to meet international students' informational needs. Although the population of international students is on the rise, research on international students' ability to search library resources is limited.

Previous studies have indicated that there are significant differences between the library skills of international students and those of US students. This exploratory study examined the ability of undergraduate and graduate international students to identify books, journals, and journal articles and compared it to a small control group of US students. The number of students was limited by a \$1,500 American Library Association Diversity Grant. It was expected that, even with a small sample size, that international students' library skills would lag behind those of US students.

This research design was patterned after Zoe and DiMartino's research on end-user international students in the 1990s. In the 90s, considerable time was spent teaching students how to search for

information in end-user databases. Libraries were moving from searching by librarians to systems which allowed users to find their own information. Today is it possible to collect data on searching, using software that records the user's interactions with the computer, often called key-logging, or tracking software. Using tracking software in this study allowed analysis of how students acquired their answers and comparison of the results of international and US students. This method differs from the other studies which used surveys to determine how international students find information and what resources are used. An exit survey provided demographic information about students, such as frequency of library use, satisfaction with library services, and prior computer use in their countries of origin. The implications of the study can be used to improve library instruction and online catalog records to increase accessibility for all students.

Literature Review

The number of international students attending American universities has increased each year. According to the *Open Doors Report* [1], the international student population has increased 3 percent, totaling 582,984 for 2006/2007 alone. *Newsweek* [2] reported that, according to the US Commerce Department, international student education is a \$13 billion boost to the economy. The article also noted that the number of international students studying in American colleges and universities has been on the rise. The Institute of International Education ranks these students' presence as having the fifth greatest impact on our economy. Because of the economic impact, services to international students are also on the rise as universities and colleges develop more partnerships with other countries. Libraries need to be involved in the planning to create opportunities for success for this important group of students.

Much of the literature of the last 20 years provides methods for improving library orientation and instruction sessions to culturally diverse library users—both minority and international students. Articles focused on cultural and language differences and characteristics librarians need to be aware of to provide culturally responsive service to international students.[3] During the 1980s, the greatest barriers for international students and librarians included language, cross cultural communication, comprehension of library terminology and concepts, technology, and Western library practices in general.

Some key articles written in the 1990s changed the way libraries approached identifying specific skills and types of information collected from international students. Prior to the 1990s, research focused on librarians' lack of understanding of international and multicultural students' diverse needs. However, research by Allen, DiMartino, and Liu concentrated on making connections between students' skills and how they searched for information. Allen not only examined how students used online catalogs and other services, but also asked students about the use of computers in their countries of origin. [4] She also obtained data about difficulties students experienced because of unfamiliarity with library services in the US.

DiMartino and Zoe examined how multicultural students and international students used databases after training on a full-text database. [5] Gender, anxiety, and ethnic background were variables examined in determining the success of information searching. One hundred and thirty-one graduate students were trained to use Lexis/Nexis, prior to the web version Academic Universe, and completed a survey about the search strategy used, the satisfaction with the results, and past searching experience. The authors concluded that most students were challenged in developing search strategies because of the language barriers. The most significant difference between the ethnic groups was the level of satisfaction of the results—native English speakers reported more positive results than other groups.

Liu and Redfern surveyed multicultural students to identify the characteristics of successful information seeking behaviors in the library. [6] Students experienced more success using the libraries with length of stay in the US, frequency of library use, and comfort level in asking for assistance. Natowitz reviewed the literature and summarized trends and concerns of academic libraries serving international students.[7] Recommendations for cultural awareness and sensitivity of library staff,

collaboration with ESL language departments, and understanding learning styles of ethnic groups were stressed again and again. Collaboration with English as a Second Language (ESL) instructors is a best practice for assisting students in breaking down the barrier of library terminology and bridging the gap of cultural values, information, and language.

Recent articles have explored comparisons between international and American/domestic students use of information and services.[8] Pamela Jackson's 2005 study surveyed 161 incoming undergraduate and graduate international students about new library services and terminology, library computer experiences and computer skills, and services or information libraries should provide to the incoming class.[9] New library services or unfamiliar concepts to the students included interlibrary loan, consulting with librarians, and virtual or online reference services. The results showed 84 percent of international students come to this country with higher levels of computer skills and computer use in their home countries than previously. The computer technology barrier identified in the 1980s and 1990s is no longer a major obstacle for students in finding and using information, although libraries need culturally responsive programs and services for international students.[10]

The most recent research on international students was a 2005 user survey at Virginia Tech University, conducted by Liao, Finn and Lu.[11] The authors compared the ways international and American graduate students begin seeking information and the resources used to find information. All graduate students were given the opportunity to participate, and 315 responded: 71 percent American and 29 percent international students. The survey instrument combined the information seeking behavior questions of Liu and Redfern with the difficulty of using library services explored in Allen's research. Overall, the results "demonstrate that international students use libraries much more actively and often than American students during their graduate studies." [12] The data also showed international students were more confident in their English language proficiency and understood most of the library terminology and concepts. [13] Over the past 25 years, the major obstacles of technology and English proficiency have been reduced and do not affect a majority of international students, although libraries must still be responsive and provide instruction that emphasizes information competencies.

Subject Parameters

This study took place on the campuses of Union College, a small private liberal arts college with an international student population of 6 percent, and the University of Nebraska-Lincoln, a public research institution with an international student population of 7 percent. To participate, students had to be at least 19 years old and enrolled in one of the two institutions where the research was conducted. Since the focus of the study was on international students, it was decided the majority of the subjects should come from that group and to use a smaller group of US students as a control group. This resulted in two-thirds international student subjects and one-third US students. International students had to have reported passing the TOEFL to be included. For the purposes of this study, international students were defined as students from countries outside the US, and US Students are those US citizens who speak English fluently.

Recruiting Methods

Two recruiting methods were used. First, flyers were placed on announcement boards in the two student unions, the libraries, various residence halls, and ESL offices. Second, a message describing the study and inviting participation was sent to student listservs. Of the two methods, the listserv message garnered the greatest response. As an incentive to participate, subjects were informed that they would receive a \$25 gift card to the local Target store for their participation. Students were instructed to contact one of the researchers who conducted a short oral interview to ensure students met criteria for the study and assigned a time for students to complete the study. During the study, walk-ins were also allowed to participate if they met the criteria.

Methodology

The study was conducted in the library computer lab at each institution. Given the potential of Total Spy, a key-logging tracking software, to be a violation of the subject's privacy, it was important the research design be reviewed and approved by each institutions' human research review board. The University of Nebraska-Lincoln's Institutional Review Board and Union College approved the methodology. This study was designed so that the only identification of a subject was an ID number assigned to the exercises. In order to protect each subject's privacy, nothing on the signed consent form linked the student with the identifying number on the exercise form, results from the tracking software, or the questionnaire.

Before participating, each student participant received an informed consent release form. This form explained the purpose of the study, how the information was gathered, what was required of the student and any potential participant risk. Each potential subject was also asked orally if they had any questions and reassured that they could ask questions at any point of the study. After signing the release form, a copy was given to each student who agreed to participate.

Each student received an exercise form (see Appendix A) to complete and shown to a computer with tracking software installed and already open to the library's home page at the student's home institution. The software provided information about each student's session. The software was selected because of its capacity to capture webpages, URLs, and keystrokes in a variety of intervals. Students were reminded not to check email or perform other functions on the computer during the study. After completion of the exercise, information was collected in electronic folders named with the participant identification number.

The exercise consisted of two parts. (See Appendix A). Part one was a series of questions to see how well they navigated and understood their home institution's online catalog. There were five questions asking the student to find books and journals on the online catalog. Some questions asked them to identify the "available" books to check out, others asked the number of copies of a book, (e.g., *Huckleberry Finn*), while another question asked them to list the title and the call number of a book. There was one multi-part question on journals, e.g., "does your library own the *American Historical Review* " and "what is the most current issue?" The exercises were designed to build confidence with simple questions before moving on to more complex information.

In part two, students answered questions using the *Academic Search Premier* (ASP) database. This database was chosen because of its frequent use at both institutions and its broad-based coverage of multiple academic disciplines. The ability to properly cite and identify a peer reviewed, or scholarly article, from ASP were library skills focused on during the study. This section had three questions with several components within each question. For example, "how many articles can you find on Sunni and Shi'ite Muslims?" The follow-up questions asked students to record a citation, underlining the journal name and circling the issue number. The final question required students to identify peer-reviewed articles about Willa Cather.

Upon completion of the searching portion of the exercise, students were given a short exit survey to gather basic demographic information, their satisfaction and comfort level with the exercise, and their use of library's resources. (See Appendix B). After completing the survey, the student received their gift card and was free to leave.

After the data gathered by the tracking software was saved by the researchers, all information from the subject's searching was purged and the computer set up for the next subject to use. The data gathered by the tracking software included the amount of time each subject spent on parts 1 and 2 of the exercises, the URLs used, and screen shots taken every minute during exercise. Although the software collected an abundance of data, the most useful information was observing how much time the student

spent on the total exercise, the screen shots, URLs, and keystrokes. Data analysis focused on the basic search techniques used in finding scholarly articles.

Results

Subjects

Sixty-nine students participated in the study, 46 international students and 23 US students. One US student did not complete the exercise, making the final number 68, with 46 international students (68 percent) and 22 US students (32 percent). Fifty (74 percent) of the students were undergraduates and 19 (26 percent) were graduate students. The undergraduates included 53 percent freshmen and 21 percent upperclassmen.

Between the two campuses, students represented 18 countries: Brazil, Cameroon, Canada, China (including Hong Kong), Colombia, England, India, Indonesia, Japan, Kenya, Korea, Latvia, Mexico, South Africa, South Korea, Uganda, United States, and Venezuela. A majority (31) of international students were from China and other Asian countries.

Online Searching Results

All 68 students were able to identify the book requested in the online catalog search from the exercises. When identifying call numbers for books from the catalog record, 62 (91 percent) correctly listed a call number. Only 6 (9 percent) international students incorrectly identified call numbers, substituting ISBNs and other numbers from the catalog record. This may indicate a problem with identifying Library of Congress call numbers or with library terminology. Ninety-one percent of international students were as proficient as US students at identifying call numbers; however, the numbers are too small to signify the problem is one of international status, terminology or library instruction at either of the two institutions.

When asked to interpret a catalog record for journals, all students encountered problems identifying the current issue and whether it was available in full-text. There was little difference between the two groups; both experienced limited success. Overall, 84 percent correctly recognized a full text version of the journal. On the other hand, 43 percent of international students and 41 percent of US students were unable to identify the most current issue of a journal by reading the catalog record. While the difference between the groups is negligible, it does indicate further study on the cataloging of journals is needed, as well as improved library instruction on interpreting journal records. This appears to have less to do with international or US status, but with how records are presented in the online catalog.

The second portion of the exercise focused on using ASP. All students but one could find relevant articles; however, when interpreting citations, there were some telling differences. Seventeen percent of international students did not record the complete article citation in ASP, compared to 9 percent of US students. Most listed the title of the article for the title of the journal. Of written citations, 47 percent of international students did not properly label the journal title and volume number, compared to 27 percent of US students. A Fisher Exact Test showed that the difference was not statistically significant (P-Value cutoff=.117; 1-tailed P-Value=.296). This discrepancy is an indication that all students struggle with interpreting database records, while international student may have a greater challenge. Again, library terminology maybe be responsible for this finding. Exit interviews showed that international students tended to have more experience using the library, so lack of familiarity with the library does not seem to be a factor in these differences.

The final challenge was to identify peer reviewed or scholarly articles. Based on the tracking software, only 40 percent of all students accomplished this basic task. Thirty-eight percent of international students and 41 percent of US students looked for scholarly articles. Clearly, these are dismal results for

both groups. They point to a deficiency in library skills for all students, with little statistical difference between the groups.

Tracking Software

The tracking software used during the study yielded some interesting results on basic search strategies. Data was collected to see if there were significant differences between the average time spent on the exercise, limiting to scholarly articles, repeating a search, or using field tags in the search for articles on Willa Cather's life. Surprisingly, there was little or no difference between the two groups in time spent completing the exercise. US students' time ranged from 16 to 81 minutes, with an average of 37 minutes on the exercises. International students spent from 12 to 79 minutes, averaging 34 minutes, to complete the exercise. The difference between the groups was insignificant.

The software revealed students searching outside the library website for answers to the questions. Students had been given both oral and written instructions, telling which part of the exercise required the use of the online catalog and which part required ASP to answer the questions. The key-logger software showed 28 percent of international and 14 percent of US students attempted to use other sources to answer the questions related to the ASP portion of the exercise. Some tried to use the multi-search feature or the online catalog to find articles. Table 1 shows that the difference between the number of international students and the numbers of US students who looked at resources other than ASP is significant with a Pearson's Chi square of .004. The difference between the two groups may indicate a language barrier or confusing library terminology. Responses from the exit survey also showed confusion with completing the exercise.

| | International Students (n=46) | US Students (n=22) | total |
|----------------------------------|--------------------------------------|------------------------------|-------|
| Looked at sources other than ASP | 15 | 7 | 22 |
| Only looked at ASP | 31 | 15 | 46 |
| Total | 46 | 22 | 68 |
| Degrees of Freedom=1 | Pearson Chi-Square Statistics = .004 | P-Value = 0.9480247607118629 | |

The software also revealed that international students were slightly more likely to repeat a search in ASP than US students. On average, international students repeated the search 2.98 times and US students repeated the search 2.52 times. Given the small sample size, this is well within the realm of natural variation. It appears that international students were not confident that they had completed the task successfully and, although they repeated the search slightly more often than US students, they used other search strategies before settling on an answer.

Since the query was straightforward, search strategy results were basic. Given the improvements in database interface, an elaborate search strategy for basic searches is no longer necessary. However, 21 percent of students (20 percent of international and 23 percent of US students) used field tags such as (ti) title, (so) source, (su) subject, (pe) people, (au) author, in ASP to qualify the original search terms. The most common field tag used was subject.

Figure 1: Keystrokes and URLs: Total Spy examples

```
---> 1:02:34 PM, IN WINDOW "UNL | Libraries - Microsoft Internet Explorer" USER
"Public" PRESSED:
eastern religion -Enter-

---> 1:06:20 PM, IN WINDOW "UNL | Libraries - Microsoft Internet Explorer" USER
"Public" PRESSED:
eastern religion -Enter-

---> 1:06:25 PM, IN WINDOW "UNL Libraries & Schmid Library - Microsoft Internet
Explorer" USER "Public" PRESSED:
-Delete- IndiaHuckleberry Finn -Delete- -Back- -Back- -Back- -Back- -Back- -Back-
-Back- -Back- -Back- -Back- -Back- -Back- -Back- -Back- -Back- American
Historical Review -Enter-

---> 1:06:26 PM, "http://library.unl.edu/search/", "UNL Libraries & Schmid Library"

---> 1:08:51 PM,
"http://library.unl.edu/search/?searchtype=X&searcharg=India&sortdropdown=-
&SORT=A&extended=0&SUBMIT=Search&searchlimits=&searchorigarg=Xeastern+rel
igion%26SORT%3DA", "http://library.unl.edu/search/?searchtype=X&searcharg=India&s
ortdropdown=-
&SORT=A&extended=0&SUBMIT=Search&searchlimits=&searchorigarg=Xeastern+rel
igion%26SORT%3DA"

---> 1:08:52 PM,
"http://library.unl.edu/search/?searchtype=X&searcharg=India&sortdropdown=-
&SORT=A&extended=0&SUBMIT=Search&searchlimits=&searchorigarg=Xeastern+rel
igion%26SORT%3DA", "UNL Libraries & Schmid Library"

---> 1:09:11 PM,
"http://library.unl.edu/search/XIndia&SORT=A/XIndia&SORT=A&extended=0&SUBK
EY=India/1%2C11503%2C11503%2CB/frameset&FF=XIndia&SORT=A&1%2C1%2C"
, "http://library.unl.edu/search/XIndia&SORT=A/XIndia&SORT=A&extended=0&SUBK
EY=India/1%2C11503%2C11503%2CB/frameset&FF=XIndia&SORT=A&1%2C1%2C"

---> 1:09:12 PM,
"http://library.unl.edu/search/XIndia&SORT=A/XIndia&SORT=A&extended=0&SUBK
EY=India/1%2C11503%2C11503%2CB/frameset&FF=XIndia&SORT=A&1%2C1%2C"
, "UNL Libraries & Schmid Library"
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Exit Survey

After finishing the exercise, students completed an exit survey inquiring about their perceptions of the exercise and their library use patterns. When asked about their perceptions of the exercise, some striking differences became apparent. In Table 2, more than 50 percent of international and US students claimed to be familiar with this type of library research. Nevertheless, US students indicated more frustration and boredom with the exercises, while international students tended to see the exercise as more simple.

| | Overall (n= 68) | International Students (n= 46) | US Students (n= 22) |
|--|-----------------|--------------------------------|---------------------|
| I was confused | 22 (32%) | 14 (30%) | 8 (36%) |
| I was frustrated | 8 (12%) | 3 (7%) | 5 (23%) |
| These were simple exercises | 28 (41%) | 20 (43%) | 8 (36%) |
| I was bored | 4 (6%) | 1 (2%) | 3 (14%) |
| I did not understand what was being asked | 9 (13%) | 5 (11%) | 4 (18%) |
| I am familiar with this type of library research | 36 (53%) | 24 (52%) | 13 (59%) |

Students were also asked about their methods of seeking assistance in the library. Both groups reported similar frequency in using their institution's library (between 2-3 times per week) and in asking for help in using library resources. There were differences in how the two groups ask for help from library staff. (Table 3) Approaching the reference desk is still the primary way of asking for help, with 86 percent of students responding to this venue. However, international students are much more likely to use a variety of communication methods to seek assistance, such as chat and email.

| | Overall (n=68) | International Students (n=46) | US Students (n=22) |
|--------------------------|----------------|-------------------------------|--------------------|
| Reference desk | 59 (86%) | 40 (85%) | 19 (83%) |
| E-Mail | 5 (7%) | 5 (11%) | 0 (0%) |
| Telephone | 15 (22%) | 9 (19%) | 6 (27%) |
| Chat | 7 (10%) | 5 (11%) | 2 (9%) |
| Appointment w/ Librarian | 3 (4%) | 2 (4%) | 1 (5%) |
| Other | 5 (7%) | 5 (11%) | 0 (0%) |

International students reported using the online catalog and journal databases more frequently than US students and with more variety in their frequency of use. As Table 4 shows, there is a significant difference in reported use of the online catalog and journal databases between international and US students. International students used these online resources more than US students. Liao's 2005 studies validate this finding. This was the only significant difference in self-reported use of library resources.

| Online Catalog | | | | | |
|------------------------|-------|--------|------------|---------------|--------------|
| | Daily | Weekly | 2/3x Month | 1/3x Semester | Seldom/Never |
| US Students | 0% | 18% | 32% | 36% | 14% |
| International Students | 7% | 44% | 17% | 17% | 15% |

| | US Students | International Students | Total | | |
|--|-------------|------------------------|------------|---------------|--------------|
| Average Score | 3.45 | 2.1 | 3.45 | | |
| Standard Deviation | 1.2 | 1.2 | .96 | | |
| <i>T-value=-4.99 probability=.000004</i> | | | | | |
| Journal Article Databases | | | | | |
| | Daily | Weekly | 2/3x Month | 1/3x Semester | Seldom/Never |
| US Students | 0 | 5% | 33% | 48% | 14% |
| International Students | 13% | 33% | 26% | 8% | 20% |
| | US Students | International Students | Total | | |
| Average Score | 3.55 | 2.8 | 3.1 | | |
| Standard Deviation | 1.2 | 1.3 | .76 | | |
| <i>T-value= -2.988 Probability=.002021</i> | | | | | |

Both international and US students claimed similar comfort and satisfaction levels in using library resources. Satisfaction with library resources was ranked 2.4 for all students, (1 being very satisfied and 5 being very dissatisfied). This mediocre score may not be as surprising when combined with the reported frustrations in using library resources. The primary frustration for both groups was “item is not in the library”. (Table 5) The second reason for US students is “don’t know where to start to look for info” and for international students “cannot find item”. International students may experience more frustration in locating materials on the shelf because of their higher frequency of use. Since International students report using library resources more often than US students, the likelihood of encountering missing books or journals is higher. Based on other comments made by international students, the importance of library instruction in assuring that students have the basics of locating and finding items on the shelf and searching online databases become obvious. Other comments made by international students were:

- limited topics available;
- do not know how to limit search;
- NetLibrary is not convenient;
- too many journals; not sure which ones are the best
- cannot open the full-text of some journals;
- some issues are not available;
- cannot find full-text.

Table 5: Frustrations using library

| | Overall (n=68) | International Students (n=46) | US Students (n=22) |
|---|-------------------|----------------------------------|-----------------------|
| cannot find item | 33 (49%) | 22 (47%) | 11 (50%) |
| cannot tell if book or journal is available | 14 (21%) | 8 (36%) | 6 (27%) |
| the item is not in the library | 39 (57%) | 26 (55%) | 13 (59%) |
| don't know where to start to look for info | 19 (28%) | 12 (26%) | 7 (31%) |
| no one is available to help me | 3 (4%) | 3 (6%) | 0 (0%) |

US Students only made two comments: “difficulty finding what I am looking for” and “want resources online not physically in the library.”

The final part of the exit survey was directed only to international students. They were asked about their use of libraries and library computers in their home country, which were divided into four geographic regions. Of the four regions, students from Europe, followed by Asia, had more access to libraries and library computers than students from Africa and the Americas. Students from Africa in particular were less likely to have experience with libraries and library computers before entering US universities. Seventy-eight percent used a library in their own country and 57 percent used library computers in their own countries. This finding is supported by Jackson's research, mentioning 84 percent of international students are using computers in their home country. (Jackson) [14]

Conclusion

Contrary to expectations, this exploratory study did not find that the library skills of international students were less developed than those of US students. Both the exercise and the tracking software showed that international students seek information in the same basic way as US students and the skills needed to find information is similar. It is important to keep in mind that due to the small sample size in this study, it would be imprudent to assume that the scales are equal. The purpose of this study was merely to ascertain if there was any evidence that international student's information seeking behavior skills in searching for basic library information in the catalog and for journal articles were still lagging behind those of US Students.

This research design was patterned after Zoe's research with multicultural students' searching behavior within a full text database. Recruiting US as the control group was based on the assumption that US students have more advantages to understanding and knowing how to use library service and resources than international student. In reality, US students were not a good control group, because of the small number and the variable characteristics of the group: undergraduate, graduate, public research institute, and private small college. The small sample size interfered with obtaining substantial significance between the international and US students, undergraduate and graduates, and between the institutions.

In the 90s, considerable amounts of time was used to teach students how to search for information within end-user databases. In comparison, today the database interface is more intuitive so users can find their way to the information they need. Therefore the complexity of the strategy is less important because of the design of the database interface. So it was difficult to compare the results of this study to Zoe & DiMartino's [15] research because of the type of database and the improved database interface.

A surprising finding that needs investigation is how students interpret records, regardless of their status or country of origin. This appears to be a concern especially with regards to journal records in the online catalog and article citations within a database. With more than 40 percent of all students struggling to interpret a journal record within the online catalog, it appears that this issue is not one of a language or cultural, but a more fundamental issue of the presentation of journals within an online catalog. Additional research on interpreting online journal records is needed to benefit all students. Although there was no significant finding between international students and US students, international students struggled more with library terminology or a language barrier while deciphering the online journal record.

The tracking software opened the door to observing student behavior in a structured way. Tracking software ascertained some search strategy differences between international and US students. Data collected was analyzed in more detail to identify the keywords, field tags, limit to peer review articles, and the number of repeated searches. The software provided a record of how the students searched for information. It was difficult to analyze much of the data because of the number of variables students used to get to the "correct" answer, the order of the search terms entered, etc. However, it was clear that international students were significantly more likely to use resources other than the designated ASP. This supports the finding that international students use a variety of information seeking behaviors to locate needed information.

A persistent, if not statistically significant, trend was revealed through the exit survey. US students were more likely than international students to see the exercises as confusing, frustrating, and boring, with the largest difference being reported levels of frustration. International students were more likely to see the exercise as simple and familiar. While this may not reveal any technological differences, it does indicate that attitudes and expectations of the students (perhaps molded by their culture) toward libraries and library research had an impact on perceived experience. The exit interview also revealed that US students were more likely to report a lower level of library experience and activity than international students. The only statistically significant difference between US students and international students was in the self-reported variety and frequency of use of library resources, with international students using more of these resources more often. The relationship between frequency of use and frustrations was also related to research dealing with anxiety levels of international students.

This study, though limited in number and scope, revealed international students use the library more frequently but still may need library instruction on the basics of library skills, such as finding a book on the shelf to identifying parts of a journal citation. Additional information about interlibrary loan, document delivery, and virtual reference services will reduce their frustrations when items can not be found in the library. Further study is needed to identify the best practices in the collaborative efforts of ESL and library instructors to create culturally responsive programs and services preparing international students for academic success.

Technology is closing the gap between undergraduate and graduate international and US students. Not only are international students coming from their countries using computers and libraries in their countries, the improvements in database user interface has reduced the need to understand library terminology which helps all students to navigate and achieve their research needs. In addition, the increasing use of technology in libraries and the willingness of international students to devote more time and energy to library research is helping to rapidly close the gap between international students and US students in using the library.

Notes

1 Philip G. Altbach. "Open Doors: Report on International Education Exchange (Book)." *Change* 34, no. 3 (2002): 29-31.

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Appendix A

ID # _____

Exercise Questions

End-User Searching: Comparing ESL Students and Native English Students

Search for books and journals in the online library catalog.

1. Find 3 books on Eastern religions. How many books are "available" to check out?
1. Find 2 books about your home country or state. What are the title and the call numbers and/or location and availability for each?

Book 1 _____

Book 2 _____

1. How many copies does your library have of the book, *Huckleberry Finn*, written by the author Mark Twain?
1. Is *American Historical Review* available in full-text from the computer? _____ Yes _____ No
1. What is the most current issue of the *American Historical Review* ?

Search for journal articles in Academic Search Premier

1. How many journal articles can you find on Sunni and Shiite Muslims using the Academic Search Premier database?
1. Write down the first article citation in the list. Then underline the journal name and circle the issue number.
 - a. Is the article available in full-text from the computer? _____ Yes _____ No
1. Do a new search looking for information about Willa Cather's life, limiting your search to scholarly (peer-reviewed) journals.
 1. How many articles did you find?
 1. What word or words did you use for this search?
 1. Which three articles would you use for a paper? (Below, provide the author's last name of the chosen articles.)

First article: author's name _____

Second Article: author's name _____

Third article: author's name _____

Appendix B

ID# _____ >

Exit Interview Questionnaire

End-User Searching: Comparing ESL Students and Native English Students

What is your home country? _____

Gender: _____ Male _____ Female

Age (circle one): under 25 26-29 30-34 35 +

What is your first (Native) Language? _____

What other languages do you speak? _____

How many years have you been in the U.S. ? _____

How many years have you been at Union/UNL? _____

Did you start at Union/UNL as a (circle one) Freshman Sophomore Junior Senior Graduate Student

What is your major or field of study? _____

What is your degree objective? (Circle one) B.S. B.A. M.A. M.S. Other

In this study, how satisfied are you with your results of this study?

_____ Very satisfied

_____ Somewhat satisfied

_____ Satisfied

_____ Somewhat dissatisfied

_____ Very dissatisfied

Check all the statements that apply about the exercise

I was confused.

I was frustrated.

These were simple exercises.

I was bored.

I did not understand what was being asked.

I am familiar with this type of library research.

Other comments

On average, how often do you use the library at Union/UNL?

____ Never

____ Once a week

____ Twice a week

____ Three times a week

____ More than 3 times a week

Have you asked for help in the library? ____ Yes ____ No

If you have asked for help in the library, check the methods you have used ____ Reference Desk (in-person)

____ E-mail Reference

____ Telephone Call

____ Chat Reference

____ Appointment with a librarian

____ Other: _____

How comfortable are you using the library?

____ Very comfortable

____ Somewhat comfortable

____ Comfortable

____ Somewhat uncomfortable

____ Very uncomfortable

How satisfied are you with this library's resources? ____ Very satisfied

____ Somewhat satisfied

____ Satisfied

____ Somewhat dissatisfied

____ Very dissatisfied

On average, how often you use the online library catalog to find books, journals? Daily
 Weekly 2-3 times a month 1-3 times a semester/quarter Never/seldom

On average, how often do you use the journal articles databases to find journal articles? Daily
 Weekly 2-3 times a month 1-3 times a semester/quarter Never/seldom

What frustrations have you experienced? (mark all applicable responses) cannot find item
 cannot tell if the book or journal is available the item is not in the library don't know where to
start to look for info no one is available to help me other:

none

For International Students

Did you use a library in your home country before coming to U.S. ? Yes No

Did you use computers in a library before coming to the U.S. ? Yes No