ARTICLE

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Librarians across Institutions: Establishing Outreach Programs. A Study of Effective Outreach Programs and Support Groups in Academic Libraries

ABSTRACT

The data used for this study was collected from "Librarians across Institutions: Establishing Outreach Programs," which gathered data from academic outreach librarians across the United States in order to identify factors that contribute to—and hinder—effective outreach programs. The study examines support for the most and least effective outreach programs carried out by outreach librarians in five support areas. To analyze the five support areas, the author conducted five independent-sample t-tests. The author wanted to test if the mean scores of support from librarians, staff, faculty, students, and volunteers were significantly different at a p value of less than 0.05 across the most effective versus least effective outreach programs. The target group was created by searching LinkedIn profiles for academic librarians whose job title included "outreach" or who had outreach listed in their work experience.

The data analysis shows there is a difference in support levels between the most effective and least effective library outreach programs. The results also revealed there are significant statistical differences in the levels of support from librarian, staff, and students between the most and least effective programs. Results from the study confirm our understanding that outreach librarians are innovative and use communication and collaboration techniques to garner support from librarians, staff, faculty, students, and volunteers to create effective outreach programs.

KEYWORDS

academic libraries, outreach, outreach programs, librarians, outreach librarian

Outreach librarians in academic libraries advocate engagement with students, underserved populations, and their local community as part of their mission. In planning outreach activities, outreach librarians must work within the constraints of budget and time for the success of their program objectives. Few academic institutions maintain a budget designated for outreach. A study done by Carter and Seaman (2011) revealed that 23 percent of

respondents had a budget for outreach, with those budgets ranging from $700 to $30,000 (167).

Outreach librarians often have a number of duties outside their typical outreach activities: they promote and participate in library services, teach information literacy instruction, design curriculum, teach workshops, attend conference proceedings, publish scholarly works, and promote scholarship. Therefore, outreach librarians must assess their priorities and identify nonmonetary factors that can contribute to the success of their programs. The scholarly literature shows that in addition to budgetary concerns, the work involved in creating outreach programs often requires the collaboration of groups, departments, and library staff who also perform outreach activities (Carter and Seaman 2011).

Measuring the effects of nonmonetary support on the success of outreach programs in academic libraries is the primary focus of this study. The research was conducted by asking outreach librarians to rate the level of nonmonetary support they received from each of five support categories—librarians, staff, faculty, students, and volunteers—for their most and least effective outreach programs. The author employed a concurrent mixed-method survey to collect both quantitative and qualitative data, then analyzed that data to determine whether the level of support from each support category has a statistically significant effect on programs' effectiveness.

Literature Review

As the study described in this article evaluates and discusses how support from certain groups contributes to the overall effectiveness and ineffectiveness of outreach programming, the author conducted a literature review focusing on effective outreach efforts in academic institutions. Several academic articles describe the success of outreach programming in academic libraries, yet there is a paucity of articles presenting information about factors that hinder the success of outreach programs.

One example of an effective outreach program comes from Texas A&M University Libraries, where librarians, faculty, students, and staff participate in the Learning and Outreach (L&O) group, which is responsible for approximately a hundred outreach activities each year. The L&O group utilizes the support and skills of the libraries' technical services staff to expand its outreach initiatives. The group has also partnered with Aggie Shields, a registered student organization, to develop outreach programs that benefit the institution's military veteran and service member population (LeMire and Ballestro 2019, 151). This collaborative support led to the success of Texas A&M libraries' outreach events: "The University Libraries' outreach program could not function without the contributions and support of everyone in the library, and there is considerable value in bringing together library employees from across the libraries to reach out to the University community" (152).

The librarians at the University of Illinois at Chicago (UIC) Special Collections Department illustrate the outcomes of taking an innovative approach to one faculty member's research. In this outreach initiative, the librarians learned that a faculty member had a strong interest in the library collections. Building a relationship with the faculty member led to a program wherein librarians trained certain students to transcribe letters and diaries. These primary documents later became sources in the students' research papers (Harris and Weller 2012, 299). The UIC Special Collections librarians created many effective programs that led staff to focus on instruction and outreach, such as collaborating with local library groups, holding receptions for politicians, and exhibiting manuscript collections. As a results of these efforts,

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the library saw an almost 100 percent increase in student visits and the use of their reading room from previously measured usage (301). In this case study, the librarians collaborated to learn more about faculty needs and created a strategic plan to integrate students and faculty research in their outreach program.

The collaboration and support from librarians, staff, and student-tutors at Mississippi State University is another example of an effective outreach program. To help the freshman football athletes meet their academic requirements, the coordinator of Reference Service and Campus Outreach, in collaboration with other librarians, taught tutors how to navigate the library site, how to perform database searches, and how to search the library catalog (Davidson and Peyton 2007). The outreach program initiated a conversation between academic departments and librarians and led to the expansion of the program to provide more subject-specific databases for the tutors to use when working with the athletes. The effectiveness of this library outreach program created an informative and safe environment where students and tutors would feel comfortable and eager to learn more from the librarians.

Access to remote library resources has allowed students, faculty, and staff to perform research without visiting the library or requiring librarian reference help. At the University of Oklahoma, the librarians' outreach efforts created the Faculty-in-Residence (FIR) program. An outreach librarian lived in one of the residence halls and provided research and other assistance to students. The effectiveness of the FIR program was attainable with the help of the residence hall staff: the residence hall was new territory for the librarian and the staff provided insight on residence-hall culture. After learning about students' needs and interests from the staff, the outreach librarian was able to arrange effective educational programming. (Strothmann and Antell 2010, 55).

Support from faculty in outreach programming is critical for its success. Scholarly literature on the topic illustrates how important it is to build relationships with faculty before requesting their participation in outreach.

" Outreach librarians must assess their priorities and identify nonmonetary factors that can contribute to the success of their programs. **"**

At Northwest Vista College in San Antonio, Texas, an outreach program became a success after faculty learned what roles librarians played in academia. As librarians attended more college events and learned more about academic courses, the faculty at Northwest Vista College began to support the librarians' outreach initiative. As a result of the program's effectiveness, more students went to the librarians for help with their informative and persuasive papers assignments. Additionally, requests for workshops and instruction increased as the semester continued (Reeves et al. 2003, 65).

Effective outreach program support can be developed for different audiences. Training students on library day-to-day tasks might seem the usual protocol for libraries and their student workers, but at the University of Illinois Springfield Brookens Library, the librarians trained and tasked the students to provide outreach to other students. The students' particular skills, motivation, and leadership were a strong marketing tool for the library, and the effective collaboration resulted in staff having time to perform other special tasks (Arnold-Garza and Tomlinson 2017, 8).

To continue to expand library services to students and the community, many outreach librarians create outreach committees who tap into the vast knowledge and skills in local organizations to establish community relations and, ultimately, improve students' success. Librarians at the John D. MacArthur Campus Library at Florida Atlantic University created a science outreach committee to enrich their science students' educational experience. The committee created an outreach program that provided the science literacy

and research skills required for the students' curriculum and future careers (Arrieta, Brunnick, and Plocharczyk 2015, 81). The program's objective was to host workshops at the library in collaboration with volunteers from the Taras Oceanographic Foundation so librarians, faculty, students, and staff could be trained in how to interact with and assist aquatic mammals (84). The outreach program gathered a total of sixty-nine volunteers made up of faculty, students, and staff. The extensive support from volunteers and the effectiveness of the program led to a second collaboration between the foundation and library (86).

The literature shows that having support from librarians, staff, faculty, students, and volunteers helps with outreach programs' success and, in some cases, expansion. This study wants to test whether nonmonetary support from those groups—or the lack of their support—has a significant impact on to the effectiveness of outreach programming.

Methodology

This study explores and compares the significance of support from librarians, staff, faculty, students, and volunteers on the success of outreach programming in academic libraries. The study focuses on two aspects: effective outreach programs and ineffective outreach programs. The sample size (seventy-five respondents), collected via survey, provides enough data to run statistical analysis.

The author created a concurrent mixed-method survey to target outreach librarians in academic libraries. Outreach librarians were identified through a search of LinkedIn and included those whose profile contained "outreach" as part of their job title or listed outreach in their work experience. The survey was additionally emailed through institution listservs to encourage participation from interested librarians from all geographic regions of the United States.

The Institutional Review Board of Georgia State University approved the author's study on March 11, 2020. On April 6, 2020, an unsolicited email invitation containing the Qualtrics survey link was distributed to two hundred LinkedIn profiles and listservs. The survey was closed on May 7, 2020 with a total of eighty-one responses. Seventy-five librarians completed the study. Of note, the data collection occurred during the COVID-19 outbreak, which may have suppressed our response rate.

The three-part survey contained checkbox, multiple-choice, yes/no, open-ended, and slider questions. The questions in the first part of the survey pertained to the most effective outreach programs. Participants had the opportunity to share a brief description of their most effective program and to rate on a ten-point sliding scale how much nonmonetary support the program received from each of the five support categories: librarian, staff, faculty, student, and volunteer. The values for the support scale ranged from no support (zero) to a great deal of support (ten) (Figure 1). The second part of the survey repeated the questions from part one but focused on outreach programs the respondents identified as their least effective. Part three of the survey collected demographic information: years of experience as outreach librarians, and the type and size of their institutions. (See Appendix 1 for survey.)

Results & Analysis

The results in Table 1 show that most of the support for both most and least effective outreach programs came from the assistance of other librarians, followed by staff. The table also shows there is a difference in each support category between the library outreach programs that were most effective and those that were least effective. Overall, programs deemed most effective

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by the participants in the survey had more support from each of the support categories.

To analyze whether having more support from each of the support categories had a significant effect on the success of the programs, the author compared means of each rating (Figure 2) and ran t-tests to find any statistical differences between the most effective and least effective outreach programs using a cutoff statistical significance value of .05 (Table 2).
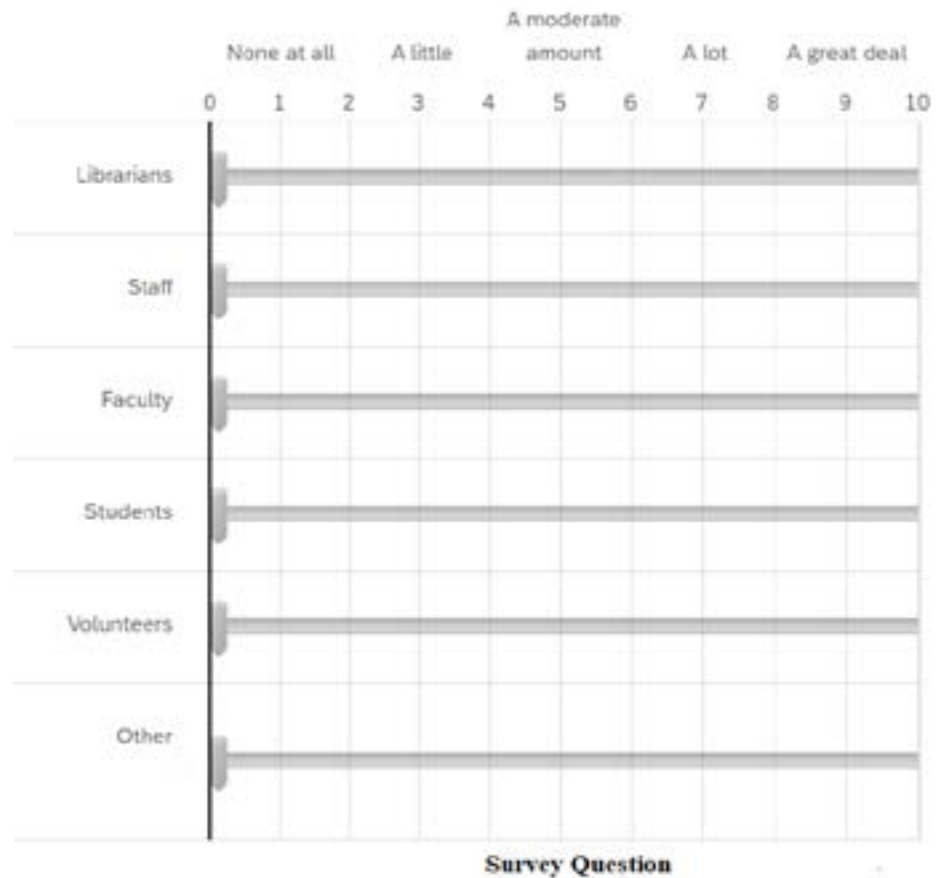

Figure 1. Survey question (How much nonmonetary support (e.g. set up, recruiting) did you have from each of the following groups?) utilized to rate the level of support reviewed from each support group in respondents' most effective and least effective outreach programs

| | No. (%) of responses | |
Support categories	Most effective program	Least effective program
Librarian	60 (80.0)	45 (60.0)
Staff	54 (72.0)	35 (46.6)
Faculty	42 (56.0)	21 (28.0)
Student	49 (65.3)	22 (29.3)
Volunteer	24 (32.0)	11 (14.6)

Table 1. Survey responses from outreach librarians on nonmonetary support. The percentages were calculated over the total number of respondents, n=75
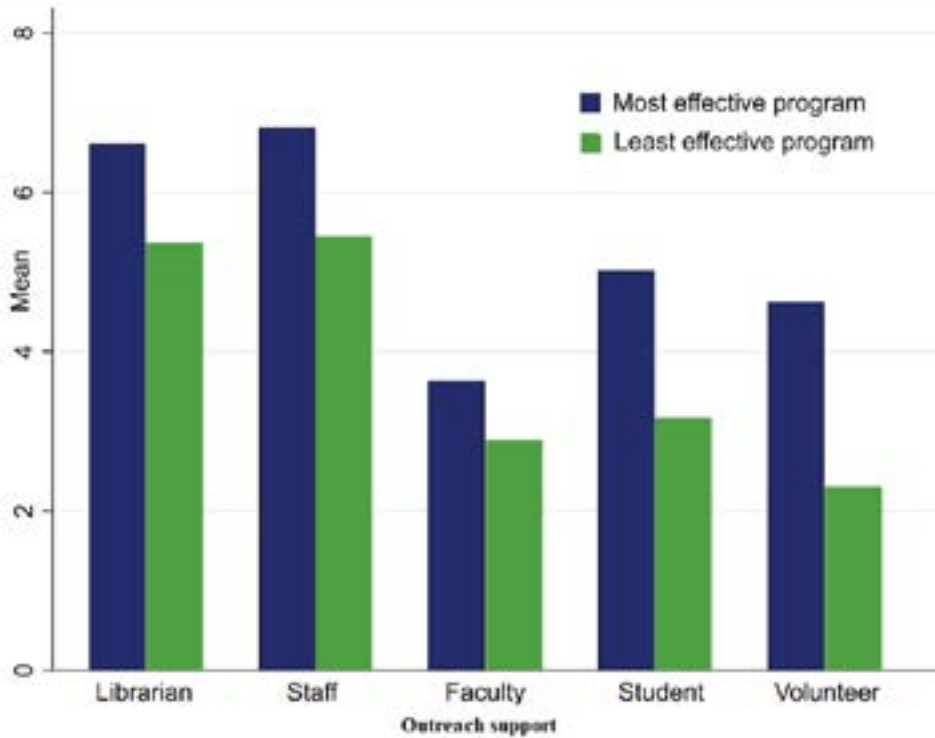
Figure 2. The most effective and least effective programs for each support category.

Types of support	Mean	Standard error	Standard deviation	Statistical significance
Librarian support				
Most effective program	6.58	.384	2.98	.0412*
Least effective program	5.30	.503	3.38	
Staff support				
Most effective program	6.81	.405	2.98	.0235*
Least effective program	5.37	.461	2.73	
Faculty support				
Most effective program	3.52	.450	2.92	.3921
Least effective program	2.88	.544	2.49	
Student support				
Most effective program	5.00	.363	2.54	.0079**
Least effective program	3.09	0.661	3.10	
Volunteer support				
Most effective program	4.63	0.761	3.73	0.0737
Least effective program	2.30	0.827	2.74	

$n=75$
* $p < .05$
** $p < .01$

Table 2. *T*-test results from most effective and least effective programs

Table 2 contains information from all independent-sample t-tests across types of support. Support from librarians showed the greatest statistical significance between most effective and least effective programs (p = .04). Support from staff followed with a statistically significant p value of .02, and support from students had a statistically significant p value of .007. Support from faculty and volunteers showed no statistically significant values between the least and most effective programs.

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Discussion

The author's research fits with the scholarly literature on academic library outreach. The results relating to support groups in this study suggest that academic outreach librarians rely greatly on the support of other librarians, staff, and students for the success of outreach programming. Having support from other librarians provides new perspectives and innovation in promoting library services, such as using orientations and instruction as part of outreach (Davidson and Peyton 2007, 71). Therefore, it's no surprise the librarian support category received the highest rating. Moving forward, outreach librarians should continue to collaborate with their librarian colleagues on programing and research, and share the results of their outreach achievements to academic librarians across the United States.

The tremendous support from staff suggests that outreach librarians in academic institutions realize this support group has the skills and interests to become a natural fit for collaboration in outreach programming. Library staff possesses different technical skills, networks, and marketing ideas that complement academic library programs. As library outreach programs in academic institutions continue to grow, libraries require the support of staff to accomplish the programs' success (LeMire and Ballestro 2019, 159). The results could also indicate that outreach librarians understand the value of staff support in expanding the capacity of outreach programming.

While previous studies on the topic describe the importance of faculty support in outreach programming, the participants' responses in this study show a significantly low percentage of faculty support (28 percent) in the least effective outreach programs (Table 1). Research has shown that many faculty do not hold the work of academic librarians in high regard (Reeves et al. 2003, 61). Such findings may explain the low support from faculty in outreach programming: perhaps faculty members do not understand the academic nature of the work of outreach librarians. Moving forward, the author is confident the results showing low faculty involvement will provide fodder for academic outreach librarians to communicate their roles to faculty and explain the importance of faculty contribution to outreach.

The study's results show students' contributions to outreach programming are significant to the programs' effectiveness. The substantial statistical difference in student support between most effective and least effective programs provides insight to academic librarians who have not tapped into this type of support for their outreach programs. The results of this study echo the experiences at Towson University's Albert S. Cook Library, which developed an outreach program that trained students to promote the library to other students and academic departments (Garza and Tomlinson 2017, 21). The author finds the results of the student support data to be evidence that academic outreach librarians should actively seek student support for their programming.

Support from volunteers as reported by the survey respondents was surprisingly low. Previous studies have shown the importance of having trained volunteers to carry out outreach initiatives in academic libraries: the quality and dependability of support are more valuable than the quantity of support (LeMire and Ballestro 2019, 158). Perhaps the time needed to train volunteers and their high turnover rate are contributing factors to the low number of respondents citing volunteers as being involved in outreach. The author encourages librarians to be proactive in reaching out to volunteers. Further research on this topic will benefit scholarly research in academic library outreach.

Limitations

While this research provides valuable insight into academic library outreach programming, the study had a relatively small sample size. Additionally, data collected from a nonrandom sample creates an obvious limitation. This study focused on collecting data from librarians who are current outreach librarians or were in the past. Moving forward, a survey of all academic librarians would be valuable for comparison; studies have shown that many academic librarians contribute to outreach despite having different job titles (Carter and Seaman 2011, 166). A future survey could also gather information from outreach librarians at public libraries to determine similarities and differences related to nonmonetary support of programming. Furthermore, future studies might focus on student support in outreach programming by distributing a survey to students to ascertain their interests in participating in and in gathering ideas for academic libraries outreach efforts.

Conclusion

Overall, the study contributes to the body of knowledge on the current trends of academic libraries and outreach. The data used for this study arose from "Librarians across Institutions: Establishing Outreach Programs," which collected survey data from seventy-five academic outreach librarians across the United States. Conducting a comprehensive search through LinkedIn profiles proved to be a successful research method. The ability to interact with the participants and to explain more of the details about the research might be a reason why most of the responses came from LinkedIn rather than from the email sent through institution listservs. Of note, during the distribution of the online survey through LinkedIn, a good number of the participants expressed eagerness to leave feedback and said they looked forward to the findings of the research.

The study set out to examine nonmonetary support for the most effective and least effective outreach programs carried out by outreach librarians in five support areas: other librarians, staff, faculty, students, and volunteers. Although some of the promising groups had low ratings for their support of outreach programming, the small sample used in this study should motivate other outreach librarians to perform more research, particularly on volunteer and faculty support in academic outreach programs. Finally, the results suggest that outreach librarians continue to be innovative and use their strong communication and collaboration techniques to garner support. The work these librarians put forth to build relationships with their librarian colleagues, staff, and students has contributed to the effectiveness of their outreach programs.

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Appendix 1: Librarians Across Institutions Survey

Q1
Part I. The following questions will focus on your most effective outreach program.

Think about your most successful outreach program. Please provide a brief description of this outreach program.

_____

_____

_____

_____

_____

Q2 Was funding a major component for the success of this outreach program?

◯ Yes (1)

◯ No (2)

Q3 How much funding did you receive?

◯ $0 (did not receive any funding) (1)

◯ Some funds, but less than $50 (5)

◯ $50 - $99 (2)

◯ $100 - $149 (3)

◯ $150 or more (4)

Q4 What did you use the funds for? (Check all that apply)

☐   Promotional Materials (1)

☐   Food and beverages (2)

☐   Other (3) _____

Q5 How important was funding for the outreach program?

○ Extremely important (1)

○ Very important (2)

○ Moderately important (3)

○ Slightly important (4)

○ Not at all important (5)

- -

Q6 How much nonmonetary support (e.g. set up, recruiting) did you have from each of the following groups?

	None at all	A little	A moderate amount	A lot	A great deal
	0 1 2 3	4 5 6	7 8 9 10		
Librarians ()					
Staff ()					
Faculty ()					
Students ()					
Volunteers ()					
Other ()					

- -
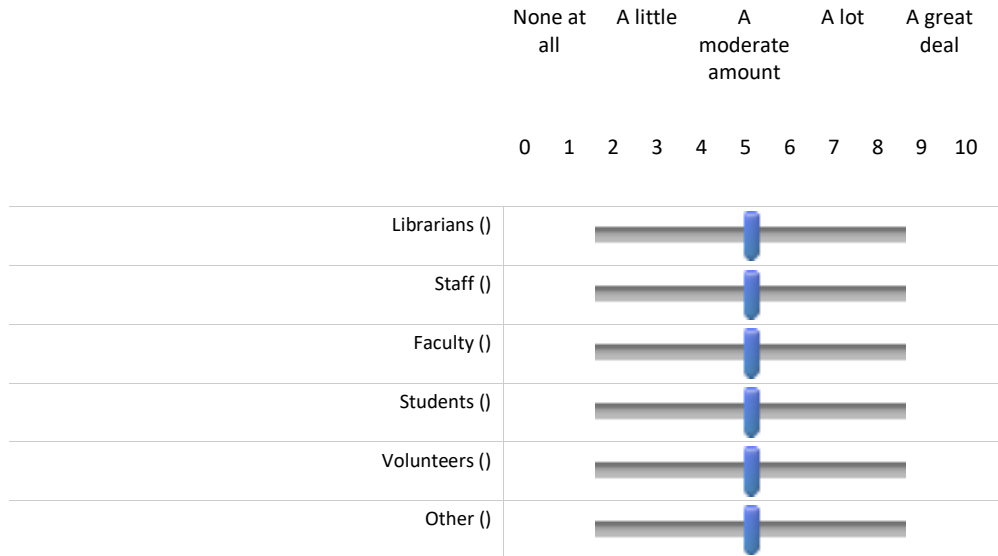
Q7 Which groups did you collaborate with on this outreach program? (Check all that apply)

☐   None (1)

☐   Academic departments (e.g. Sociology, Biology, English) (2)

☐   Centers on campus (e.g. Multicultural Center, Writing Center, Disability Services) (3)

☐   Community groups (4)

☐   Other (5) _____

Q8 Where was the outreach program located? (Check all that apply)

☐ Library (1)

☐ On campus (2)

☐ Off campus (3)

☐ Online/virtual (4)

☐ Other (5) _____

Q9 What school term did the outreach program occur?

○ Spring (1)

○ Summer (2)

○ Fall (3)

○ Other (4) _____

Q10 What marketing strategies did you use? (Check all that apply)

☐ Social Media (1)

☐ Flyers (2)

☐ Newsletter (3)

☐ Email (4)

☐ Marketing department (5)

☐ Other (6) _____

Q11 Did you have enough dedicated time to create this outreach program?

○ Definitely yes (1)

○ Probably yes (2)

○ Probably not (3)

○ Definitely not (4)

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Q12 How many total **hours** did you spend on this outreach program? This includes planning and the outreach program event.

_____

Q13 How important was having dedicated time to plan the outreach program?

◯ Extremely important (1)

◯ Very important (2)

◯ Moderately important (3)

◯ Slightly important (4)

◯ Not at all important (5)

- -

Q14 Was having enough dedicated time, a key component to your program's success?

◯ Definitely yes (1)

◯ Probably yes (2)

◯ Might or might not (3)

◯ Probably not (4)

◯ Definitely not (5)

- -

Q15 What, if anything, would you have done differently with this outreach program?

_____

_____

_____

_____

Q16
Part II. The following questions will focus on your least effective outreach program.

Think about an outreach program that you had difficulties planning. Please provide a brief description of this outreach program.

_____

_____

_____

_____

_____

Q17 Was funding an issue with this outreach program?

○ Yes (1)

○ No (2)

Q18 How much funding did you receive?

○ $0 (did not receive funding) (1)

○ Some funding, but less than $50 (5)

○ $50 - $99 (2)

○ $100 - $149 (3)

○ $150 or more (4)

Q19 What did you use the funds for? (Check all that apply)
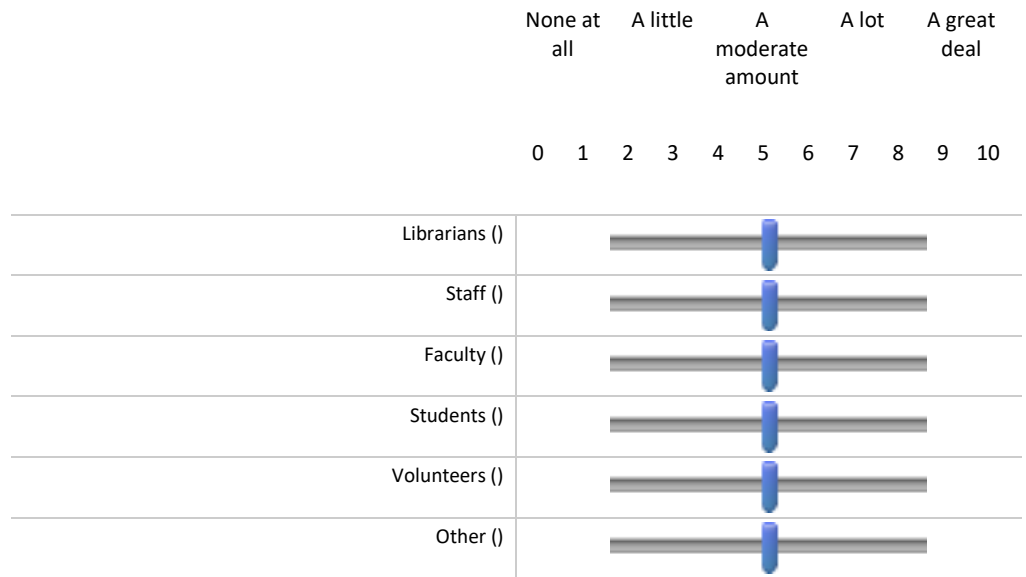
☐ Promotional materials (1)

☐ Food and beverages (2)

☐ Other (3) _____

Q20 How important was funding for the outreach program?

○ Extremely important (1)

○ Very important (2)

○ Moderately important (3)

○ Slightly important (4)

○ Not at all important (5)

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Q21 How much nonmonetary support (e.g. set up, recruiting) did you have from each of the following groups?

	None at all	A little	A moderate amount	A lot	A great deal
	0 1	2 3	4 5 6	7 8	9 10

Librarians ()	
Staff ()	
Faculty ()	
Students ()	
Volunteers ()	
Other ()	

Q22 Which groups did you collaborate with on this outreach program? (Check all that apply)

☐ None (1)

☐ Academic departments (e.g. Sociology, Biology, English) (2)

☐ Centers on campus (e.g. Multicultural Center, Writing Center, Disabilities Services) (3)

☐ Community groups (4)

☐ Other (5) _____

Q23 Where was the outreach program located? (Check all that apply)

☐ Library (1)

☐ On campus (2)

☐ Off campus (3)

☐ Online/virtual (4)

☐ Other (5) _____

Q24 What school term did the outreach program occur?

○ Spring (1)

○ Summer (2)

○ Fall (3)

○ Other (4) _____

Q25 What marketing strategies did you use? (Check all that apply)

☐ Social Media (1)

☐ Flyers (2)

☐ Newsletter (3)

☐ Email (4)

☐ Marketing Department (5)

☐ Other (6) _____

Q26 Did you have enough dedicated time to plan the outreach program?

○ Definitely yes (1)

○ Probably yes (2)

○ Probably not (3)

○ Definitely not (4)

Q27 How many total hours did you spend on this outreach program? This includes planning and the outreach program event.

_____

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Q28 How important was having dedicated time to plan the outreach program?

○ Extremely important (1)

○ Very important (2)

○ Moderately important (3)

○ Slightly important (4)

○ Not at all important (5)

Q29 Was not having enough dedicated time, a contributing factor to this outreach program?

○ Definitely yes (1)

○ Probably yes (2)

○ Probably not (3)

○ Definitely not (4)

Q30 What, if anything, would you have done differently with this outreach program?

_____

_____

_____

_____

_____

Q31
Part III. About You and Your Library.

Which gender identity do you identify with?

○ Male (1)

○ Female (2)

○ Transgender female (3)

○ Transgender male (4)

○ Gender variant/Non-conforming (5)

○ Not listed (7) _____

Q32 How old are you?

○ 24 or younger (1)

○ 25 - 30 (6)

○ 31 - 40 (2)

○ 41 - 50 (3)

○ 51 - 64 (4)

○ 65 or older (5)

Q33 What is your race? (Check all that apply)

☐ American Indian or Alaska Native (1)

☐ Asian (2)

☐ Black or African American (3)

☐ Native Hawaiian or Other Pacific Islander (4)
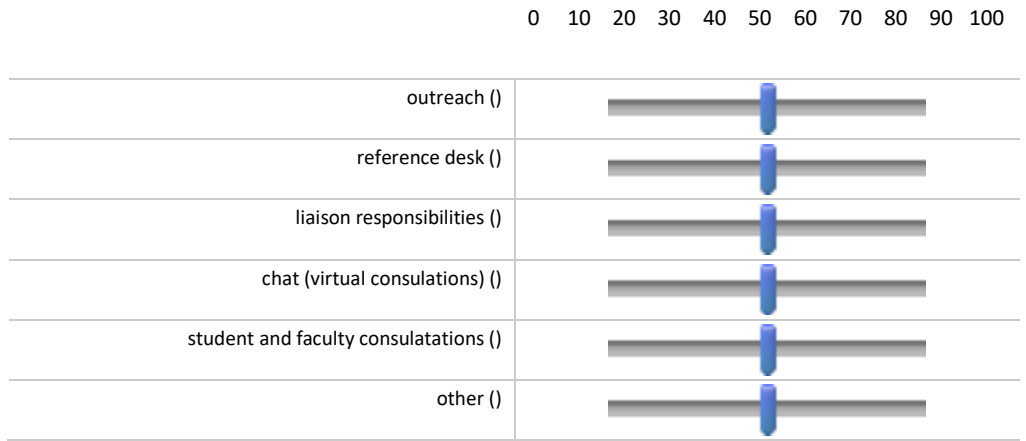
☐ White (5)

Q34 What is your ethnicity?

○ Hispanic or Latino or Spanish Origin (1)

○ Not Hispanic or Latino or Spanish Origin (2)

Q35 In total, how many years have you been an Outreach Librarian?

○ 0 - 1 (1)

○ 2 - 4 (2)

○ 5 - 7 (3)

○ 8 - 10 (4)

○ 11 or more (5)

Q36 What percent of your time is dedicated to each of the following areas?

	0 10 20 30 40 50 60 70 80 90 100
outreach ()	
reference desk ()	
liaison responsibilities ()	
chat (virtual consulations) ()	
student and faculty consulatations ()	
other ()	

- -

Q37 Approximately, how many students are enrolled at your institution?

	Less than 1K (1)	1-5K (2)	6-10K (3)	11-15K (4)	16-20K (5)	50k + (6)
Number of students (1)	○	○	○	○	○	○

Q38 Degree options at your institution (Check all that apply)

☐ Associate (1)

☐ Bachelor (2)

☐ Masters (3)

☐ Doctorate (4)

- -

Q39 What state is the institution located in?

▼ Alabama (1) ... I do not reside in the United States (53)

Appendix 2: Statistics/Data Analysis

Librarians *Group 1= Most Effective Program *Group 2= Least Effective Program

. ttest Q6_1, by (Type)

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1	60	6.583333	.3842166	2.976129	5.814518	7.352149
2	45	5.2976	.5033423	3.376523	4.28318	6.31202
combined	105	6.032305	.3125477	3.202661	5.412511	6.652099
diff		1.285733	.6218583		.052424	2.519043

```
    diff = mean(1) - mean(2)                              t =   2.0676
Ho: diff = 0                              degrees of freedom =      103

    Ha: diff < 0                 Ha: diff != 0                Ha: diff > 0
 Pr(T < t) = 0.9794       Pr(|T| > |t|) = 0.0412        Pr(T > t) = 0.0206
```

Staff *Group 1= Most Effective Program *Group 2= Least Effective Program

. ttest Q6_2, by (Type)

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1	54	6.814815	.4053055	2.978375	6.001875	7.627755
2	35	5.372371	.4608949	2.726691	4.43572	6.309023
combined	89	6.247562	.3129641	2.952498	5.625611	6.869512
diff		1.442443	.6255377		.1991195	2.685767

```
    diff = mean(1) - mean(2)                              t =   2.3059
Ho: diff = 0                              degrees of freedom =       87

    Ha: diff < 0                 Ha: diff != 0                Ha: diff > 0
 Pr(T < t) = 0.9883       Pr(|T| > |t|) = 0.0235        Pr(T > t) = 0.0117
```

Faculty *Group 1= Most Effective Program *Group 2= Least Effective Program

. ttest Q6_3, by (Type)

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1	42	3.52381	.4498523	2.915376	2.615314	4.432305
2	21	2.882476	.5441591	2.49365	1.74738	4.017572
combined	63	3.310032	.3500422	2.778374	2.610307	4.009756
diff		.6413333	.7440962		-.846579	2.129246

```
    diff = mean(1) - mean(2)                              t =   0.8619
Ho: diff = 0                              degrees of freedom =       61

    Ha: diff < 0                 Ha: diff != 0                Ha: diff > 0
 Pr(T < t) = 0.8039       Pr(|T| > |t|) = 0.3921        Pr(T > t) = 0.1961
```

Students *Group 1= Most Effective Program *Group 2= Least Effective Program

. ttest Q6_4, by (Type)

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1	49	5	.3630464	2.541325	4.270046	5.729954
2	22	3.087545	.6614304	3.102384	1.712026	4.463065
combined	71	4.407408	.3379582	2.847687	3.733372	5.081445
diff		1.912455	.6991676		.5176533	3.307256

```
    diff = mean(1) - mean(2)                              t =   2.7353
Ho: diff = 0                               degrees of freedom =      69

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
Pr(T < t) = 0.9960       Pr(|T| > |t|) = 0.0079       Pr(T > t) = 0.0040
```

Volunteers *Group 1= Most Effective Program *Group 2= Least Effective Program

. ttest Q6_5, by (Type)

Two-sample t test with equal variances

Group	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
1	24	4.625	.7609407	3.727833	3.050874	6.199126
2	11	2.298	.8273349	2.74396	.4545829	4.141417
combined	35	3.893657	.6051336	3.580019	2.663878	5.123437
diff		2.327	1.259588		-.2356517	4.889652

```
    diff = mean(1) - mean(2)                              t =   1.8474
Ho: diff = 0                               degrees of freedom =      33

    Ha: diff < 0                 Ha: diff != 0                 Ha: diff > 0
Pr(T < t) = 0.9632       Pr(|T| > |t|) = 0.0737       Pr(T > t) = 0.0368
```