"My Second Home": Why Undergraduate Women in STEM Use Academic Libraries

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abstract: Few women major in the science, technology, engineering, and mathematics (STEM) fields at the undergraduate level. Given the drive to attract and retain students in general, and women in STEM in particular, educational institutions need to know what resources and services might help support these students in their work. This study seeks to provide a better understanding of how undergraduate women in STEM use the academic library. The study involved focus groups and interviews with women at a research-intensive university in the United States. Grounded theory principles provided a basis for analysis of the collected conversations. The findings from this study indicate that undergraduate women in STEM depend on the academic library as a quiet place to study where there are few distractions and technology is easily available.

Introduction

To date, the number of women majoring in STEM fields remains relatively low. STEM, the acronym for science, technology, engineering, and mathematics, was first coined as an educational term by the National Science Foundation in the early 2000s.[1] Recognizing the need for women to bring their opinions, voices, and expertise to these fields, many colleges and universities made it a priority to increase the number of women majoring in STEM disciplines. To retain these students, it is important to understand what campus resources and services provide the support they need to succeed in their programs. Research in this area will help academic libraries adapt their offerings to better serve the students' requirements.

The researcher conducted this study as part of a dissertation project with academic librarians who were liaisons in STEM departments to learn how women in those disci-

plines use library resources.[2] This study focuses on one of the main findings from that dissertation research, which examined the use of physical space in academic libraries. For this study, agriculture was included as a STEM field because the majority of agriculture majors take science and technology courses.

The academic library is where students receive technical help, research assistance, and, to some extent, academic support. Virtual reference services, such as e-mail, instant messaging, and text messaging, enable students to ask questions anonymously and receive answers from librarians. Instruction by librarians teaches basic library skills, including how to search for information, what resources to use, and where to find them. Library collections and database subscriptions are available to assist students with their studies. While the physical library remains an important place for on-campus students, the availability of electronic resources online has decreased the need to visit the library and ask librarians for assistance when searching for information. To address the use of library resources and services by undergraduate women in STEM and the support provided by academic libraries, the following research question was posed: "What role does the academic library have in assisting undergraduate women in the STEM fields?"

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This study involved focus groups and interviews with undergraduate women in STEM at a research-intensive university in the United States. Grounded theory, in which the researcher reviewed the data that had been gathered to find repeated ideas, then grouped them into categories, provided a basis for the analysis of the collected conversations. This research offers a better understanding of how undergraduate women in STEM use library resources and services. As we try to bring more women into the STEM disciplines, we need to make a better effort to understand their needs and to provide the resources and services that they need to persist in their fields. Academic libraries are one piece of that effort, and their role in supporting women in STEM should be explored.

Literature Review

Underrepresentation of Women in STEM

Women and minorities are less likely than males to pursue an undergraduate degree in a STEM field, according to the National Science Board.[3] Differing educational backgrounds play a role in college freshmen choosing a field of study, as well as their ability and desire to persist in a STEM major.[4] Katrina Piatek-Jimenez, Jennifer Cribbs, and Nicole Gill surveyed 499 students at two universities in the United States and found that "personality traits stereotypically associated with males and females" affect how women view STEM and non-STEM career goals.[5] The women often regard people in

STEM as "male, focused solely on work, and anti-social."[6] The number of STEM degrees awarded to women and racial or ethnic minorities remains relatively low, which is an issue considering the anticipated growth of job opportunities.[7] Mary Armstrong and Jasna Jovanovic argue that a multipronged approach using a number of "intersectional facilitators" is needed to support underrepresented minority women in STEM.[8]

For reasons of global competitiveness and social justice, higher education institutions must make greater efforts to recruit and retain women and racial or ethnic minorities in the STEM fields.[9] Since women and minorities are underrepresented in those disciplines, they also miss out on potential career opportunities.

Underrepresentation in STEM is a major issue women face when pursuing leadership positions in the United States, and this gender gap has been obvious for decades.[10] Gender disparities have long been evident in engineering, physical science, and computer science, areas that the U.S. government has recognized as needing to improve in innovation and competitiveness.[11] The disproportionate gender

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gap in STEM is evident not only at the professional level but also among students receiving undergraduate degrees.[12] The U.S. government's report "Women in STEM: 2017 Update" found that although "women only held 24 percent of STEM jobs in 2015, they make up 30 percent of all STEM degree holders and are more likely to work in education or healthcare."[13] Another issue is the gender wage gap, which increased from 14 percent in 2009 to 16 percent in 2015.[14]

Academic Library Services

Academic libraries are typically the center of college campuses because they provide information, resources, and services for students and faculty from every department. Libraries support the needs of the students who are their primary users, and they constantly work to improve, add, and evaluate the services offered.[15] According to the Association of College and Research Libraries (ACRL), "Part of the library's function has always been to guide users to information and to provide members of the academic community with tools for thoughtful inquiry."[16] Along with directing users to information, libraries provide access to scholarly resources through licensing agreements with electronic journals, databases, and other digital providers.[17]

The present study focuses on the use of library resources and services by undergraduates in the STEM fields; therefore, it is necessary to begin with an overview of the services provided. According to ACRL,

> Effective undergraduate library services must support the undergraduate programs of the institution. To facilitate academic success, library services to undergraduates must provide access to a broad range of information resources. Reference and referral services, orientation activities, and instruction sessions that teach students the critical thinking skills necessary for using library resources are basic services provided by undergraduate library personnel. Undergraduate library services provide a gateway to all future library

inquiry, not only preparing students for graduate work and research, but also teaching them to use information sources as citizens, as consumers, as professionals, and for recreational purposes.[18]

Some of the main library services for undergraduates are reference services, instruction services, and resources and collections.[19]

Undergraduates and the Academic Library

So much information is now available online that undergraduates can write papers and search for academic literature without using any library resources.[20] At Florida State University in Tallahassee, 104 undergraduates were surveyed about library services and social media communication.[21] That study's results showed that "87% of the students use the library to study, 59% use the library to access the catalog, full-text databases, and other information, or computer resources, and 25% use the library to hold club meetings."[22] Regarding the library's social media postings, students found the most relevant information to be "operations updates, study support services and events."[23] Undergraduates will more likely use online sources than print materials such as journals and books, a trend that concerns both researchers and academic librarians because the students may rely on information that is not credible.[24] Thus, library instruction sessions are needed to inform undergraduates of available library resources and why and how to use them.

According to Saira Ijaz Ahmad, Mohammad Abiodullah, and Jamila Irum, the academic library is where undergraduates can expand their knowledge if they know how to properly use library resources.[25] Academic disciplines differ in how much their undergraduates use library services.[26] Students in the social sciences and humanities tend to use the library the most, while those in the sciences consult it less often. Laurie Bridges found that "engineering students used the virtual library less than health and human sciences, sciences, and liberal arts students."[27]

Daejin Kim, Sheila Bosch, and Jae Hwa Lee studied the physical environment needs of students in the academic library and found that learners primarily use individual, group, and lounge seating.[28] Ethelene Whitmire found differences in undergraduate library use based on racial backgrounds and cultural diversity.[29] Jung Mi Scoulas conducted a study at the University of Illinois Chicago to examine differences between STEM and non-STEM disciplines in library use and grade point average.[30] Her findings showed that STEM students "perceived library resources (subject and course guides, library instructions and library workshops) as slightly less important than non-STEM participants."[31]

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According to Krista Soria, Jan Fransen, and Shane Nackerud, several studies that examined the association between library use, student learning, and engagement found that "participation in information and library-related activities is positively correlated

with student engagement in other areas."[32] The support that institutions provide for library programs influences how engaged students are with the library's resources and services.[33] Library use was also found to be associated with undergraduate student retention.[34] No studies focus specifically on undergraduate women in the STEM fields, however.

STEM Services in Academic Libraries

Academic libraries play a vital role in providing services for undergraduate STEM students, including those in traditional science and in e-science, which uses technology to collect and process huge amounts of data. Undergraduates must learn how to conduct research and how to access information. Lisa Zilinski and Megan Nelson note that undergraduate STEM curricula are "increasingly focused on research-based group projects that develop professional skills, building the professional portfolio needed for early career scientists, technologists, and engineers."[35] According to ACRL, instruction librarians need knowledge of the curriculum as well as teaching skills.[36] Librarians must instruct students on how to find academic research, which will prepare them for their professional careers.

To assist undergraduates and faculty with their research needs, many academic libraries offer research data services. According to Carol Tenopir, Ben Birch, and Suzie Allard,

> Research data services are services that a library offers to researchers in relation to managing data and can include informational services (e.g., consulting with faculty, staff, or students on data management plans or metadata standards; providing reference support for finding and citing data sets; or providing web guides and finding aids for data or data sets), as well as technical services (e.g., providing technical support for data repositories, preparing data sets for a repository, deaccessioning or deselecting data sets from a repository, or creating metadata for data sets).[37]

In summary, the academic library's purpose is to "provide students, faculty and community patrons with a place to do their research and advance their knowledge."[38]

Methods

To learn about the lived experiences of undergraduate women in STEM, this case study used qualitative methodologies, involving three focus groups and five interviews. Focus groups, each consisting of three participants, helped the researcher learn more about the subjects' stories.[39] Individual, in-depth interviews allowed her to delve deeply into social and personal matters.[40]

Participants

This study was approved by the Institutional Review Board with human subjects, and no incentives were offered to the participants. Only undergraduate women in the STEM fields were recruited to participate.

To enroll subjects, the researcher sought assistance from an administrator who works with STEM faculty. The administrator suggested including students from agriculture

and veterinarian programs, in addition to the more traditional STEM fields, because students in those disciplines take many classes in science and technology.

The researcher sent an e-mail to faculty members in STEM, asking them to provide the names and e-mail addresses of undergraduate women who would be willing to participate in a focus group on their use of library resources and services. The researcher contacted each potential participant via e-mail asking if she would take part. According to John Creswell, participants should be willing to honestly share "their story."[41] In total, the researcher received the names of 18 potential participants.

The original study included academic librarians who were liaisons with the STEM departments, but the current study focuses only on undergraduate women. All participants responded within a day or two indicating that they would take part.

Data Collection

After the participants agreed to the study, the researcher scheduled focus groups based on the subjects' availability, gathering as many women as possible for the groups. Typically, the ideal size of a focus group varies from 6 to 12 participants. Because of the subjects' schedules, however, only three focus groups were planned, each consisting of three women (see Table 1). All focus groups were conducted in quiet rooms that the researcher reserved on campus so the participants could speak freely about their experiences.[42] The day before the focus groups and interviews, the researcher sent the subjects an e-mail reminding them of the day, time, and location. On the day of the focus groups and interviews, each woman was given an informed consent form to read and sign and was also asked if she could be digitally recorded during the session. Each focus group and interview began with the researcher greeting the participants, thanking them for agreeing to take part, and providing introductions. Each woman introduced herself and stated her year of study and major.

A discussion guide for a case study "usually has a list of key questions the researcher would like to cover, with some useful prompts to encourage the participants to talk about their experiences."[43] According to Sharan Merriam, good discussion questions should be "open-ended and yield descriptive data, even stories about the phenomenon."[44] Developing a discussion guide requires a clear focus and a good understanding of the topic at hand.[45] Questions should be designed to "elicit the participant's experiences."[46] Any queries that can be answered with "yes" or "no" should be avoided.[47] The questions should be as neutral as possible, clearly worded, and open-ended.[48] In this study, the questions included:

- What are some of the influencing factors that helped you decide to major in this field?
- What insights might you want to share for other undergraduate women who major in STEM?

Lastly, the participants were asked what role the library played in their academic lives. By asking probing questions, the researcher obtained more information about how the library specifically influenced the subjects' lives:

Table 1.
Methods used to gather data

Method	Participants' year of study and major*	Location	Length
Focus group	Senior, chemical engineering; junior, microbiology; and senior, chemical engineering	Quiet room in the main library	42 minutes
Focus group	Junior, food science; senior, food science; and senior, food science	Conference room on the agriculture campus	40 minutes
Focus group	Sophomore, mathematics and education; senior, mathematics; and senior, mathematics and biochemistry and molecular biology	Quiet room in the main library	42 minutes
Interview	Senior, biological sciences	Quiet room in the main library	21 minutes
Interview	Senior, mathematics; and freshman, computer science	Quiet room in the main library	20 minutes
Interview	Senior, urban forestry; and senior, urban forestry	Quiet room in the main library	25 minutes
Interview	Freshman, civil engineering	Quiet room in the main library	20 minutes
Interview	Freshman, animal science	Quiet room in the main library	23 minutes
Interview	Junior, food science	Quiet room in the main library	22 minutes
Interview	Sophomore, biochemistry and molecular biology	Quiet room in the main library	20 minutes

*All participants were undergraduate women in STEM fields.

- In the past week, how often have you used the resources, services, and programs in the library?
- Is it clear to you that the library has coordinated its efforts with your department to have the resources and services that you need?
- How has the library played a role in your academic life?

According to Creswell, such probing gives the participants the chance to fully explain their thoughts.[49] The focus groups lasted 40 to 45 minutes. See the Appendix for the complete discussion guide.

In addition to the focus groups, the researcher conducted seven interviews. Two interviews had two participants each, and the remaining five involved a single individual. All the participants were asked the same questions as those in the focus groups. The interviews lasted an average of 25 minutes. Each focus group and interview session ended with the researcher once again thanking the participants.

Analysis

The researcher transcribed all the focus groups and interviews. She analyzed the transcripts using the inductive thematic analysis described by Virginia Braun and Victoria Clarke, which involves collecting information and drawing conclusions about patterns from the data gathered.[50] The researcher carefully read each transcript four times to identify potential themes and interesting features and then sorted the data into groups of similar topics to make sense of what was uncovered.[51] Quotations from each participant were taken, and codes were assigned to each person to ensure confidentiality.

Findings

The transcripts from the focus groups and interviews underscored that undergraduate women in STEM need and depend on the academic library, though resources such as books and academic journals are not their main reason for using it. Their dependence involves the physical space more than the resources available. Four subthemes emerged: the library offers a good place to study, freedom from distractions, technology, and a convenient way to search for information. Students depend not only on the space in the library but also on the technology that it provides. Desktop and laptop computers and printers are essential for student use. The availability of electronic resources made research much more convenient for students.

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Two other themes emerged in addition to those related to the academic library space. One theme was that professors provided the material needed; some students believed that all the resources they required for their courses were supplied by their instructors. They failed to realize, however, that the materials came indirectly from the library, which subscribes to the journals that publish the articles their professors assign. A need for departmental support emerged as another

theme because students felt they did not receive enough academic and career assistance from their advisers, professors, and department.

A Good Place to Study

When talking about how they use the library, the participants reported that they view it as a quiet place to study. The majority of the participants reported going to the library every day and using the physical space. The library is where they can gather to study alone and in groups; they spend so much time there that it becomes almost like a second home. The participants' views of the library are summarized by the following quotations:

> For me, the library is kind of like my second home. I'm here all the time especially this year; it's just really tough for me to study at home, so the library is the perfect place. During the day, I stay on the first floor because that is the quiet floor, and there is not a lot of talking like on the second floor. I do like the fourth floor and sometimes the second floor when I come on the weekends because it is a little bit quieter, so I'll come and get work done.
>
> Junior microbiology major

> I go to the library every single day 'cause it is the only place I can really study, which is probably a mental thing.
>
> Senior food science major

> Being in the library gets you in a different mindset because you are no longer chillin' in your room doing your work . . . not a classroom, but a quiet structure where you need to actually do your work.
>
> Sophomore mathematics major

One participant commented that the library is a safe place to meet with other students:

> When I would be studying all night, having a place to meet with students, like especially if they are students that you don't really know them, you don't want to bring them to your dorm or to your apartment. Having a place like the library to meet allows you to meet with students even if you don't know them.
>
> Senior biological sciences major

Participants frequently mentioned that they liked the study rooms in the library. Some reported that they preferred to study in groups rather than alone, and they see the option to use study rooms as a benefit:

> I find most of my time is spent in the library with study groups.
>
> Senior food science major

> I do utilize the study rooms because I usually don't come in here alone, so it's normally like two or three of us that go into a study room 'cause it's a lot quieter that sitting in the main library.
>
> Junior food science and technology major

> I really like how they have set up different group study rooms and quiet study floors, so there are places where people can talk and places where they know they should be quiet so people can focus.
>
> <div align="right">Senior mathematics major</div>

> I have used the study rooms for personal usage, and I have also, like, signed out the rooms for meetings that I held for one of the organizations that I am in.
>
> <div align="right">Senior biological sciences major</div>

Suggestions for Improving the Physical Space

Since the participants visit the library often, they had suggestions for improving the space to better meet their needs:

> I know there are certain rooms, I guess it's the East or South Commons, something like that, those rooms on that side have more dry-erase boards than those on the same side as Starbucks. The rooms on the opposite side of Starbucks have more dry-erase boards than those on the same side as Starbucks. I don't know why they do, but they just do; but I think when it comes down to using them for group study, it's more difficult.
>
> <div align="right">Senior mathematics major</div>

> I think they have chalkboards in some of the group rooms, and nobody carries around chalk. Whenever it's, like, exam period, it's really hard to get in here, regardless of what you are studying for; so more whiteboards and more writing utensils would be great.
>
> <div align="right">Senior mathematics and biochemistry and molecular biology major</div>

Even with all the space available in the main library, some participants thought there should be more room:

> It is always full in here, and there have been a few times when I went to the group study floor and it was full; it was too many people. I go to the Commons and, like, the rooms they're full; so, like, if you want to do group work, like hard-core group work, you might have to go to a study room in a dorm instead of the library. I think that the library is always so full and so packed, so they should definitely refine that area.
>
> <div align="right">Freshman civil engineering major</div>

> It would actually be nice to have a little more space like tables here for laptops and stuff because I've had groups here; and of course around this time of year, it's always crowded. Everybody is trying to use the computers; everybody is having study groups; and so if there were more tables around, we could have more groups and that would be nice.
>
> <div align="right">Sophomore biochemistry and molecular biology major</div>

Freedom from Distractions

Having space in the library to study eliminates distractions and allows participants to focus, as shown by the participants' remarks:

I think it would have been really hard not to have the library because, you know, it allowed me to have a change of scenery.

<div align="right">Senior biological sciences</div>

I really enjoy it as a space to just study and go over things. I mean sometimes at home you get distracted, but I think having the library is essential.

<div align="right">Junior food science major</div>

Well pretty much for me, it's like there are study rooms in our dorm and different things like that, and that's nice sometimes; but sometimes it's like I have to get away from all the distractions.

<div align="right">Senior chemical engineering major</div>

Well, I definitely think if you are going to be in math you need to be in the library to do your homework. I think that you can [study] wherever you live and listen to music; but at the end of the day, you're going to be having a test in front of you where you don't have music, so you need to be in the library where it's quiet and you can focus on that material. Math is a hard concept; and if you don't have that quietness and fully having all your focus on the math, you are going to miss aspects of it, so it's important to be in the library just for the structure it gives you.

<div align="right">Sophomore mathematics major</div>

Some participants talked not only about being able to focus but also about how their grades and retention improved by studying in the library.

It plays a very important role, like, in terms of making the grade and being able to focus. College is very eventful I must say, and it's essential as far as being able to get your work done and being able to have the right resources to complete assignments.

<div align="right">Freshman animal science major</div>

If you are going to study anywhere, study here 'cause it's just not the same atmosphere if you are at your house. My first semester here, I tried studying in my room; and I didn't do too well; and I tried the library, and it just exponentially helped my grades and helps understanding. You can't blare music or watch Netflix. You need to actually do your work and look at it and focus, so it's nice to have a place where you can go do that, 'cause I know dorms and other apartments try to set up an atmosphere like that, and it's just not the same.

<div align="right">Sophomore mathematics major</div>

I was just telling one my friends last week, I can tell when I don't come to the library that I've slacked off as far as studying or retaining information. If I do come to the library three or four days during the week, I can tell a huge difference like sitting in class and knowing what the teacher is talking about.

<div align="right">Junior food science and technology major</div>

Discussion

This study's goal was to determine what role the academic library plays in assisting undergraduate women in STEM and if the library can provide more support. The findings indicate that the library serves an important function for undergraduate women in STEM because they depend on the physical space as a quiet, distraction-free place to study where technology is readily available.

The academic library has been described as the center of the learning community, providing a place for students and faculty to do their research and advance their knowledge.[52] According to ACRL, "Undergraduate library facilities should foster the collaborative nature of study, research, and learning."[53] The students' narratives declared that having the physical space of the library is essential. All the students talked about their daily use of it. For example, a senior food science major said, "Just having that space, I mean sometimes these buildings get busy, and it's just nice to know that you have a little hole to just focus on what you are doing and quiet time." According to Rachel Applegate, a "substantial body of literature is available on using the library as a place but focuses mainly on renovations and new construction in the library."[54] Undergraduate women in STEM talked at length about using the space more than any of the library's resources or services. The need for and use of this space shows the ongoing need for academic libraries. After examining library patrons' use of space, Jeffery Gayton concluded that what library patrons "find most useful and appealing are communal spaces that encourage serious studying."[55] Other studies show that users like the library because it provides a quiet setting for study.[56]

An undergraduate survey at Boston University showed that students mainly use the library as a place to study.[57] More research is needed in this area. While research on construction and new renovations in academic libraries is important, the focus on why students use the physical space in the library is equally significant. Seung Hyun Cha and Tae Wan Kim explored what learners think is important when using the library. They found that the amount of space, noise level, crowdedness, comfort of furnishing, and cleanliness are all meaningful factors.[58] Those findings align with why undergraduate women in STEM use the physical space in the library. According to George Kuh and Robert Gonyea, "The library is the physical manifestation of the core values and activities of academic life."[59] A senior food sciences major reinforced the use of the library's physical space:

> . . . the library serves an important function for undergraduate women in STEM because they depend on the physical space as a quiet, distraction-free place to study where technology is readily available.

> . . . the amount of space, noise level, crowdedness, comfort of furnishing, and cleanliness are all meaningful factors.

> It's essential to me for sure because I have a two-hour break every day, and sometimes I have longer than that, and I use that time to study and catch up on assignments. If I didn't have that time then, I would be totally overwhelmed by the time I got home; and I don't think my grades would be as good if I didn't have the library to study at.

One participant mentioned that the library is a "safe place," but no other participants spoke of the library in that way. This important finding points to an area of further study for academic libraries. Some literature discusses how libraries are viewed as welcoming places for students in the LGBTQ+ (lesbian, gay, bisexual, transgender, queer, and questioning) community,[60] as family-friendly settings for college students with children,[61] and as safe places for the homeless.[62] There is a gap in the literature, however, studying academic libraries as a safe place for college women.

Conclusion

Based on this study's findings, the library's physical space is what the undergraduate women in STEM appreciate most. These women visit the library daily or weekly to study independently or in groups. This finding should be valuable to library administration, other academic administrators, and stakeholders. One suggestion would be for academic libraries with STEM programs to advertise their space to students more, which could lead to higher use of the library. Another suggestion would be to block off study space for STEM students, especially during examination periods and other high-use times.

In addition to the use of the library's physical space, several studies found a connection between library use and student success,[63] highlighting how valuable the library is to academic institutions. The library at the University of Illinois Chicago (UIC) created the Undergraduate Engagement Program in collaboration with such campus programs as the UIC Writing Center and the Centers for Cultural Understanding and Social Change to redefine student success.[64] The Undergraduate Engagement Program was established to "strive to change who the library is for, how student success is defined, and how students have a sense of belonging within the library as an institution."[65] Collaboration of libraries with other centers and departments on campus can provide students with the necessary resources for academic success. According to Carrie Girton, Krista McDonald, and Jamie Viars, "Housing the TRiO SSS [student support services] program in the library space is the best option because the library is conducive to studying and would encourage the students to focus on studying and coursework."[66]

Limitations

This study had a few limitations. Because all the participants were from the same university, the findings may not apply to other institutions. Also, undergraduate women in STEM represented only a small portion of the campus population. The biggest issue was that the study included few technology majors. Urban forestry majors were recruited, in particular, because they take science and technology courses and so helped fill in for the lack of technology majors. Agriculture and veterinarian majors were enlisted because the majority of the classes they take are science, but agriculture is rarely mentioned in STEM. A larger study should include a wide range of undergraduate women in STEM fields, including agriculture.

Another area to focus on would be the academic library as a safe place for under-graduate women. As indicated in the discussion, studies that concentrate on libraries as a secure setting primarily deal with public libraries. There should be more research on academic libraries as safe places.

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Appendix

Interview Guide for Undergraduate Women in STEM

Good morning/afternoon,

Thank you for agreeing to participate in this focus group. I am going to start with some basic questions about your major.

Your Major

1. What is your major?
2. What are some of the influencing factors that helped you decide to major in this field?
3. What are your career goals?
4. What have been some significant or memorable experiences in STEM?
5. What have been some challenges that you have faced in STEM? How did you overcome those challenges?
6. What insights might you want to share for other undergraduate women that major in STEM?
7. What else might you be able to tell me that would help me better understand your experience majoring in one of the STEM fields?

The Role of the Library

1. What has the role of the library been as undergraduate women in the STEM fields?
2. What resources, materials, services, and programs in the library have you used?
3. In the past week, how often have you used the resources, services, and programs in the library?
4. What are the resources that were not available through the library that you think the library should have?
5. Is it clear to you that the library has coordinated its efforts with your department to have resources and services that you need?
6. How has the library played a role in your academic life?
7. What else might you be able to tell me that would help me better understand the role that the academic library plays as undergraduate women in the STEM field?

Notes

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