

Testing Classification Systems for Reference Questions

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Two reference question classification systems were tested using data from a small academic library. Results indicate that a skill/strategy-based approach, rather than a system based on resources used or time allocated per question, leads to more consistent classification and provides a more accurate reflection of today's reference desk activity.

Technology has changed the nature of reference desk inquiries significantly. The functions of the library are increasingly being combined with those of computer centers to form Information Commons.¹ In addition to electronic collections and resources, libraries regularly offer services such as word processing, open Internet searching, e-mail and chat services, printing, and photocopying. Providing support for wireless networks, along with hardware and software troubleshooting, are services that are often managed by reference staff. Students are asking questions about increasingly sophisticated computer operations and software functions along with their more traditional informational queries. Many of these questions do not always fit well into the original definitions of reference help and require a very different skill set to answer them adequately. At the authors' own institution, discussions over how to record these new requests

demonstrated frustration and a lack of consistency when using the current classification system.

In 2001, Warner reported a new classification system for reference questions. Her institution, a health sciences library, was undergoing a physical redesign and consolidation of the circulation and reference service desks, and, concurrently, was assessing staffing and collection needs. The staff was having trouble recording query statistics and separating reference or information questions using traditional definitions.²

Many libraries depend heavily on statistics for planning and managing reference services and assessing the value and usefulness of the library's collection. The statistics must also reflect the increasing responsibility libraries are assuming for providing other campus-wide services such as computing facilities.³ For accuracy's sake, statistics must be collected in a clear and consistent fashion by the staff. Classifications of questions must be distinguishable and understandable if results are to be used effectively for planning and evaluation. This study analyzes reference data collected over five semesters at an academic library comparing Warner's new classification system as reported in the literature to the traditional definitions of reference questions.

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LITERATURE REVIEW

Classification of reference queries is not a new trend. In the 1870s, librarians attempted to create statistical categories that would allow standardization when reporting library activity.⁴ In 1935, a group of public librarians attempted to reach a common understanding on how reference services should be measured and compared.⁵

The major national statistical reporting units generally agree on the definition of a reference transaction. The Association of Research Libraries (ARL), the National Center for Education Statistics (NCES), the American Library Association's (ALA) Office for Research and Statistics, and ALA's Reference and User Services Association (RUSA) all use an exact or slightly modified version of the National Information Standards Organization (NISO) standard: "An information contact that involves the knowledge, use, recommendation, interpretation, or instruction in the use of one or more information sources by a member of the library staff."⁶

Classification of information questions is important not only to analyze work flow in a particular library but also to provide comparisons with peer organizations and to evaluate national trends. To compare reference activity accurately, standardization of defined categories is essential. Any new classification definitions must be compatible with these national reporting systems.

Traditional reference question categories are described in detail in Katz's *Introduction to Reference Work* as directional, ready reference, specific-search questions, and research.⁷ Directional questions are self-evident: where is the library catalog? Do you have a photocopy machine? Where are the bathrooms? Ready reference usually refers to those questions that may require the use of a standard reference work such as a handbook, almanac, dictionary, or directory. Specific-search questions may involve demonstrating how to use book catalogs and electronic databases to find information on a well-defined research question such as opposing viewpoints of current issues. This category of questioning may actually evolve into the fourth category, "in-depth research question." The research question often requires the services of a subject specialist or exploring resources that are not common or readily accessed.

Literature evaluating various types of electronic reference—chat, e-mail, or instant messaging (IM)—abounds. As part of the overall effectiveness of these services, authors have also tried to categorize the nature of the questions received.⁸ Several authors have described new categories to reflect not only the uniqueness of electronic refer-

ence queries but also the wide range and variability of the questions posed by users. Diamond and Pease divided transactions into eleven categories including catalog searches, library policies, collection scope, connectivity questions, and database searching techniques.⁹ Exploring the type of questions received by their archival library via e-mail, Duff and Johnson redefined and reorganized some traditional categories into new ones that better fit their organization: administrative/directional, fact-finding, material-finding, service requests, and consultation.¹⁰ Sears uses Katz's classifications but adds two categories based on policy and procedural questions, such as database instructions.¹¹ She also more clearly defines the directional category. Warner poses an interesting new classification scheme based on skill or strategy requirements to address questions rather than on length of time it takes or resources used to answer a question.¹² The four categories she developed are non-resource, skill, strategy, and consultation. Non-resource questions include directional, policy, or general practice. Skill-based questions include many computer related queries as well as some simple reference questions. The strategy classification requires the development of a more sophisticated search strategy and may require multiple sources. Consultation describes a question that requires in-depth efforts or perhaps the attention of a subject specialist. Desai analyzes questions received through an IM service using both Katz's and Warner's categories.¹³

Creating reference classification categories is not an easy task and often leads to debate and even confusion. Public librarians in the 1935 study expressed a "wide divergence of opinion as to what might be considered a reference question."¹⁴ More recently, a number of academic libraries provided their reference staff with detailed instructions on what kinds of questions should be counted as well as examples of the types of questions that fit into their preferred categories.¹⁵

Taking all of these factors into account, Warner's classification system appears to be an easily understandable method that allows for new trends in reference inquiries while still providing flexibility so that the data can be incorporated into national classification standards. Therefore testing of the Warner classification system in a general academic library is justified.

METHODOLOGY

The University of South Florida St. Petersburg is a small public institution serving approximately five-thousand students and offering both under-

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Table 1

Katz Classifications	Descriptions / Examples
Direction	General or directional information; rarely requires more than geographical knowledge of key locations; for example, where is the catalog?
Ready Reference	Requires single, straightforward answer such as those found in standard reference works in print or online; for example, how long is the Amazon River?
Specific-search Questions	Query usually requires multiple resources; for example, where can I find information about gender bias in business?
Research	Lengthy detailed assistance; may require a specialist.

Table 2

Warner Classifications	Descriptions / Examples
Level 1 Non-resource-based	Does not require a resource to answer; might be addressed by signage or help sheet; directional or policy questions; for example, how late are you open?
Level 2 Skilled-based	May require a demonstration to answer; "how-to" questions; for example, how do I download to a disk? How can I find a video in your catalog?
Level 3 Strategy-based	Formulation of a strategy is required and selection of resources. May require individual subject approach; for example, I need articles on cancer and nutrition.
Level 4 Consultation	Longer encounters outside the regular desk duty; research recommendations or report preparation for consultation; for example, what criteria should I use to evaluate a Web site?

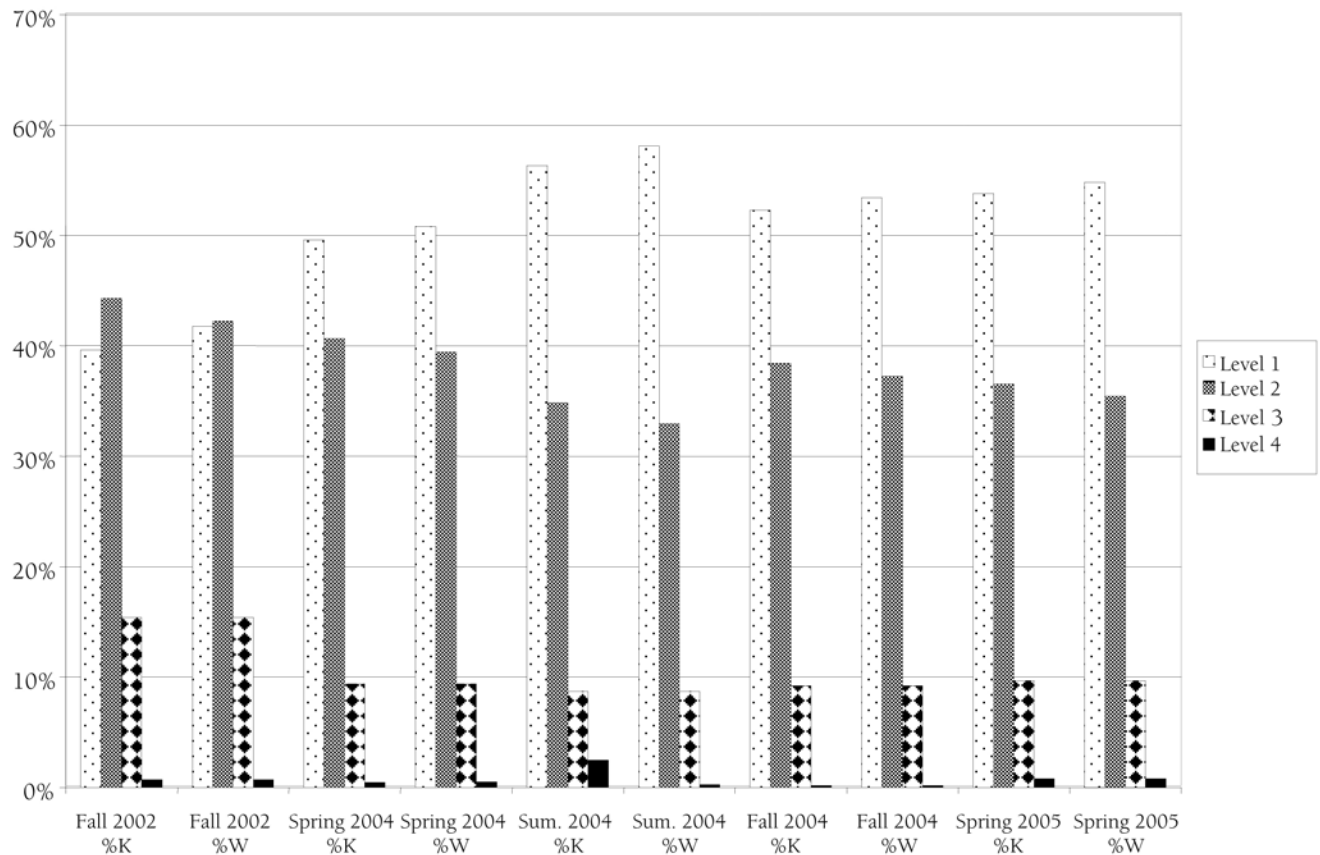
graduate and graduate degrees. The library has a staff of eight professionals (MLS), three administrative professionals, and eleven paraprofessionals. The reference desk is staffed by professional librarians seventy-four hours a week, including nights and weekends. The reference department provides access to the university's online catalog, the open Internet, and an extensive electronic collection of journals, books, and reference materials through thirty-nine personal computers located near the reference desk. Wireless access is available through most of the library building. Microsoft Office applications such as Word, Excel, PowerPoint and Access are also available to students on the library machines. In addition, the USF system uses the course management software Blackboard 6.1 Learning System. The reference computer area is very popular because it allows the students to accomplish both their information research and word processing needs while still within easy access to library personnel if they have questions. Assistance is no longer limited to help with library resources. Students routinely ask for help manipulating productivity software, troubleshooting Web site access, and solving their hardware and software issues.

Although interactions at the reference desk are usually recorded by a simple tick mark on a spreadsheet, the authors recorded all of the actual questions they received during their shifts at the reference desk during the fall 2002 semester and, again, from the spring 2004 through the spring

2005 semesters. For reasons discussed below, a total of 5572 (out of 6270) of those interactions were used for this study, accounting for 89 percent of the total number of questions collected by the authors. The 6270 questions account for 15 percent (6270 of 42181) of the total number of reference questions received by the entire reference staff during this same period. A smaller set of data was also collected during the summer of 2002 (142 interactions) as a precursor to the main study but was not included in the final analysis.

As this was a study to test the practicality and workability of a new system in our library, a compilation of the total number of questions received by all reference librarians at the desk was not critical for the comparison. It would have been impractical to include the entire reference staff in the data collection portion of the study. A great deal of time would have been required to train all of the librarians in a new system and in the labor intensive recording methodology. By using the questions received by the authors during their regularly scheduled reference shifts, it was possible to collect a wide variety of questions over the course of the day, week, and semester that could be used as a test sample for the comparison of the classifications systems.

During the data collection period, a substantial number of interactions at the reference desk involved signing up non-USF individuals for open-use computers. These people fell into one of two categories. "Affiliates" are defined as those

Table 3. Distribution of Types of Questions by Semester (K=Katz levels; W=Warner levels)

persons who work for private institutions, government agencies, neighboring educational institutions, other college and university students, alumni association members, and Library Friends members whose organizations have collegial relationships with the University of South Florida St. Petersburg. “Community users” are defined as persons from the general population with no particular ties to the university but who desire to use some of the resources and facilities. During the course of this study, the library’s policies regarding community computer use changed considerably. These community sign-up interactions were excluded from the analysis to avoid skewing the other data. Nonetheless, these transactions (11 percent, 698 of 6270) represented interactions that need to be considered in training and staff planning.

Each question was recorded in a database with parameters noted such as semester, day of week, and general time of day (early morning, morning, lunch, early afternoon, etc.) Keywords and overall subject area category were assigned using terminology compiled by the authors. The authors independently examined the questions

and assigned two classification codes representing the criteria defined by either the Katz or Warner classifications. Initially, any question that did not seem to fit one of the categories was marked for further evaluation and consultation. When both authors had completed their individual analyses, the codes were compared for discrepancies. The authors then jointly reviewed all questions and finalized entries.

RESULTS

Comparison of Classification Systems

The Katz classification levels are based on resources used to assist the user and the time spent on questions. These levels are described in table 1.¹⁶ Katz acknowledges the difficulty of classification, noting that questions may often morph into another category.¹⁷ This represents a significant problem for those who must keep statistics and underscores the importance of finding a classification system that is easier to employ consistently by staff members. For the purposes of this study, Katz’s levels are referred to as K1 through K4.

Table 4. Further Clarifications of Question Levels

Warner	Katz
<p>W1. Non-resource-based In addition to the previous description, further qualifications include:</p> <p><i>W1A. Interpretation and enforcement of policy</i> <i>W1B. Access secure location only librarian is allowed</i></p>	<p>K1. Directional In addition to the previous description, further qualifications include:</p> <p><i>K1A. Policy questions</i> <i>K1B. Interpretation and enforcement of policy</i> <i>K1C. Access secure location only librarian is allowed</i> <i>K1D. Borrow supplies</i></p>
<p>W2. Skill-based No need to expand interpretation</p>	<p>K2. Ready Reference In addition to the previous description, further qualifications include:</p> <p><i>K2A. Any technology-based short answer questions and maintenance on copiers, printers, etc</i> <i>K2B. Remote access problems or questions</i></p>
<p>W3. Strategy-based No need to expand interpretation</p>	<p>K3. Specific-search questions No need to expand interpretation</p>
<p>W4. Consultation No need to expand interpretation</p>	<p>K4. Research No need to expand interpretation</p>

Warner’s system moves away from specific resources and time spent and looks at skills and strategies. These levels are described in table 2 and were recorded as W1 through W4 during this test.¹⁸

Table 3 represents the distribution of question types during each semester data was collected. The most common class of questions overall was the directional (K1) or non-resource-based question (W1), averaging 50% or more of the total. This average is similar to Katz’s projected range of 30–50% and Warner’s reported 46%.¹⁹ The second level of question comprised 30–40% of the total questions. Katz’s estimated range of “ready reference”(K2) is 50–60% while Warner’s “skill-based” (W2) averages 40%.²⁰ Finally, in this study, strategy-based questions (W3) accounted for fewer than 10%, similar to Warner’s findings of 12%.²¹ The distribution of question types is fairly consistent. There appears to have been a slight increase in level 1 questions during the summer semester, when courses are considerably compressed. Students may require more guidance in directional or policy issues, since the university enrolls a number of temporary students during the summer. With this exception, the types of questions from semester to semester are fairly consistent. An important issue then becomes the ease-of-use and accuracy of the system.

One of the most striking findings of this exercise was the number of discrepancies between

the authors/reviewers during the initial classification process. Using the Katz system, the reviewers originally recorded different codes for 3797 of the 6270 total questions (61%) collected during the entire recording period (fall 2002, and spring 2004 through spring 2005). Conversely, only 18% of the questions (1119 of 6270 total) differed between reviewers using the Warner system. It should be noted that the reviewers are experienced reference and instruction librarians who have provided various types of in-person, chat, and phone reference service to both academic and community patrons.

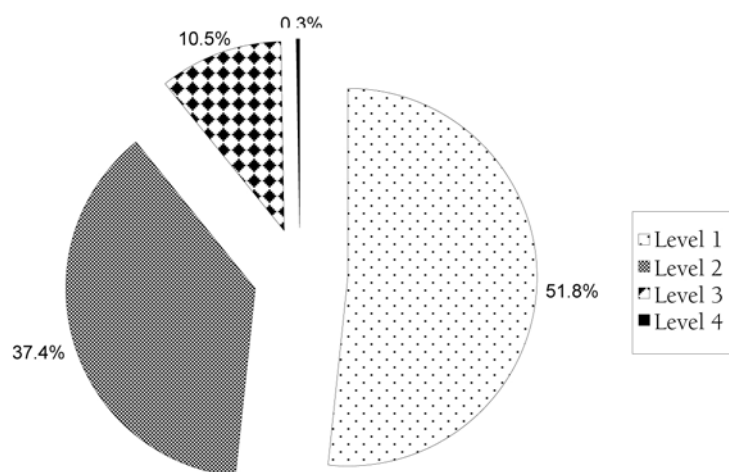
While discussing discrepancies during the final codification, the reviewers had to expand on the original descriptive elements of some of the levels (table 4). In trying to “fit” some questions into the first two Katz levels, the authors had to make significantly more adjustments than was needed to apply the Warner level 1 classification. For example, policy questions and interpretations accounted for 259 (5%) of the 5572 questions recorded. Technical or computer assistance comprised about 32% (1766 of 5572) of the questions received at the desk. These types of interactions are not specifically addressed by the “directional” or “ready reference” descriptions used in Katz. In contrast, fewer than 3% of the Warner level 1 questions were difficult to place. Warner’s levels 2–4 seemed to pose no problems during the assignment stage nor did Katz’s last two levels.

Table 5. Percent of Categories of Questions

Category	Number	% of Total	K Level	W Level
Access (computer equipment & programs)	159	2.9	K1	W1
ADA	12	0.2	K1	W1
Assist at circulation	39	0.7	K2A	W2
Change (cash)	36	0.6	K1	W1
Check location	20	0.4	K1	W1
Copy/print problems	285	5.1	K1	W1
Database—basic	41	0.7	K2	W2
Database—search strategy	193	3.5	K3	W3
Directions (campus & local sites)	107	1.9	K1	W1
Directory, basic	73	1.3	K2	W1
Directory, advanced	19	0.3	K2	W2
Explain library service	212	3.8	K2	W2
Full text (acquiring)	40	0.7	K2	W2
General Information	556	10.0	K1	W1
Group study rooms	165	2.9	K1	W1
Handouts	31	0.6	K1	W1
Instruction	74	1.3	K3	W3
Library locations	515	9.2	K1	W1
OPAC Lookup—advanced	65	1.2	K2	W3
OPAC Lookup—basic	639	11.5	K2	W2
Policy	216	3.9	K1A	W1
Policy enforcement	43	0.8	K1B	W1A
Reference query	211	3.8	K3	W3
Reference query—advanced	15	0.3	K4	W4
Referral to other offices	266	4.8	K1	W1
Remote access to databases	98	1.8	K2B	W2
Safe/key/security	18	0.3	K1C	W1B
Sign up—affiliate	263	4.7	K1	W1
Supplies	182	3.3	K1D	W1
Technical assistance	961	17.2	K2A	W2
Troubleshooting location	18	0.3	K2	W2
Total	5572	100		

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Table 6. Average Distribution of Warner Levels 1–4



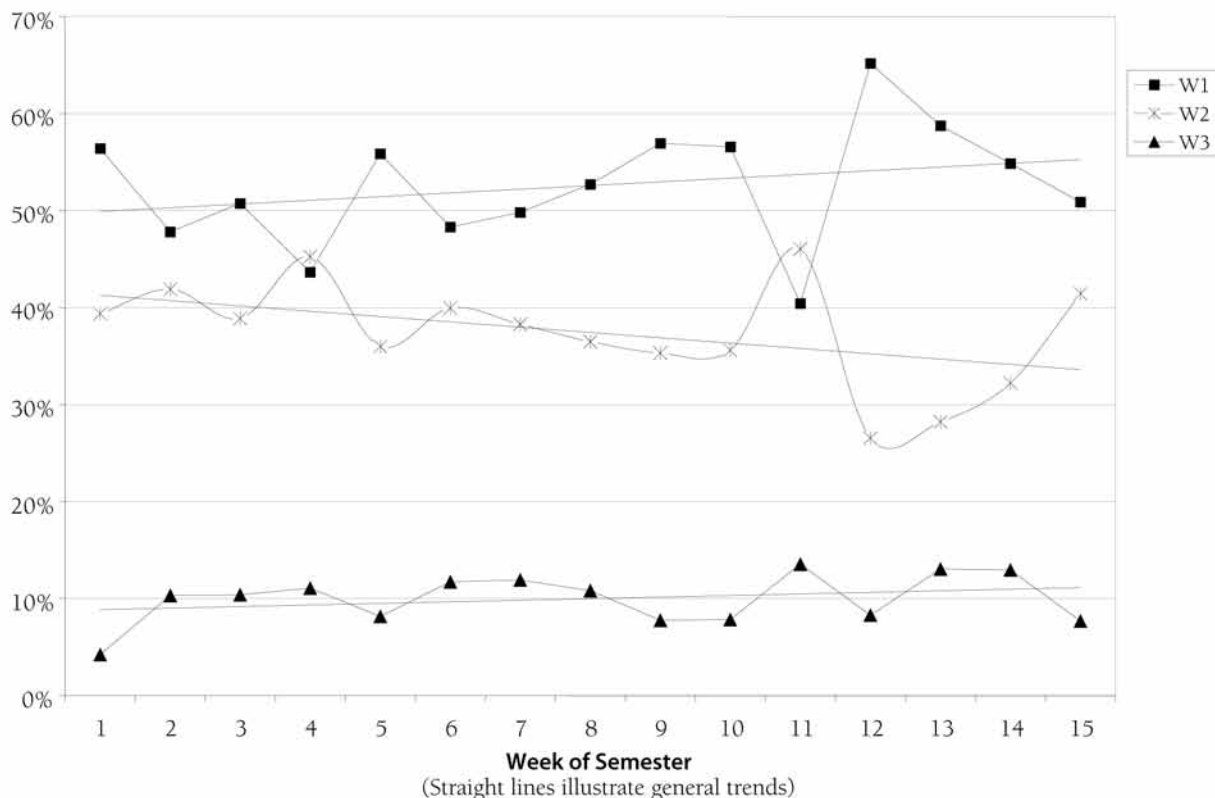
Utilizing Warner's Classification

During the analysis, questions were assigned categories to reflect the subject of the query (see table 5). These categories were then analyzed to recommend staffing levels that might be needed to answer different types of queries. Basic and advanced database searching (4%, 234 of 5572), advanced

catalog searching (1%, 65 of 5572), multifaceted reference questions (4%, 226 of 5572) and instruction (1%, 74 of 5572) offered from the desk are the types of queries that are normally best handled by professional reference librarians. Sometimes simple questions may lead to more complex searches, but, overall, the results of this study strongly indicate that the time that MLS-degreed professionals spend staffing the desk may need reexamination. Librarians at Stetson University came to a similar conclusion during their 2005 analysis of sources used to answer their reference queries. They reported a large number of very basic or general questions.²² If routine questions can be answered by paraprofessionals during

less-busy times, librarians would have more time to devote to myriad responsibilities including classroom instruction, collection development, liaison work, and scholarly activities that may result in presentations, publications, or other types of contributions to their professional literature and societies.

Table 7. Distribution of Warner Levels 1–3 by Week of Semester (Spring 2004–Spring 2005)



General and skill/technology-based questions (W1 and W2) may not necessarily require a master's degree in library science. A paraprofessional library staff member could address many general and technology related questions. The strategy based levels (W3 and W4) more obviously fall within the responsibility of degreed professionals but comprise less than 11% of the total number of questions in this study as demonstrated in table 6.

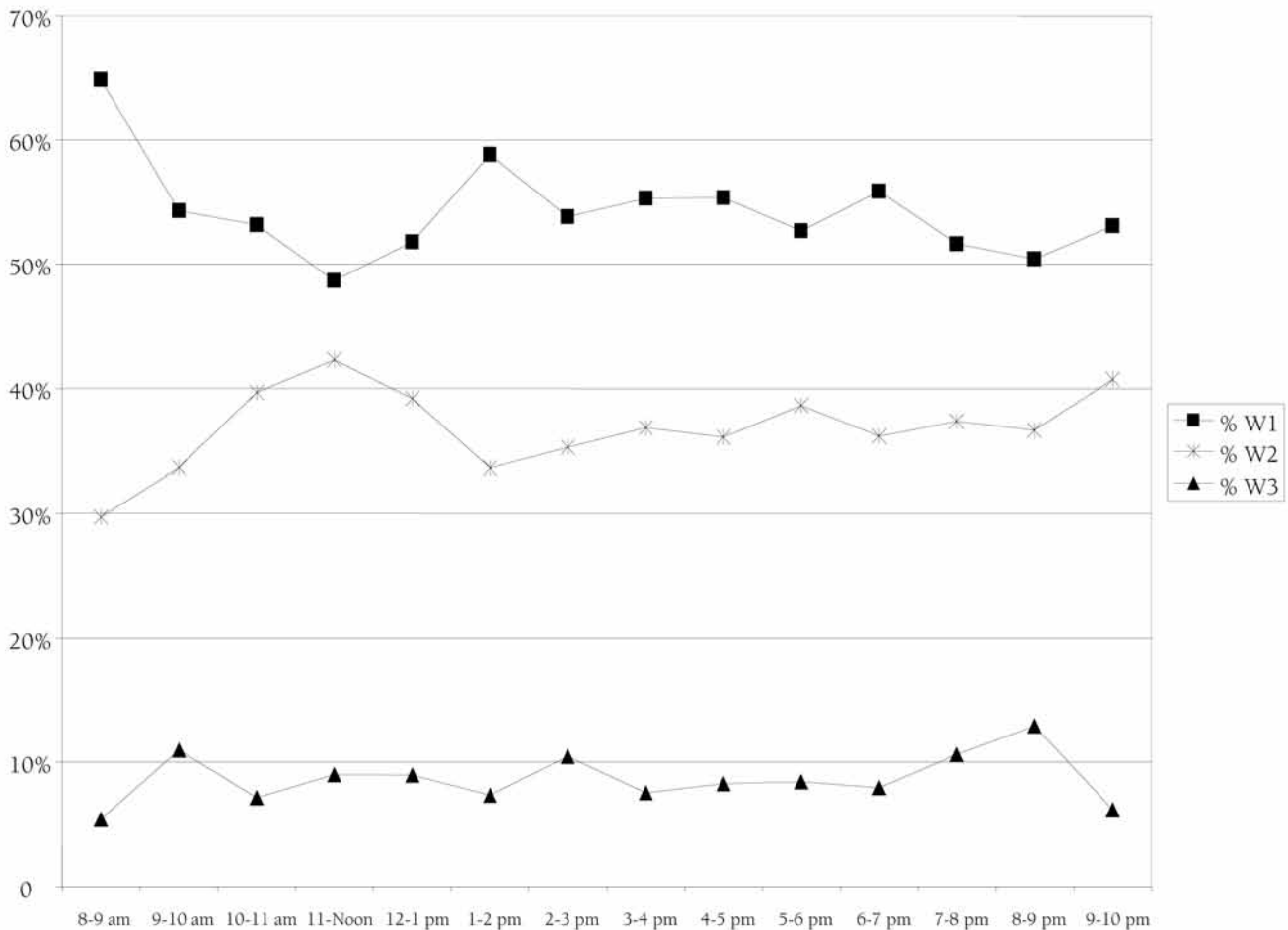
The Microsoft Excel Trend function was applied to the data illustrating desk activity by the week of the semester. Data from four consecutive semesters (spring, summer, and fall of 2004 and spring 2005) were plotted. While the linear trend function (method of least squares) is not a rigorous predictor of fit, this measure may be used to explore possible patterns in the types of questions asked at the reference desk over the course of a typical semester.²³

Unfortunately, examining the number and types of questions in this study does not clearly indicate a specific time of the semester when

an MLS-degreed professional is most needed. In table 7, there is only a hint of an increase in the volume of research-related questions as semesters progress. Technology-based questions appear to decrease slightly over the course of the semester as students become more comfortable with various library resources. There is considerable variability in the number of general questions asked during this time frame making predictions difficult; however, trend analysis of individual semesters (not shown here) indicated that general questions, including policy questions, referrals, and directions, increase slightly each semester.

In studying the questions received over the course of a fourteen-hour day, no definite patterns emerge revealing when it would be most helpful to staff the desk with a degreed professional (table 8). The hourly distribution of questions during the course of a day does not indicate a significant change in question type as the day progresses, although an interesting tilt upward in W1 and W2 questions at the very end of the library day has been unofficially termed "the closing syndrome."

Table 8. Distribution of Warner Levels 1–3 by Hour of Day



Students become aware that time is running out and realize that they may still need to save and print documents, borrow a stapler or paper clip, or other similar final tasks.

DISCUSSION

In an early study of reference questions asked at nine major public library systems in 1935, 83% of the questions asked were considered informational with only 8% classified as research (with research being defined as needing the assistance of a specialist).²⁴ According to the current study, the frequency of research-related reference interactions at an academic library is only slightly higher than that of a public library. This comparison emphasizes that the type of interactions formerly identified as directional or ready reference has been replaced significantly with technology and skill-based questions.

One important factor that is not obviously addressed by any classification standard is how to report information that the librarian and the paraprofessional staff carry in their heads, such as their experience and understanding of library policy and its enforcement and their knowledge of local computer and technology systems and software applications including troubleshooting and instructing students in its use.²⁵ Librarians also deal daily with complex printing and copying services and are adept at combining services where circulation, reference, and computing are all merged into one functioning service point. This type of interaction cannot always be solved readily by handing a library user a piece of paper or picking up a reference book. The librarian and the paraprofessional should be considered more than just another “informational source.” Reference librarians at Stetson University found that they were answering an amazingly high number of questions with knowledge coming directly from information that was gained by experience. These types of questions accounted for 23.6% of the total queries that they received during their study.²⁶

As mentioned earlier, any new method for compiling statistics must work within the constraints of the national reporting systems. The Academic Library Survey of 2004 and the ARL survey do not include directional questions (Warner classification W1) in their survey requests.²⁷ While Warner classifications W3 and W4 provide a nice fit into the national reference transaction definitions, classification W2 might be more difficult to categorize since the national definitions do not specifically consider technology skills. But, since many of the W2 transactions involve instructing

users on the proper use of productivity software or library systems, it seems reasonable to include this classification into the national reference transaction definition as well.

CONCLUSIONS

Statistics are only meaningful if they reflect reality. As evidenced by the discrepancy rate and categorization of questions, adopting a new classification system would seem warranted to make identification more exact and relevant to today's reference desk. Because the library's “resources” include so many electronic and technological items, Warner's system appears more applicable. Decisions concerning staffing and training depend on an accurate portrayal of the activity at the desk. Perhaps it is time to reassess the term “information sources” to something more expansive both institutionally and nationally.

At the authors' institution, the results of this study have encouraged the public services department to reexamine desk scheduling and the classification system currently in use. Although the library plans to expand the number of physical hours it is open, hours of operation at the reference desk are being slightly reduced. An on-call system and the use of a savvy, part-time technology assistant are being explored. Along with these changes, an adaptation of the Warner system has been implemented to provide the basis for new criteria for classifying queries. The new system seems to be working quite well at the Poynter reference desk, but a follow up will be conducted to analyze the impact, if any, on the reference desk staff. A second study is already underway to invite reference staff (both at the authors' institution and other institutions) to participate in a similar comparison test of the two classification studies in an effort to validate these findings. Additional studies using the Warner system would be valuable if they can reveal more definitive trends relating to time-of-day and time-of-semester transactions.

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