International graduate students in the United States: Research processes and challenges

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ABSTRACT

International students enrolled in graduate programs in the United States struggle with conducting academic research and can benefit from specialized library support. This qualitative study uses critical incident technique to explore how these students complete research assignments and use library and other resources in the process. Many participants described similar research processes, beginning with selecting a research topic and ending with cutting and pasting text from sources deemed to be useful. Two-thirds described using specific library resources—usually online resources—for their research. Some described broader research difficulties, such as coming up with a good idea, and others struggled with more specific skills like data analysis. Half of the participants had received some sort of library instruction, but they did not have particularly positive responses to these sessions. The findings of this study may be of use to academic librarians who wish to better understand international students and improve research support for this user population.

1. Introduction

According to the Institute of International Education's (IIE) "Open Doors Report on International Education Exchange" (2016), the number of international students studying in the United States during the 2015–2016 academic year topped one million for the first time. International students studying in the U.S. higher education system come from a variety of cultural and educational backgrounds. They may be accustomed to diverse styles of teaching and learning, as well as different perspectives on academic research. Academic librarians can be key figures in campus efforts to support these students as they adapt to the U.S. academically and socially. This research explores the processes international students use to conduct their academic research and writing, as well as the information resources they use along the way. In this study, an international student is defined as "anyone studying at an institution of higher education in the United States on a temporary visa that allows for academic coursework" (IIE, n.d.).

2. Problem statement

International graduate students studying in the United States face unique challenges in adapting to and succeeding in American higher education, particularly in relation to conducting academic research. International student enrollment in the U.S. has increased by 85% over the last decade (IIE, 2016), and the library and information science literature shows only a slight increase in research on this population

(Click, Wiley, & Houlihan, 2017). No study has explored the research processes of these students via the examination of specific, graduate-level assignments and the information needed to complete them. Providing specialized academic support for international graduate students requires an understanding of how they approach their research assignments, and the findings of this study would be useful in informing practice for college and university librarians who wish to improve support and services for this user population. The presence of international students on U.S. campuses has many benefits, thus helping them to succeed academically is a worthwhile endeavor. This student population contributes to the U.S. economy (IIE, 2016), to learning environments (Trice, 2003), and even to the growth and development of their domestic classmates (Luo & Jamieson-Drake, 2013).

3. Literature review

The recent library and information science (LIS) literature on international students tends to be anecdotal and descriptive in nature, as opposed to research-based (Click, Wiley, & Houlihan, 2017). This literature review focuses on original research about the information seeking and information literacy skills of international students. The first section, however, covers the sparse literature on the research processes of graduate students in general.

3.1. Research processes of graduate students

The literature on graduate students' research processes and information behaviors rarely explores the completion of an entire research assignment, from beginning to end. More often, surveys and interviews are used to investigate general information preferences. However, a longitudinal study of how graduate students complete a required literature review demonstrated improved information seeking skill over time (Rempel, 2010). One student who made a vague reference to collecting books and papers in the first interview, "described going to specific databases for specific searches, using table of contents alerts, and citation chaining" (p. 538) in the second interview. The author's library offered a literature review workshop, through which participants were recruited. Workshop attendees appreciated learning about the formal steps of the literature review process, as well as tools like disciplinary databases and bibliographic management software.

A study of graduate students at Carnegie Mellon University found that academic staff like advisers and committee members are highly influential, providing research guidance and resources (George et al., 2006). Catalano (2010) also found that the majority of the graduate students in her study consulted with professors when they need help with research. They might also seek help from fellow graduate students, "because they are in close proximity to one another, are not intimidating (i.e., they do not grade each other) and know the 'tricks of the trade' for graduate school" (Sloan & McPhee, 2013). But graduate students rarely seek help from librarians (Earp, 2008; Sloan & McPhee, 2013).

Graduate students often use a mix of Internet and library resources for their research (George et al., 2006). Students in Earp's (2008) study reported beginning their research on the Internet before moving on to research databases and the library catalog. They regularly engage in citation chasing or chaining (Barrett, 2005; George et al., 2006; Orlu, 2016; Sloan & McPhee, 2013), but they are much less familiar with advanced search strategies such as Boolean operators, proximity searches, or subject terms (Catalano, 2010; Perrett, 2004).

3.2. Information seeking of international students

In a study of international students in Australia, Hughes and Bruce (2006) found evidence of ineffective research processes when working with online information. Participants did not plan search strategies, were often unsatisfied with search results, misinterpreted information that they found, and generally took a "non-critical approach to all aspects of the search process" (Hughes & Bruce, 2006, p. 36). Mehra and Bilal (2007) interviewed Asian students at the University of Tennessee in order to explore their information seeking strategies using information and communication technologies (ICT), both on the internet (e.g., search engines) and in the library (e.g., online databases). Participants reported that challenges in using library ICT included limited search skills, poor search functionality, unfriendly interface design, and irrelevant search results. The researchers also asked students to discuss experiences with libraries and research processes. Participants reported that the library was not so integral in supporting research in their home countries, and that the research process generally focused on class notes and textbooks as opposed to journal articles.

Research indicates that international and domestic students demonstrate similar information seeking abilities, although international students demonstrate a preference for informal information sources and struggle with language issues. An exploratory study compared international and domestic students' abilities to answer questions using online library resources, including the catalog and Academic Search Premier database (Martin, Maxey-Harris, Graybill, & Rodacker-Borgens, 2009). The authors expected to find that international students lagged in information seeking ability, but this was not the case. International and domestic students demonstrated similar information seeking behaviors, although international students were more likely to use resources other than the designated database. A study at Virginia Tech drew similar conclusions about information seeking ability, but depended on students to self-report behaviors as opposed to tracked information retrieval (Liao, Finn, & Lu, 2007). International students at three universities in California reported preferences for friends, teachers, and Wikipedia as information sources (Knight, Hight, & Polfer, 2010). Hughes (2005) used semi-structured interviews and critical incident technique to study international students' use of online resources, and found that "linguistic factors tended to have more impact on the participants' actual use of online resources, while cultural factors had greater influence on their wider educational experience" (p. 175). These linguistic factors included issues such as limited vocabulary and spelling mistakes. She noted that these students possessed strong IT skills but limited information literacy skills.

3.3. Library instruction & international students

International students tend to respond positively to library instruction. Research shows that it reduces anxiety and increases motivation to use library resources for this population. In his dissertation work, Battle (2004) studied the effects of information literacy instruction on international students' library anxiety. Two groups of students enrolled in an English for speakers of other languages course were asked to use library resources to complete a research assignment. One group attended several library instruction sessions, and the other group did not. Participant anxiety levels were measured using the State-Trait Anxiety Inventory and the Library Anxiety Scale, and Battle determined that receiving information literacy instruction reduced both general and library anxiety for these international students. In a comparative study, Song (2004) found that international students were more likely than domestic students to find library instruction workshops helpful, and to feel motivated to use library services after attending these workshops. However, Song also discovered that 94% of the international business student respondents began their academic research on either Google or Yahoo instead of the library website, so the true meaning of these findings is unclear. In a study of students in Canadian business schools, 52 students were interviewed about information literacy instruction (ILI) and learning outcomes (Detlor, Julien, Willson, Serenko, & Lavallee, 2011). The authors found that international students "seemed more responsive to ILI and more likely to exhibit positive student learning outcomes from instruction" (p. 581) than domestic students.

Morrissey and Given's (2006) research, in which the authors conducted in-depth interviews with nine Chinese graduate students at the University of Alberta, focused on information literacy skills. The authors found that the library orientation sessions provided to new students at the beginning of each semester were not very useful for these students because of their lack of English proficiency. They argue that "targeted, hands-on library training" is the best way to reach these students and introduce them to library resources and the role of the librarian, and note that "plagiarism, copyright, and appropriate citation strategies" (p. 236) are areas of particular importance for international students. Liu and Winn (2009) interviewed Chinese graduate students on another Canadian campus, the University of Windsor, and discovered that most of them were unaware of library tours, orientations, or instruction sessions. However, those that attended these types of events found them to be valuable.

4. Methods

This qualitative, constructivist study uses critical incident technique (CIT) to explore how international graduate students studying at three universities in North Carolina conduct their academic research. Participants were enrolled in graduate programs at the University of North Carolina at Chapel Hill (UNC-CH), a flagship public research university; North Carolina State University (NCSU), a public research