Regarding Reference in an Academic Library

Does the Desk Make a Difference?

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Some academic libraries are consolidating their circulation and reference desks into single service points. The librarians at one academic library undertook a study to determine if such a consolidation would affect their reference service. They analyzed the number and type of questions asked during times when a librarian was physically present at the reference desk and compared it to the number and type of questions asked when a librarian was "on call" (not present at the desk, but available to be called to the service desk to answer reference questions) over a period of seven academic semesters. This article reports on the methodology used to collect and analyze the data and the researchers' findings. The results show that true reference questions remained steady whether or not the reference desk was staffed. The implications are important at a time when libraries are moving to single service desks staffed by nonlibrarians and are unsure of the efficacy of this model.

Reference in academic libraries has been undergoing a dramatic transformation. Many libraries have abandoned the traditional reference desk in favor of different service models, including tiered reference services, expanded electronic reference services, learning commons models, removal of the reference desk in favor of a single service point, or a combination of these.[1] These changes have been implemented as a result of anecdotal and observational evidence and widely read and quoted statistics from the Association of Research Libraries (ARL) that document a steady decrease in reference traffic in academic libraries. Over the last ten years, the number of reference transactions reported to ARL by participating academic libraries has decreased by almost 50 percent.[2] This has spurred an ongoing debate regarding the value of staffing librarians to answer drop-in, in-person reference requests.[3]

As noted by Sheehan, "conversations about reference services and experimentation with different methods of providing reference" had been going on for some time in the University Libraries at Grand Valley State University (GVSU).[4] The librarians at the Zumberge Library on the Allendale campus switched from a separate reference desk and circulation desk model to a single service point desk in January 2010.[5] Before adopting this reference model at the Steelcase Library on the Grand Rapids campus of GVSU, the librarians, who questioned the efficacy of this model, undertook a study to analyze activity at the reference desk to determine if and how consolidating into a single

service point would affect their reference service. Over a period of seven semesters, they experimented with a variety of staffing models at the reference desk and recorded the number and type of questions asked during times when a librarian was physically present at the reference desk compared to the number and type of questions asked when a librarian was "on call" (not present at the desk, but available to be called to the service desk to answer reference questions). On-call librarians carried a pager that was used to summon them to the service desk.

BACKGROUND

Grand Valley State University is a public liberal arts university in Michigan with its main campus in Allendale, additional campuses in Grand Rapids and Holland, and regional centers in Muskegon and Traverse City. The university serves over twenty thousand undergraduate students and more than three thousand graduate students in more than two hundred areas of study. The GVSU libraries consist of three libraries: the Zumberge Library located on the main campus in Allendale, the Frey Foundation Learning Center located in the Cook-DeVos Center for Health Sciences in Grand Rapids, and the Steelcase Library located on the Pew Campus, also in downtown Grand Rapids. The Zumberge Library serves the majority of GVSU's undergraduate programs, particularly liberal arts and sciences; the Frey Foundation Learning Center serves the health sciences programs; and the Steelcase Library serves primarily professional programs, including criminal justice, social work, business, and education.

The Steelcase Library, built in 2000, is part of a larger building complex called the DeVos Center located on the Pew Campus in downtown Grand Rapids. The one-story library consists of a reading room for quiet study, a reference area, an instruction lab, a service desk, an automated retrieval system, and a staff area, including librarians' offices. The Steelcase Library was built to accommodate the traditional library service model of separate service and reference desks. Librarians staffed the reference desk located in the reference area, and library staff and student workers staffed the service desk.

In addition to face-to-face reference, GVSU's libraries offer virtual reference services and consultation services. At the time of this study, the university libraries offered virtual chat reference, but librarians no longer staffed this service. Instead, service desk staff answered these inquiries. The change in this staffing model was the result of a detailed study of chat reference at the university libraries that showed that use of chat reference was consistently low.[6] In addition, because of the liaison librarian model used by GVSU libraries, librarians frequently receive email questions from student and faculty members in their liaison areas.

Since it opened in 2000, the librarians staffing the reference desk at the Steelcase library recorded reference transactions on a paper form using hash marks. This method of keeping reference statistics, however, only allowed for the

collection of basic quantitative data, not qualitative data. Librarians were able to record only the date, timeframe the question was asked, (e.g., between 8 a.m.–9 a.m.), and whether the question was "directional" (specifically asking for directions) or "desk" (all other types of questions).

Beginning in fall semester 2008, GVSU libraries abandoned the hash mark system and began to record reference data in LibStats, an online tool that was developed to enable librarians to collect both quantitative and qualitative reference statistics.[7] Using LibStats, librarians were able to record both the questions asked and answers given at the reference desk, providing a richer level of detail than the hash mark system. The software also recorded the exact date and time this data was entered. Librarians now could evaluate and assess not only the number but also the nature of and the exact time queries were made at the reference desk.

LITERATURE REVIEW

Some librarians believe that (for their learning communities, at least) the value of in-person, professional help at the reference desk is great enough to justify staffing desks with librarians. This position is supported by Gratz and Gilbert, who asked students where they went for help in their academic library. Nearly two-thirds of the responding students reported that they approach the reference desk or a reference librarian for help, while less than a quarter ask for help at the service desk. Based on the results of this study the authors concluded that these usage rates justified maintaining a traditional reference desk.[8]

Other librarians have opted to allocate their time to instruction and other endeavors, relying on front-line staff to refer students and faculty with complex reference questions to librarians. For example, Sonntag and Palsson provide a background of the arguments for removal of the reference desk at California State University, San Marcos, which freed up librarians to provide more in-class instruction.[9] Kennedy describes the rationale for and the mechanics of the discontinuation of the reference desk at the Homer Babbidge Library where an information commons model replaced what the author referred to as the "antiquated reference model."[10] In a presentation provocatively titled "Redesign Your Reference Desk: Get Rid of It!" Meldrem, Mardis, and Johnson chronicle Northwest Missouri State University's library's transition to a tiered reference system where librarians are on call instead of at a desk.[11]

Among those academic libraries that have removed their reference desks, few have contributed in-depth assessments of those changes to the body of library science literature. Sonntag and Palsson describe the statistics that student "information assistants" and on-call librarians kept regarding reference desk questions. All questions asked at the desk were recorded and tracked to help understand student need and the level of service that was being provided.[12] The authors do not, however, discuss the number of questions asked

and whether those numbers changed with the evolution of reference service. Kennedy, while including a rationale and process for discontinuing a reference desk, does not include an assessment of the service change.[13] Meldrem, Mardis, and Johnson's assessment of the change to a tiered reference system was limited to satisfaction surveys of library users and surveys of staff.[14] While useful and vindicating in their case, this is not quantitative evidence of success.

Arndt, however, does provide more in-depth data on a reference transformation in her 2010 case study of reference in the Dickinson College Library. The study chronicles how the library staff responded to internal statistics indicating low reference use (less than one question per hour), with only 66 percent being actual reference questions.[15] Librarians at Dickinson decided to remove the reference desk completely and to instead schedule on-call librarians to be available for reference queries. To ensure that reference continued to be available to faculty and students, they sought to reframe reference as a service, unshackling it conceptually from the physical presence of the desk. Their effort to maintain reference availability included marketing their reference services and thoroughly and consistently training access services staff for effective and collaborative referrals to subject librarians. Dickinson's librarians assessed the change one year later, using reference use statistics, number of visits to the "Ask a Librarian" website, and a student survey. All measures indicated success. For the purposes of this literature review, the reference use statistics are most notable. According to Arndt, the number of true reference questions (combined appointments and walk-in consultations) dramatically increased by 37 percent while nonreference questions answered by librarians (not surprisingly) decreased by 66 percent.[16] Arndt is careful to point out that the success is due in large part to characteristics specific to that library. Nonetheless, the case study presents strong evidence that removing the reference desk, accompanied by the right measures, can actually lead to an increase in actual reference questions.

Dinkins and Ryan studied the questions that a paraprofessional referred to an on-call librarian at Stetson University to assess whether more extensive staffing of the reference desk by paraprofessionals could be successful.[17] After analyzing the reference questions referred by the paraprofessional to an on-call librarian and comparing the numbers to the total number of questions the paraprofessional handled, they conclude that "the reference desk could be staffed by a trained paraprofessional," and "librarians and the library administration are pleased with the results" and believe that the referral system is working.[18] Interestingly, the total number of reference questions during the paraprofessional's shifts decreased dramatically and more markedly than the modest decreases seen in the other shifts. Over the year of the study, only about 7.4 percent of the total questions were referred to a librarian.[19]

Some scholarship has illustrated how libraries can use data to make informed decisions about reference staffing. Notably, Ryan analyzed 4,431 questions over four study periods to find, among other things, that 89 percent of the questions asked at the reference desk could be answered by students or trained staff.[20] Ryan used salary data to calculate the amount of each transaction cost; noninformational direction and machine questions (the most common transaction) cost the library $17,919 over 2,528 transactions.[21] Dennison, of Winona State University, also approached the question of reference desk staffing using statistical evidence. There, librarians collected reference statistics over several years then analyzed each hour to determine whether to staff, double staff, or not staff the reference desk with librarians.[22]

No research studies have examined whether or how patrons' reference questions are answered when no one is staffing the reference desk in an academic library. This study analyzes the number and nature of questions answered by librarians at a reference desk and compares them to the number and nature of questions answered by librarians who are on call in order to determine which reference staffing model best meets the needs of its patrons: a staffed reference desk, an on-call reference system, or a combination of both.

METHOD

The purpose of this research was to determine:

1. the nature and number of questions asked at the Steelcase Library reference desk and what percentage of those were reference questions according to the classification scheme the researchers developed to analyze them;
2. the nature and number of questions asked at the Steelcase Library service desk that prompted a staff member to summon the on-call librarian to answer; and
3. patterns of reference activity to inform reference scheduling in the Steelcase Library.

This study covers a period of seven academic semesters, beginning spring/summer semester 2009 through the end of winter semester 2011. During this time, librarians working at the Steelcase Library recorded all reference questions they were asked in LibStats. The LibStats interface allowed Steelcase librarians to record whether they were at the reference desk or on call when they answered a question. For purposes of this study, only the questions themselves were examined. The answers to these questions were not part of this study and were not evaluated.

The sample of questions for this study was the entire population of questions recorded by Steelcase librarians in LibStats for the study period (N = 1,567). All questions recorded during the study period were analyzed and rated according to the classification system described in table 1.[23]

DATA ANALYSIS

The researchers analyzed the questions recorded in LibStats using content analysis. Content analysis is based on the premise that groups of words that comprise a document or other

Table 1. Classification System

Category	Type	Examples
1	Directional, Technical, Policy	Directions Computer or printer problems Library hours
2	Find Known Item (Ready Reference)	Find article or book by known title or citation Find information through simple Google search
3	Strategy Based Searching (Reference)	Find articles for a literature review Find appropriate sources for research topic either through library databases or other sources
4	Citation Formatting Citation Management Tools	Proper citation formatting Use of citation management software

written communication "can be reduced to, or organized into, categories in which words or word units…share the same central meaning or connotation."[24] Based on this technique, the researchers developed a system to analyze the content of the questions asked at the Steelcase reference desk. They devised a four level classification system similar to that used by Bravender, Lyon, and Molaro to code the questions.[25] Table 1 shows the classification system used to analyze the data.

Questions classified in the first category could be answered without reference to library resources, including those that were computer-skills based. Questions in this category could be answered by anyone working in the library or would be referred to the appropriate university department. The second category of questions were those seeking known items or brief information that could be found with minimal searching in the library's catalog or databases or through a Google search, i.e., ready reference questions. The third category included questions that required strategy-based searching in the library's resources. Such questions usually required appropriate source selection, development of search terms, and critical evaluation of results. A fourth category was created for questions that were related to citation formatting or the use of bibliographic management software.

Based on the classification system described in table 1, both researchers independently categorized the questions from one semester. They then compared their results and further refined their mutual understanding of the classification system. The researchers then independently coded all seven semesters of questions and compared their ratings. Differences in coding were resolved by the mutual agreement of the researchers.

STAFFING MODELS AT THE REFERENCE DESK

Tables 2 and 3 show the staffing models used in Steelcase Library over the study period.[26]

As shown in tables 2 and 3, during the first three study semesters, spring/summer 2009, fall 2009, and winter 2010, librarians extended on-call hours in the morning by one hour each semester. They were physically present at the reference desk for the rest of the day until 6 p.m. Prior to the start of the spring/summer 2010 semester, and based on statistics from the 2009 spring/summer semester which indicated very low reference activity, it was decided that the reference desk would not be staffed during the spring/summer 2010 semester. Instead, librarians were scheduled to be on call only.

Throughout the fall 2010 and winter 2011 semesters the reference desk was again staffed from 11 a.m. until 6 p.m. During these semesters the researchers implemented a system to study and compare reference activity at the desk during what were the highest-use reference times as based on earlier recorded reference statistics. During fall semester 2010 from 11 a.m. to 2 p.m. and 4:30 p.m. to 6 p.m., the reference desk was staffed on alternate weeks, that is, it was staffed on week 1, week 3, week 5, etc. and on-call week 2, week 4, etc. During winter semester 2011, the reference desk was staffed on the opposite weeks from the fall semester, that is, it was staffed on week 2, week 4, week 6 and on-call week 1, week 3, etc. During the spring/summer 2011 semester, the reference desk was not staffed and all reference was on-call.

FINDINGS

This study analyzed a total of 1,567 questions (N = 1,567) asked of librarians at the Steelcase Library and recorded in LibStats over seven academic semesters from the beginning of spring/summer semester 2009 through the end of spring/summer semester 2011. The inter-coder reliability was found to be Kappa = 0.8487. According to Landis and Koch this is almost perfect agreement.[27]

Table 4 shows the total number of questions in all categories that Steelcase librarians answered during the study period.

In the fall 2009 semester, the reference desk was staffed for a total of 592 hours. In the fall 2010 semester, the reference desk was staffed for 168 hours, about a quarter (28.4 percent) of the time it was staffed in fall 2009. A total of 460 questions were answered in fall 2009 and 257 in fall 2010. The numbers of category 1 and 2 questions, which were defined as not requiring the services of a librarian, fell during the fall 2010 semester, during times when the reference desk was not staffed and librarians were on call. Most significantly,

Table 2. Monday–Thursday Reference Desk Staffing Models at the Steelcase Library

Time	S/S '09	Fall '09	Win '10	S/S '10	Fall '10	Win '11	S/S '11
8–9 a.m.	on call*	on call	on call	on call	on call	on call	on call
9–10 a.m.	desk**	on call	on call	on call	on call	on call	on call
10–11 a.m.	desk	desk	on call	on call	on call	on call	on call
11 a.m.–Noon	desk	desk	desk	on call	alt†	alt	on call
Noon–1 p.m.	desk	desk	desk	on call	alt	alt	on call
1–2 p.m.	desk	desk	desk	on call	alt	alt	on call
2–3 p.m.	desk	desk	desk	on call	on call	on call	on call
3–4 p.m.	desk	desk	desk	on call	on call	on call	on call
4–4:30 p.m.	desk	desk	desk	on call	on call	on call	on call
4:30–5 p.m.	desk	desk	desk	on call	alt	alt	on call
5–6 p.m.	desk	desk	desk	on call	alt	alt	on call

Table 3. Friday Reference Desk Staffing Models at the Steelcase Library

Time	S/S '09	Fall '09	Win '10	S/S '10	Fall '10	Win '11	S/S '11
8–9 a.m.	on call	on call	on call	on call	on call	on call	on call
9–10 a.m.	desk	on call	on call	on call	on call	alt	on call
10–11 a.m.	desk	desk	on call	on call	on call	alt	on call
11 a.m.–Noon	desk	desk	desk	on call	alt	alt	on call
Noon–1 p.m.	desk	desk	desk	on call	alt	alt	on call
1–2 p.m.	desk	desk	desk	on call	alt	alt	on call
2–3 p.m.	desk	desk	on call	on call	on call	on call	on call
3–4 p.m.	on call	on call	on call	on call	on call	on call	on call
5–6 p.m.	on call	on call	on call	on call	on call	on call	on call

* *on call* indicates that the reference desk was not staffed but a librarian was available to be called to the service desk to respond to a question

** *desk* indicates that the reference desk was staffed

† *alt* indicates that on call and on desk times were alternated weekly over the course of these two semesters

however, the number of true reference questions (category 3) answered by librarians remained almost the same: 86 in fall 2009 and 91 in fall 2010.

Questions about citation formatting and citation software (category 4) continued to be asked of or referred to librarians at a steady but low rate regardless of whether the reference desk was staffed or not.

Table 5 shows the number of reference (category 3) questions that were asked during the fall and winter semesters of the study period by week. Shaded numbers represent times when no one was staffing the reference desk and a librarian was on call, and nonshaded areas represent times when the desk was staffed. During fall 2010 and winter 2011, when the desk was staffed on alternate weeks, the average number of reference questions answered by on-call librarians was the same as the number answered when the reference desk was staffed.[28]

DISCUSSION

The researchers expected to find that overall reference activity at the Steelcase Library reference desk had declined since 2009, and data collected during this study confirms this. Furthermore, analyzing alternating weeks of librarians on desk and on call revealed to the researchers that when a staff member is visible at the reference desk, the librarian staffing the desk answers more directional and ready reference questions. However, the researchers were surprised to find that, at the Steelcase Library, librarians are answering the reference questions requiring the skills of a librarian, whether or not librarians are physically at the reference desk. The researchers had hypothesized that without someone present at the desk, questions would go unasked and thus unanswered. According to the results of this study, this is not the case. Students with reference questions are coming to the service desk to ask them, and service desk staff members are referring questions

Table 4. Total Number of Questions Answered by Steelcase Librarians (*N* = 1,567)

Category	S/S '09 on-desk	Fall '09 on-desk	Win '10 on-desk	S/S '10 off-desk on call	Fall '10 alternate	Win '11 alternate	S/S '11 off-desk on call
1. Directional Technical	27	120	98	4	77	75	8
2. Ready Reference	43	229	148	26	70	89	6
3. Reference	49	86	67	36	91	64	31
4. Citation	11	25	21	13	19	15	19
Total	130	460	334	79	257	243	64

that require librarian expertise to the librarian on call.

So while the higher-level reference questions and citation related questions are being answered by librarians, whether they are staffing a reference desk or are on call, the other questions are no longer coming to librarians. This indicates that this single-service on-call reference model is working. The researchers hypothesize that ready reference and directional questions are being answered at the service desk.

At the Steelcase Library reference questions fell in the spring/summer semesters over the course of the study period as shown in table 4. There is no clear explanation for this, although there are several factors that may have caused this decline. It is probable that the number of reference questions is linked to the number of students on campus during the spring/summer semester, which varies over the course of the spring/summer semester. Also, because of the small number of reference questions asked during these semesters, even a small curricular change in one program (e.g., no longer requiring a research paper in one class) could significantly affect the number of questions asked.

The data collected during this study was illustrative in establishing actual reference question patterns over the day and the semester. This evidence-based knowledge impacts staffing decisions and schedules, allowing the library to be sure librarians are on call during the periods with the heaviest reference loads.

CONCLUSION

Librarians at the Steelcase Library were initially ambivalent about adopting an on-call model of reference. While they knew that overall activity at the reference desk was declining, and they saw the practicality of spending time in reaching students in other higher-impact ways, they also strongly felt the need to be available to help students at their time of need. The anxiety they felt about the reference change appears to be common among many academic librarians who are understandably afraid that, by not being physically present at a reference desk, they are somehow failing their students. At the Steelcase Library, this study allowed the researchers to compare reference models in an objective light and assess the changes about which the librarians felt uncomfortable.

Table 5. Category 3 Reference Questions

	Fall '09	Fall '10	Win '10	Win '11
Week 1	2	7	1	1
Week 2	3	5	5	5
Week 3	8	0	7	5
Week 4	7	8	4	5
Week 5	8	7	3	4
Week 6	6	3	5	5
Week 7	6	4	5	8
Week 8	5	11	4	5
Week 9	4	4	2	3
Week 10	4	10	5	1
Week 11	1	9	6	1
Week 12	9	12	0	7
Week 13	6	2	7	8
Week 14	10	4	7	3
Week 15	6	3	5	3
Exams	1	2	1	0
Total	86	91	67	64

Shaded numbers = on call

Further qualitative study would be useful to determine patron satisfaction. However, through quantitative assessment, the researchers discovered that the change in the reference model did, in fact, seem to meet the reference needs of their learning community.

References and Notes

1. See, for example, Elizabeth B. Fitzpatrick, Anne C. Moore, and Beth W. Lang, "Reference Librarians at the Reference Desk in a Learning Commons: A Mixed Methods Evaluation," *Journal of Academic Librarianship* 34, no. 3 (2008): 231–38; Vicky Duncan and Angie Gerrard, "All Together Now! Integrating Virtual Reference in the Academic Library," *Reference & User Services Quarterly* 50, no. 3 (2011): 280–92; Harry C. Meserve, Sandra E. Belanger, Joan Bowlby, and Lisa Rosenblum, "Developing a Model for Reference Research Statistics: Applying the 'Warner Model' of Reference Question Classification to Streamline Research Services,"

Reference & User Services Quarterly 48, no. 3 (2009): 247–58; Judith A. Wolfe, Ted Naylor, and Jeanetta Drueke, "The Role of the Academic Reference Librarian in the Learning Commons," *Reference & User Services Quarterly* 50, no. 2 (2010): 108–13.

2. Association of Research Libraries, "Annual Tables from the ARL Statistics," 1999–2009, accessed July 10, 2012, www.arl.org/stats/annualsurveys/arlstats/statxls.shtml; Association of Research Libraries, "Annual Tables from the ARL Statistics," accessed July 10, 2012, 2009–2010, http://publications.arl.org/ARL-Statistics-2009-2010. This data excludes directional transactions.

3. See, for example, Sarah Barbara Watstein and Steven J. Bell, "Is There a Future for the Reference Desk? A Point-Counterpoint Discussion," *Reference Librarian* 49, no. 1 (2008): 1–20; David S. Nolen, "Reforming or Rejecting the Reference Desk: Conflict and Continuity in the Concept of Reference," *Library Philosophy & Practice* (May 2010), www.webpages.uidaho.edu/~mbolin/nolen.htm. Nolen provides an informative discussion of the debate that questions whether "pro-desk" and "anti-desk" arguments are diametrically opposed. It also includes a history of the desk debate.

4. Lynn A. Sheehan, "Re-Inventing Reference," in *Declaration of Interdependence: The Proceedings of the ACRL 2011 Conference* (Chicago: Association of College and Research Libraries, 2011): 384–89.

5. Ibid., 384.

6. Patricia Bravender, Colleen Lyon, and Anthony Molaro, "Should Chat Reference Be Staffed by Librarians? An Assessment of Chat Reference at an Academic Library Using LibStats," *Internet Reference Services Quarterly* 16, no. 3 (2011): 111–27.

7. For a description of the LibStats software, see Elizabeth Jordan, "Libstats: An Open Source Online Tool for Collecting and Reporting on Statistics in an Academic Library," *Performance, Measurement and Metrics* 9, no. 1 (2008): 18–25. For a detailed explanation of how LibStats was implemented in the GVSU Libraries, see Bravender, Lyon, and Molaro, "Should Chat Reference Be Staffed by Librarians?"

8. Amy Gratz and Julie Gilbert, "Meeting Student Needs at the Reference Desk," *Reference Services Review* 39, no. 3 (2011): 423–38.

9. Gabriela Sonntag and Felicia Palsson, "No Longer the Sacred Cow—No Longer a Desk: Transforming Reference Service to Meet 21st Century User Needs," *Library Philosophy & Practice* (February 2007), http://digitalcommons.unl.edu/libphilprac/111.

10. Scott Kennedy, "Farewell to the Reference Librarian," *Journal of Library Administration* 51, no. 4 (2011): 319–25.

11. Joyce A Meldrem, Lori A. Mardis, and Carolyn Johnson, "Redesign Your Reference Desk: Get Rid of It!" (paper presented at the National Conference of the Association of College & Research Libraries, Minneapolis, MN, April 7–10, 2005), www.ala.org/acrl/sites/ala.org.acrl/files/content/conferences/pdf/meldrem05.pdf.

12. Sonntag and Palsson, "No Longer the Sacred Cow."

13. Kennedy, "Farewell to the Reference Librarian."

14. Meldrem, Mardis, and Johnson, "Redesign Your Reference Desk."

15. Theresa S. Arndt, "Reference Service without the Desk," *Reference Services Review* 38, no. 1 (2010): 71–80.

16. Ibid., 77.

17. Debbi Dinkins and Susan M. Ryan, "Measuring Referrals: The Use of Paraprofessionals at the Reference Desk," *Journal of Academic Librarianship* 36, no. 4 (2010): 279–86.

18. Ibid., 285.

19. Ibid., 283.

20. Susan M. Ryan, "Reference Transactions Analysis: The Cost-Effectiveness of Staffing a Traditional Academic Reference Desk," *Journal of Academic Leadership* 34, no. 5 (2008): 389–99.

21. Ibid., 396.

22. Russell F. Dennison, "Usage-Based Staffing of the Reference Desk: A Statistical Approach," *Reference & User Services Quarterly* 39, no. 2 (1999): 158–65.

23. It is assumed that some reference transactions were not recorded, so this number represents the minimum number that occurred during the study period.

24. Lynn S. Connaway and Ronald R. Powell, *Basic Research Methods for Librarians* (Santa Barbara, CA, 2010): 223.

25. Bravender, Lyon, and Molaro, "Should Chat Reference Be Staffed by Librarians?"

26. Reference activity on Fridays in the Steelcase Library has traditionally been low so staffing on Friday is different than on Monday through Thursday. It is shown separately in table 3.

27. J. Richard Landis and Gary G. Koch, "The Measurement of Observer Agreement for Categorical Data," *Biometrics* 33, no. 1 (1977): 159–74, 165.

28. Based on quantitative data kept by means of hash marks before 2008 and confirmed by data recorded in LibStats since 2008, reference activity in the Steelcase Library is traditionally highest in fall semester, lower in winter semester, and very low in spring/summer semester.