

# What STEM and International Graduate Students Value in Higher Education and Library Services

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## INTRODUCTION

In 2016, the Ithaka S+R Graduate Student Survey was administered at the University of Illinois at Urbana-Champaign. According to the Institute of International Education, in 2016 international graduate students made up 49% of total on-campus enrollment. The majority of these students were enrolled in Liberal Arts & Science and the College of Engineering. While there is research into graduate students' perception of institutions and their libraries, less has been published about Science, Technology, Engineering and Mathematics (STEM) and international student perspectives. In this study we examine those perspectives and where they intersect.

## METHODS

### Instrument

The Ithaka S+R Graduate Student Survey is a set of questions developed by Ithaka S+R and conducted via Qualtrics. The survey is designed to assess graduate and professional student practices and attitudes in order to support strategic planning for the future of libraries and other institutional information services.

### Analysis

The authors of this study used the Mann-Whitney Wilcoxon Test (MWW) to identify if the international STEM graduate student group (ISG) presented any responses that were statistically significantly different from the responses provided by the non-international STEM graduate student group (Non-ISG).

The Analysis was applied to two modules in the survey:

- Higher Education Objectives
- Role of the Library

## SAMPLE

In spring 2016, a sample of 90% (10,918) of the degree-seeking graduate and professional students enrolled at the University of Illinois Urbana-Champaign were invited to participate in the Ithaka S+R Graduate Student Survey. Of these students, 1,388 respondents completed the survey in its entirety which resulted in an overall survey response rate of 13%.

- 749 (52%) self-identified as pursuing a STEM degree
- 492 (38%) self-identified as an international student

Therefore

- 284 (20%) of respondents were recorded as international STEM graduate students (ISG)
- 1,104 (80%) respondents were non-international STEM graduate students (Non-ISG)

## RESULTS

Results of Mann-Whitney-Wilcoxon test by the STEM status ISG student status - Summarized

How important is the opportunity to do the following?	ISG	Non-ISG	STEM	Non-STEM	International Student	Non-International Student
Study abroad	√				√	
Take various general courses	√			√	√	
Collaborate with professors and advisors	√		√		√	
Obtain a certain GPA	√			√	√	
Extracurricular activities	√		√		√	
Social events	√				√	
Collaborating with students	√		√		√	
Second degree	√				√	
Getting a job		√		√		√

Student Behavior in Library	ISG	Non-ISG	STEM	Non-STEM	International Student	Non-International Student
How often go inside library?	√			√	√	
Off campus library access?		√		√		√

Libraries & Librarians Help With...	ISG	Non-ISG	STEM	Non-STEM	International Student	Non-International Student
Storing and organizing materials		√		√		√
Paying for resources		√				√
Developing students' research skills		√		√		
Finding resources for class and research		√		√		
Ethnical guidance on using information	√			√	√	

The check mark "√" identifies groups that have the statistically higher means.

## DISCUSSION

All graduate student populations examined valued their college experience thus far. In other areas the MWW test showed statistically significant differences between the groups.

ISG students valued collaboration with faculty and other students and involvement in extra-curricular activities such as clubs higher than other groups. In regards to the role of the library, they placed less significance on the library as a physical or virtual space for accessing information as well as storing and organizing that information.

The non-STEM group placed more value on the library as a place to develop research skills or find resources for class. International students valued the opportunity for a second degree as well as the opportunity to participate in social events and study abroad. International students and non-STEM students valued having a high GPA and taking general courses. They also put more value in the library's role in assisting with ethical issues like plagiarism and frequented physical libraries the most. Interestingly, only non-international, non-STEM students put high value in off campus access to materials as well as obtaining a job after graduation.

## CONCLUSIONS

International, STEM, and international-STEM graduate students seem to have perceptions of the university and library service that are distinct from other graduate populations. While quickly looking at student experience as a whole can be helpful while strategically planning for the future, it is a mistake to assume student needs always coincide. Librarians and academic institutions should continue to assess the perceptions and experiences of graduate level international STEM students in order to ascertain how we can adjust services and outreach to meet needs and contribute to student success.

## LIMITATIONS

- Since the students self-identified it is possible some students who fit into these demographics chose not to identify for personal reasons.
- Since Illinois does not define STEM majors and students in the survey self-identified it is not possible to state whether the 20% sample is statistically representative.
- Results may not be generalizable to institutions without characteristics similar to Illinois.

