Setting Them Up for Success: Assessing a Pre-Research Assignment for First-Year International Students

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Abstract

As the international student population continues to grow, librarians must adjust their instruction to meet the needs of students who are adapting to a new country, culture, and language. This study assesses first-year international students as they engage in the research process through the completion of concept maps that precede database searches. Librarians assessed concept maps of international students completed prior to information literacy instruction to better understand the difficulties they experienced defining research topics and identifying keywords and alternatives. The results of this assessment provide a deeper understanding of the challenges first-year international students face with creating search strategies. Ultimately, this study resulted in more meaningful relationships between librarians and English as a second language (ESL) instructors, and effective adaptations to ESL library instruction.

Keywords: international students; library instruction; research process

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Introduction

In the ten-year span from 2005 to 2015 the number of international students at institutions of higher learning in the United States grew from 526,000 students to nearly 975,000 (Institute of International Education, 2016). International students arrive in the United States with different backgrounds and educational experiences, presenting challenges for the institutions they attend. Defining the role the academic library will play presents many questions. How can libraries contribute to the academic success of international students? Are they providing students meaningful learning experiences? How can libraries measure their impact? As librarians work with international students, they must "cope in an understanding fashion with the reality that foreign students possess a different set of needs than traditional American students" (Shaffer, 2010, p. 110).

In fall semester 2015 there were more than 10,000 international students enrolled at the University of Illinois at Urbana-Champaign (UIUC); more than 5,400 of these were undergraduates. The undergraduate international students at UIUC come from diverse backgrounds: the largest group of students comes from China (3,070), followed by South Korea (697), and India (485). Their majors are wide ranging. Programs with the greatest numbers include electrical and computer engineering (665), mathematics (514), and more than 300 each in the Division of General Studies, accountancy, economics, and computer science. An international student population of this size necessitates extensive programming and support that reaches beyond the classroom. Tasks that can be daunting for students who grew up and attended high school in the United States present greater difficulties for international students who encounter them in both a new culture and language.

This study, which took place in the Undergraduate Library at the UIUC, provides an in-depth examination of first-year international students as they engage in their first major research assignment in the context of course-integrated information literacy instruction. While assumptions certainly exist that international students are likely to face challenges beginning such an assignment, this study sought to identify the prevalence of those challenges and, more specifically, the difficulty language plays in developing a search strategy. Librarians and curriculum coordinators in the ESL department shared anecdotal experiences of the obstacles first-year international students experienced in their database

searches, particularly as they related to topic identification and keyword selection. With support of the UIUC administration and the Dean of Libraries, librarians assessed concept maps completed by students prior to information literacy instruction. This assessment was conducted to determine the readiness of students to successfully search in library databases. While prior studies of ESL students and information literacy instruction have tended to focus on interviews and surveys, this study assesses completed assignments of individual students.

Literature Review

There are numerous articles in the literature that focus on both general and specific aspects of international students and the library. Many of these can serve as precursors to understanding the challenges international students face when beginning their education in a new country and culture. Kwon's 2009 study found a relationship between the degree of individual international students' English proficiencies and their feelings of isolation and intimidation in their adjustment to education in the United States (U.S.), particularly in English speaking classes. Mamiseichvili (2011) focused on the persistence of first-year international students attending U.S. universities, discovering that grade point average, degree goals, and English skills all played a role.

Koenigstein (2012) examined the role of the library as international students begin to transition to a new culture and provided suggestions for both the classroom and the reference desk, stressing an awareness of the cultural and educational differences. Amsbury (2008) provides practical suggestions for working with international students in the instruction classroom, particularly with regard to the language challenges they face. Carlyle (2013) shared similar tips for working with international students in the library context, noting the importance of taking time when working with international students.

While the 2010 study of Knight, Hight, and Polfer was small, the authors shared important concerns about working with international students in the library. In particular, they found international students had infrequent interactions with librarians, preferred in-person communication, and favored friends as a source of information. Shaffer, Vardaman, and Miller (2010) also sought to discover library usage among international students. Their study, which was focused more on library resources and services including hours, computers, books, etc., found international students were far more dependent on the library than their American counterparts.

Some authors focused on specific populations in their studies. Ishimura (2012) focused on Japanese students' research processes and information literacy skills. Ishimura's research stresses the importance of professors and librarians working collaboratively in order to "supplement each other's efforts in providing explicit assignment guidelines and facilitating students' choices in pursuing research topics" (p. 32). Sackers, Secomb, and Hulett's 2008 study focused on a survey of international students at an Australian university, discovering preferences for using the library web pages and e-mail for services and communication.

Several authors wrote about various aspects of international students in the library instruction classroom. Ishimura and Bartlett (2014) investigated the teaching skills of librarians and their preparation to teach international students. They found that while most librarians recognized international students had different needs, less than half acknowledged their libraries had corresponding services. They also stressed the need to "bridge theory and practice to improve librarians' teaching competencies in relation to this population" (p. 320). Herring (2014) shared information about a course enhancement grant at Ohio State University, which focused on an ESL composition course. This program created greater collaboration between classroom faculty and librarians, which in turn, provided ESL students with a better understanding of important aspects of the research process. Aytac (2016) engaged in a three-pronged study that included observations, semi-structured interviews, and classroom artifacts, recommending greater collaboration with ESL instructors and additional instructional opportunities. The importance of building relationships between the library and ESL instructors was the focus of Martin, Reaume, Reeves, and Wright (2012), noting such relationships can "bridge the gap for ESL students" (p. 364). Hughes (2005) observed the behaviors of international students as they searched for information in library databases; she also investigated their thoughts and feelings about this experience. Hughes surmised that information literacy education "plays a vital role" (p. 177) in empowering all students to gain the greatest benefits from a library's online resources.

Background

Composition 1 courses and international students

Approximately 5,000 students complete a Composition 1 course at UIUC each academic year. There are courses in three departments that fulfill this requirement: rhetoric, communication, and English as a Second Language (ESL). While there are unique elements

specific to individual Composition 1 courses, the overall objectives for library instruction for each of them remains the same. Following library instruction, individual students will:

- Gain familiarity with the Undergraduate Library as a physical and virtual space
- Understand the basic skills and concepts necessary for academic research
- Learn where and how to get help

The Undergraduate Library provides library instruction for all courses that fulfill the Composition 1 requirement. Most international students fulfill this requirement through an ESL course.

Prior to being placed in an ESL course, first-year international students must complete an English placement test. Scores on this assessment determine placement in either in a one-semester course, ESL 115; or a two-semester sequence, ESL 111/112. (Research components are included in ESL 112.) Library instruction is mandated in all ESL courses and a common syllabus that includes the same assignments is used in each section. Approximately 30 first-year ESL classes receive library instruction each academic year. The timing of the instruction is crucial to maximize the relevancy for the students. As this is the initial academic research assignment for the majority of first-year ESL students, assuring the library instruction is a positive learning experience is an important goal for the Undergraduate Library.

Concept maps

Students in all sections must complete a concept map (Appendix). The objective of the concept map used by the library is to prepare students for their initial database searches and to encourage them to think about their research topic in more than one way. While there are numerous concept maps and mind maps available for brainstorming topics, the concept map used in the library is purposefully less complex; the primary intent is to serve as a tool to assist students in the creation of a search strategy. The focus of the concept map is the student's preliminary research topic. With this topic, students identify the keywords (Step 1), alternative terms (Step 2), and potential databases in which to search (Step 3). Prior to this study concept maps in ESL classes were completed during library instruction sessions. Using a common demonstration topic, concept maps were introduced and distributed to students, at which time they were provided a few minutes to work on them. Two drawbacks to this process were noted: 1) in some sections students had not yet chosen topics, and 2) time constraints of a 50-minute class resulted in inadequate time for students to brainstorm potential keywords.

Until this study, there were no specific assessment efforts tied to the concept maps on the part of either the classroom instructors or the librarians. During the instruction session, librarians and instructors observed student progress on the concept maps. However, neither the content nor the completeness of the concept maps was assessed. In summer 2015 instruction librarians and ESL writing program coordinators met to discuss and develop new approaches for introducing the concept map with the goal of providing a more meaningful experience for first-year ESL students.

In fall 2015 the procedures for the concept map assignment were revised. ESL instructors sought to provide students the opportunity for additional in-class search time with a librarian present. Given the time limitations inherent in one-shot instruction sessions, flipped classroom elements were employed to introduce the concept maps. Classroom instructors assigned the concept map and guided students to a course LibGuide where they could access short videos, written instructions, and an example of a completed concept map. Upon completion, each student uploaded a copy of their concept map to a forum in the course management site for their section. Librarians were assigned to each section and provided access to the corresponding forum in order to provide feedback to each student on their concept map. A timeline was established for the process with the goal of affording adequate time for the librarians to provide students feedback and for the students to revise their concept maps prior to the library instruction session. While the initial objective was the librarian feedback on the concept maps, helping international students understand the role of librarians in assisting them with their research in an academic setting quickly became a secondary objective.

Methodology

This study assessed concept maps completed by first-year international students in ESL 112 and ESL 115 courses in fall semester 2015. At the start of each library instruction session, the librarian shared information about the present study and distributed consent forms to students. While all students received feedback on their concepts maps, only the concept maps of consenting students were assessed for this study. Sixty-nine students in six sections of ESL 115 and two sections of ESL 112 participated.

A rubric-based analysis was developed for the assessment of the topic and keyword segments of the concept map, and the following three categories were established for both segments:

- Ready: Indicating readiness for database searching
- Refine: Indicating some aspects were ready to go, but in need of additional work prior to database searching
- Revise: Indicating significant revisions were necessary before beginning a database search

Specific criteria were developed for each of these categories (see Table 1) and applied to the evaluation of each student's concept map.

Table 1: Concept Map Rubric Criteria

	Ready = 3	Refine = 2	Revise = 1
Topic Statement	Fully developed. Topic statement is present and complete.	In progress. Topic statement is present but requires some focus and/or refinement.	Not developed or absent. Topic statement is either too loosely defined (e.g. "obesity in children," "skin cancer." etc.) or not present.
Keyword Selection	Database ready. All main concepts have clear relationship to topic and alternative keywords provided are appropriate.	Almost database ready. All, or some, concepts have clear relationship to topic. Some alternative keywords present, though refinement is necessary for successful database search.	Not database ready. Main concepts do not have a clear relationship to topic and/or alternative terminology is missing or irrelevant.

The desired outcome for each student was the creation of a concise topic statement with readily identifiable keywords. Librarians assessed the topic statements based on the rubric criteria. From the keywords identified in the topic statement, students also listed appropriate alternative terms. This was considered a particularly important step for yielding successful results when students began their initial database searches. Anecdotal evidence from previous instruction noted students struggling to identify alternative keywords when their original search terms yielded few or no results.

The librarians participating in the study engaged in an initial assessment, evaluating several concept maps together to establish inter-rater reliability. This initial evaluation led to further clarification of the rubric categories, after which the rubric was applied to the

evaluation of the remaining concept maps. Each librarian was responsible for four of the eight sections participating in the study.

Findings and Discussion

The challenge of international students engaging in research in a non-native language was anticipated. This had a significant impact with the assignment outcomes. Not surprisingly, there were wide variations in the scores. Overall students performed significantly better on writing topic statements than the selection of keywords and alternative terms.

Topic assessment

Step 1 of the concept map instructed students to "Write the topic for your paper in the box at the top of the Concept Map." Topic statements were assessed using the criteria in the Topic Statement Rubric and, as evidenced in Figure 1, more than half of the students were challenged with this aspect of the concept map.

Figure 1: Topic Statement Frequency of Results
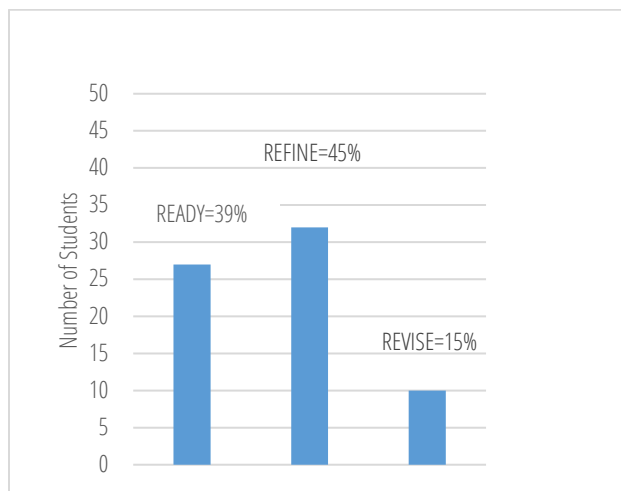
In a small number of concept maps the topic statement was missing completely, while in other instances students provided a lengthy topic statement that included explanatory information. For example, one student wrote: "My topic is food safety. I chose this topic because as the developing of the technology, there are increasingly potential risks about food safety such as the selling of genetically engineered food without labeling."

The difficulties posed when writing a topic statement in English were demonstrated in numerous examples. Many students failed to write their topics in the form of a sentence or question, and proper syntax was often missing. However, the intent of many students was

evident to the librarian: for instance, "deforestation and degradation of forest in worldwide," "Refugee Crisis in United States," and "Nutrition Education Helps Alleviate Hunger." *(Note: Spelling and capitalization in examples are in context.)*

Keyword assessment

Selecting appropriate keywords prior to searching for information can be a challenge for international students. Yet, as librarians know, the identification of appropriate keywords and alternative terms can save time and significantly improve the likelihood of retrieving relevant information. However, it quickly became evident while assessing the concept maps that students for whom English is not a native language struggled to identify pertinent keywords and understand the role they play when searching for information.

Keywords were assessed using the criteria in the Keyword Statement Rubric. Students were directed to complete two steps in this section of the concept map. Step 1 instructed students to: "**Underline** the keywords or keyword phrases for your topic." Step 2 instructed students to: "Write your keywords in the three boxes," and "For each of your keywords, add some alternative keywords."

As noted, the keyword assessment resulted in significantly lower scores than the topic assessment. The results indicate international students experienced particular difficulty with this task (see Figure 2).

Figure 2: Keyword Selection Frequency of Results
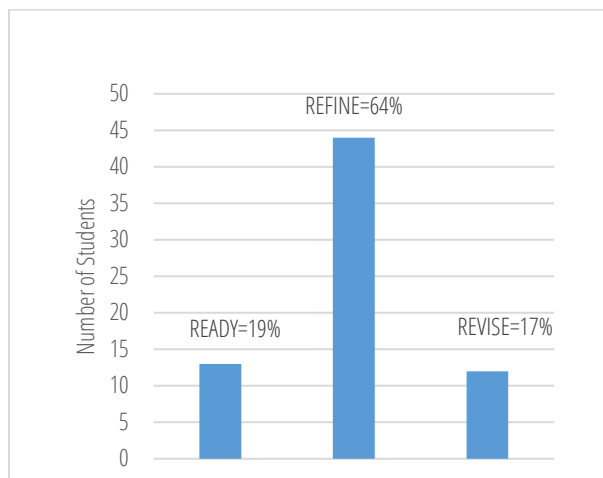
More than 80 percent of the students needed additional work on this portion of their concept maps. The task of identifying alternative keywords in English was challenging for

many students. Keyword phrases that were unlikely to produce search results were often included. For example, a student whose topic focused on "Lack of education for children in rural area around the world" included "lack of education," "lack teacher," "no school," and "less knowledge" as potential keyword phrases. While it is possible to imagine how the student may have selected these phrases, they were unlikely to yield results in a database. During instruction sessions, librarians stressed that, in order for keyword phrases to be effective, they should include words that are likely to appear as those exact phrases.

In some instances, students with an incomplete topic statement selected keywords that demonstrated confusion about the assignment. For example, a student with the topic of teenage depression identified the following keywords: "Adolescent Development," "Adolescent Depression," and "Teenage Psychology." No alternative terminology was provided for any of the suggested keyword phrases. The author surmises that many students did not understand this portion of the assignment, possibly because they did not read for instructions or watch the how-to videos provided in the course LibGuide prior to completing their concept maps.

Individual student scores

Examining individual student scores for the concept map topic statement (Step 1) and keyword selection (Step 2) provided the opportunity to look for relationships between the two. A higher score on the topic statement did not necessarily translate to a similar score on the keyword selection. The greatest number of students (30) scored a 2 (Refine) on both the topic statement and keywords. Eleven students scored a 3 (Ready) on both sections of the concept map, while nine students scored a 1 (Revise) as seen in Table 2.

Table 2: Aggregate Student Concept Map Scores

Individual Topic Score	Individual Keyword Score	Total Number of Students
3	3	11
3	2	13
3	1	3
2	3	1
2	2	30
2	1	1
1	3	0
1	2	1
1	1	9

Undeveloped topic statements often corresponded to similar difficulties in the identification of keywords. For example, both "Beverage industry and (water) sustainability," and "What's the harmful effects of college drinking for college students" resulted in concept maps with only two keywords identified. Conversely, there were other examples where students with an incomplete topic statement exhibited a sense of direction through their keyword selection (see Table 3).

Table 3: Concept Map Topic Examples

Example	Topic Statement	Keyword 1	Keyword 2	Keyword 3
1	Food safety	health, disease	money, profit	pollute, environment
2	Protect girl's rights	girl's rights	safe abortion	end early childhood marriages
3	Distracted driving	distracted, distraction	car crash, traffic collision	cell phone, smart phone

With each of the examples in Table 3, there are indications that the student had a sense of direction that they failed to convey in the topic statement. The student in Example 1 shows evidence of two distinct focuses regarding food safety: the impact of food safety on the environment and health, and concerns about the potential impact of profit on food safety. Example 2 indicates two aspects of girl's rights are likely to be the student's focus: the right to safe abortions and the prevention of early childhood marriages. Example 3 shows a more specific focus. In this case, there is evidence that the student is specifically seeking to examine distracted driving and the impact of cell phone usage on traffic accidents. These three examples are typical of what the researchers observed.

Conclusion

Teaching international students in the information literacy instruction classroom requires adjustments. Concerns about class pace and language are important, but two observations from the concept map study can be informative to librarians working with international students. First, assignment expectations must be clear and directions for completing them should be given in multiple formats. Providing video recordings and written instructions addresses varying learning styles and preferences. A careful review of assignment instructions, preferably with feedback from international students can be a helpful. The

findings of this study have resulted in the creation of a more detailed instructional video for completing the concept map.

Second, building strong relationships with academic departments that serve international students is crucial in assuring that research assignments and expectations are both realistic and understandable. In the case of Undergraduate Library, working closely with the ESL department resulted in a greater understanding of its course expectations and the needs of its first-year international students. The author believes this has given rise to more meaningful library instruction experiences for students in first-year ESL courses. The results of this study an enhanced role of ESL instructors in preparing students for the concept map assignment and extending the assignment timeline to provide both librarians and students a more realistic timeframe for feedback and revisions. In turn, this has resulted in a more seamless integration of the library instruction. Although the scope of the study was on international students, engaging a similar investigation of domestic students could provide important comparative data.

As the population of international students continues to grow it is essential that librarians are adequately prepared to teach to their specific needs. As Ishimura and Bartlett (2014) observed, "It does not necessarily follow that librarians are equipped to teach effectively in these circumstances" (p. 313). The onus is on librarians to gain as much familiarity as they can about the international student population at their institution.

Acknowledgements

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Appendix: Concept Map

Create a Concept Map for Your Topic

ESL 112 | ESL 115

Complete a Concept Map to identify the keywords and concepts you will use when you search for articles about your topic. It can help you identify what you know about your topic and begin to think about your topic in new ways.

To complete your concept map follow the steps below.

1. **Write your topic in the box below and circle your keywords or keyword**

    phrases:

TOPIC:

2. **Write your keywords in the boxes and**

    list alternate keywords (these will be

    synonyms).

Keyword and alternate
keywords

_____

Keyword and alternate
keywords

_____

Keyword and alternate
keywords

_____