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A Repeated Survey Analysis of AskERIC User Survey Data, 1998-2002

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Abstract

Four surveys of users of the AskERIC email reference service were conducted, during the years 1998, 2000, 2001, and 2002. These surveys presented a snapshot of the AskERIC user population and user satisfaction at a single point in time. This paper reanalyzes the findings from these surveys utilizing repeated survey techniques. This paper presents the evolution of some of the demographics of AskERIC's user population over time, as well as the evolution of AskERIC user behavior. As perhaps the oldest AskA service in existence, this analysis of AskERIC data sheds light on the evolution of all AskA services, and of email-based reference services in general.

Introduction

The Educational Resources Information Center (ERIC) (www.eric.ed.gov), funded by the U.S. Department of Education, has been providing access to literature on education research and practice since 1966. At the heart of ERIC is the largest education database in the world, containing more than a million bibliographic records. The mission of the ERIC system is to improve American education by increasing and facilitating the use of educational research and information to improve practice in learning, teaching, educational decision making, and research, wherever and whenever these activities take place (ERIC Annual Report, 2002).

An excellent and thorough history of the ERIC system may be obtained by reading Burchinal (2000). In January 2004, however, the Department of Education implemented a reengineering plan for ERIC. The ERIC database continues to exist, but the ERIC system is no longer the nationwide information network that it formerly was. The ERIC system was formerly composed of 16 subject-specific clearinghouses, associated adjunct clearinghouses, and support components, all of which have been closed. AskERIC too has been discontinued.

AskERIC was a personalized Internet-based reference service providing education information to teachers, librarians, counselors, administrators, parents, and anyone interested in education throughout the United States and the world. AskERIC began in 1992 as a project of the ERIC Clearinghouse on Information and Technology and was, until its dissolution, one of several projects under the umbrella of the Information Institute of Syracuse (IIS) at Syracuse University. While operational, AskERIC encompassed the resources of the entire ERIC system and beyond, and used the subject expertise of the 16 ERIC Clearinghouses to respond to patrons' requests for education information. AskERIC served an average of 35,000 users a year.

Background

Digital Reference

The term "digital reference" is used in this paper, rather than the equally popular and nearly synonymous term "virtual reference." In her book *The Virtual Reference Librarian's Handbook*, Lipow (2002) acknowledges that there has to date been little agreement in the use of these terms. She defines the term digital reference broadly to indicate "a broad range of electronic reference activities that include creating and managing digital reference resources… *as well as* providing personalized reference service *via* the Internet" (p. xix), and the term virtual reference more narrowly to indicate only reference service provided *via* synchronous technologies: chat, instant messaging, voice over IP, etc. Lipow's distinction between these terms will be maintained in this study, as the service formerly offered by AskERIC with which this study is concerned was limited to asynchronous interactions – digital reference conducted *via* email or webforms. It should be noted that the AskERIC Live! Service was offered from late 2001 until AskERIC's dissolution. The AskERIC Live! Service was a chat-based service utilizing the 24/7 Reference software (www.247ref.org). Thus AskERIC made inroads into the arena of *virtual* reference in addition to its longer-standing *digital* reference services. The AskERIC Live! Service was, however, not the object of any of the surveys reanalyzed for this paper, and will not be discussed further.

The earliest digital reference services were offered *via* email, as outgrowths of existing reference desk services in academic and special libraries (Kittle, 1985; Howard and Jankowski, 1986; Weise and Borgendale, 1986; Roysdon and Elliott, 1988; Hodges, 1989; Bristow, 1992; Still and Campbell, 1993). These digital reference services were developed both to extend the hours of availability of the reference desk, and to experiment with the new technology provided by campus-wide networks. Many physical reference desks – in academic, special, and public libraries – continue to offer email-based reference services. Almost as soon as the technology became available to create a webform, digital reference services began utilizing webforms for question submission

(Lankes, 1998a; Lagace, 1999). Since that time, the percentage of questions submitted to services *via* webforms has far outstripped the percentage submitted *via* email (Carter and Janes, 2000; Janes, Hill, and Rolfe, 2001).

In the early- to mid-1990s, reference services began to appear on the Internet that were not affiliated with a library, either physical or digital (Bushallow-Wilbur, DeVinney, and Whitcomb, 1996; Philip, 1997). Lankes (1998a) refers to services of this type of reference service as "AskA" services, "such as Ask-A-Scientist" (p. 9), since most services of this type specialize in a particular subject: for example, art (Ask Joan of Art, nmaa-ryder.si.edu/study/nav-joan.html), education (AskERIC), mathematics (Ask Dr. Math, mathforum.org), oceanography (Ask Shamu, www.seaworld.org/ask-shamu), etc. Having started in 1992, AskERIC was the first AskA service, followed by the Internet Public Library, started in 1995 (LeJeune, 1997).

AskA services arrived on the reference scene with little fanfare. Indeed, even innovators in the field took some time to recognize that there were unique aspects to AskAs that set them apart from digital reference services in general: Lankes and Kasowitz (1998) wrote that "digital reference services are also referred to as AskA services" (p. 8). By the turn of the millennium, however, AskA services had been established as unique, so that Janes, Hill, and Rolfe (2001) could declare that AskA services "are human mediated, nonlibrary, commercial, or noncommercial information service projects that offer self-declared expert answers to user questions in innumerable subject areas, for free or for fee on the World Wide Web" (p. 1106). By specifying that AskA services are unaffiliated with libraries, Janes, Hill, and Rolfe set them apart as a unique type of service, separate from the digital reference service offered by libraries.

As of this writing, AskA services have existed for just over ten years. In that time, there have been surprisingly few studies of AskA services specifically, as opposed to digital reference services affiliated with a library. Indeed, it was not until AskA services had been in existence for some years that anything was written about them at all. Much of the earliest literature on AskA services concerns the technical details involved in building

and maintaining them (Lankes, 1998a, 1998b; Lankes and Kasowitz, 1998; Janes et al., 1999). To date, only two studies exist that investigate AskA services specifically, rather than digital reference services affiliated with libraries. The first of these studies (Lankes, 1998a) decomposes the processes employed by six AskA services to acquire questions, handle questions within the service, and output answers to the users. The second of these studies (Janes, Hill, and Rolfe, 2001) investigates the types of services offered and offers a variety of performance measures for these services.

The fact that these two studies of AskA services focus on the provision of the service itself is an indication that, even in these early days of the study of AskA services, there is already a trend towards measures for evaluating the quality of these services. In the past few years, a number of researchers and practitioners have begun to formulate measures for the evaluation of digital reference services. Kasowitz, Bennett, and Lankes (2000) present twelve characteristics that they suggest may be used to judge the quality of a digital reference service; these twelve characteristics form the basis of the Virtual Reference Desk Project's Facets of quality (www.vrd.org/facets-06-03.shtml). White (2001) presents a framework for the analysis of a digital reference service, which includes twelve questions grouped into three categories concerning the quality of the service. McClure et al. (2002) presents thirty-five measures that may be used to assess various aspects of digital reference services. There is naturally some overlap between these various frameworks.

There have, however, to date been no studies published of the user population of digital reference services. When the user is even mentioned in studies of digital reference services, the user is equated with the question – that is, such studies proceed as if the only information that the service has about the patron is what is collected with the question. This is often true, since if the librarian sends a follow-up email to the patron asking for clarification, the patron frequently does not reply. Further, there have been no longitudinal studies (at least none that have been published) of the changing face of this user population, or of the services themselves. All existing studies of digital reference services are snapshots of a service at a particular point in time, evaluating the services

offered at that point in time. This reanalysis fills that gap in the literature on digital reference services, by providing a longitudinal analysis of data collected both about the service and about the use made of that service by its patrons.

AskERIC Surveys

Four surveys of users of the AskERIC email reference service were conducted, during the years 1998, 2000, 2001, and 2002. The 2000 and 2002 surveys were designed to study users' satisfaction with the AskERIC email service, while the 1998 and 2001 surveys were designed to study the composition of the AskERIC user population. These surveys were conducted primarily for internal use within AskERIC and the ERIC system: the results of these surveys were utilized by the AskERIC service as a feedback mechanism for improving the service, and were reported on at annual ERIC system meetings. What was made publicly available were executive summaries of the 1998 and 2000 surveys, which were published on the AskERIC website.

These reports were designed to be standalone surveys, the data from which presented a snapshot of the AskERIC user population and user satisfaction at a single point in time. This paper reanalyzes the findings from these surveys utilizing repeated survey techniques. Although these surveys were not designed with this purpose in mind, many questions on the surveys are repeated from one year to the next, thus making the use of repeated survey techniques possible. The purpose of this reanalysis is twofold: first, as a means to gather data about digital reference user demographics and satisfaction, so that this data may be utilized by the many other digital reference and AskA services in existence, to improve the service provided. Second, as perhaps the oldest AskA service in existence, AskERIC may be viewed as a revelatory case (Yin, 2003). Yin's definition of a revelatory case includes the element of being "previously inaccessible to scientific investigation" (p. 42). While AskERIC has been in existence for a decade, this survey data has not been previously accessible for reanalysis. This reanalysis is not a case study, but it also fulfills the other criteria for being a revelatory case: a study of the evolution of

AskERIC is "worth conducting because the descriptive information alone will be revelatory" (p. 43) of the evolution of digital reference services.

Methodology

The findings from the four AskERIC surveys were reanalyzed utilizing repeated survey techniques. Firebaugh (1997) states that "repeated surveys ask the same questions to different samples of people" (p. 1). The AskERIC surveys were designed to be "one-off" surveys, to provide a snapshot of certain aspects of the state of the AskERIC service at a particular point in time. As a result, consistency of questions from one year to the next was not the primary concern in creating these surveys. Furthermore, these surveys were created by committee, and each committee had a different set of priorities regarding what questions should be asked and what questions from previous years should be redesigned or dropped. Nevertheless, several questions on the surveys were in fact consistent from year to year. It is the data from these repeated questions only that are reanalyzed in this paper.

In conducting repeated surveys, the samples are generally non-overlapping, such that each sample is composed of entirely new individuals from the population. It is not possible to know whether the samples for the AskERIC surveys were entirely non-overlapping, since personal information such as name and email address was removed from the data before it was analyzed for the original reports, and could not be reconstructed for this reanalysis. It is, however, unlikely that there were individuals who responded to AskERIC surveys in more than one year. According to the 2002 ERIC Annual Report (Educational Resources Information Center, 2002), AskERIC received 34,181 email requests in 2001. There is of course no way to know if these 34,181 requests were submitted by 34,181 different individuals or if – as seems likely – there were some repeat users from one year to the next.

AskERIC received equally large numbers of requests in the other years in which surveys were conducted: 43,405 in 1998, 38,157 in 2000, and 32,645 in 2002 (Jennifer Barth,

personal communication). Even if approximately half of all AskERIC users are repeat users, as is indicated by the numbers in Table 3, there is still a very small chance that any individuals responded to AskERIC surveys in more than one year. Each of these surveys was administered during a narrow window of time, so only a small fraction of the population of individuals who submitted questions in any given year were solicited for the surveys. Surveys that were sent via email were sent only once to any individual and repeat submissions by email from any individual were deleted prior to the original analysis. Surveys that were administered as webpages could be filled out more than once by any individual; however, any user who had already filled out a survey during the narrow window of time in which it was being administered would probably not be motivated to fill out another.

This reanalysis was therefore performed under the assumption that the samples of respondents were independent from year to year. The sample sizes for the four years in which the AskERIC survey was conducted are presented in Table 1.

Table 1: Survey Response Rates

	# Surveys Sent	# Surveys Received	Response Rate (%)
1998	689	196	28.4
2000	443	79	17.8
2001	NA	547	NA
2002: round 1	1,151	970	84.3
2002: round 2	752	143	19.0

The AskERIC service formerly maintained both a webform and an email address for question submission. The webform asked the user for certain personal data, such as “You are asking this question in your role as a(n),” and “If you are in the United States, what US State are you in?” When a user submitted a question directly to the email address, this data was of course not collected, unless the user stated it in his or her email message.

The methodology for sampling AskERIC users for the 1998 and 2000 surveys was the same: an email message was sent to every third user of the AskERIC service, three days after the user received a response from the service, whether they submitted a question via the webform or email address. This email message contained both a link to a webform containing the survey, and the text of the survey itself. The sampling methodology for the 2001 survey was different: for the span of a month, a link was conspicuously placed on most of the pages on the AskERIC website to a webform survey. Thus the 2001 survey was "pulled" by AskERIC users, rather than being "pushed" to them. The sampling methodology for the 2002 survey was different again: this survey was administered in two parts, over the span of two weeks. The first survey was sent to every user who submitted a question via the webform; this first survey appeared as a webform on the confirmation page that a user received when they submitted their question to AskERIC via the question submission webform. For the second survey, an email message was sent one day after the user received a response from the service; this email message contained both a link to a webform survey, and the text of the survey itself. A code was included in all survey responses so that the responses from both surveys could be paired for the same patron. For all of the surveys, respondents were instructed that they could fill out the survey electronically, or could print it out and submit it by mail or fax; respondents did in fact submit surveys by all available methods. Thus the 1998 and 2000 surveys were sent to a systematic sample from the user population (Fowler, 2002), the 2001 survey sample was self-selected, and the 2002 surveys were sent to all AskERIC users who submitted questions. Further, the 1998 and 2000 populations included users who submitted questions via both the web and email; the 2001 population included users who may or may not have submitted questions but were merely using the AskERIC website; the 2002 population included users who submitted questions only via the web.

Due to these differences in sampling frames and usage of the AskERIC website, it is possible that the user populations sampled for the 1998 and 2000 surveys, the 2001 survey, and the 2002 surveys differ. There is, however, no reason to hypothesize that this is the case – though to be fair, there is no reason to hypothesize that this is <u>not</u> the case either. In fact, there is no evidence either way: no studies have been conducted to

determine if there are differences between different segments of the populations of digital reference service users. While a self-selection bias exists when survey respondents are volunteers (as in the 2001 survey), it is not clear that these self-selected respondents – or any of the respondent pools for any of the surveys – are in any way unrepresentative of the population of AskERIC users as a whole.

A further limitation of the sampling methodology for all four surveys is the fact that survey respondents were self-selected, in that the surveys were self-administered, and therefore voluntary. As with most surveys, there was no way to force users to complete the AskERIC surveys. As Fowler (2002) recommends, the task of completing the surveys was made a simple as possible by creating them as webforms, by utilizing checkboxes and pull-down menus wherever possible on these webforms, and by providing links to the webform surveys in the email solicitations. Nevertheless, those users who decided to or not to complete the surveys was beyond the control of the AskERIC service.

A final limitation of the sampling methodology for the 1998 and 2000 surveys is the fact that those surveys were sent only to users who received a response from AskERIC. AskERIC, like many digital reference services, has question-swapping agreements with other digital reference services. AskERIC is a member of the Virtual Reference Desk (VRD) Network, which is both a question-swapping consortium and a digital reference service in its own right. The VRD's description of themselves states that:

> When a subject specific service receives questions which are out of its stated scope area, it can forward those questions to the VRD Network for assistance. If a question cannot be addressed by another participating service, it will be handled by one of the VRD Network Information Specialists (www.vrd.org/network.shtml).

There are a number of other such consortia, both national and local: The QuestionPoint collaborative reference is managed by the Library of Congress and OCLC, while the Metropolitan Cooperative Library System (MCLS) is an association of libraries in the

greater Los Angeles area. Of course, the specific services that are allowed to swap questions within these consortia are only those services that participate – as of this writing in March 2004 the VRD has thirty participants (Bennett, personal communication), MCLS has 44 full and 26 associate members (www.mcls.org/webpublic/libraries/libraries.cfm), and "over 300 libraries are using QuestionPoint, including users in Australia, Canada, China, England, Germany, the Netherlands, Norway and Scotland" (Penka, 2003, QuestionPoint section, ¶ 3).

Because the 1998 and 2000 surveys were sent only to users who received a response from AskERIC, any users who submitted questions that were deemed out-of-scope and forwarded to the VRD would not have been sent these surveys. Thus, the user population sampled for these surveys was composed exclusively of users who asked questions within the scope of educational research and practice, parenting, and library science. This same is true of the second 2002 survey, as this survey was also sent only to users who received a response from AskERIC. The first 2002 survey, on the other hand, was sent to all users who submitted questions via the webform, whether those questions were later deemed out-of-scope or not. The population from which the 2001 survey respondents came was broader still, being all users who visited the AskERIC website during the month in which the survey link was displayed. Again, however, because no studies have been conducted to determine if there are differences between different segments of the populations of digital reference service users, there is no reason to hypothesize that the population of users who submitted questions to the AskERIC service is significantly different than the population of users of the AskERIC website.

Results

As discussed above, repeated survey techniques were utilized in this reanalysis. The limitation of repeated survey techniques is that in order to be applicable, a survey question must actually be repeated. While many questions on the AskERIC surveys were not consistent from one year to the next, many questions did in fact repeat from year to year. It is the data from these repeated questions that are reanalyzed here.

Geographic Location

The question "If you are outside the United States, what country are you in?" is asked on the AskERIC question submission webform, yet data from this question was reported only for the 2000 and 2002 surveys. Additionally, although the AskERIC question submission webform provides the user with a pull-down list of the names of over 240 nations, the 2000 and 2002 reports collapsed the responses into two categories: Within the United States, and Outside of the United States. Although it would be interesting to know the specific breakdown of the percentage of users from various nations outside of the United States, that data was not preserved. Unfortunate though this may be, it is understandable given the fact that the mission of the ERIC system – as a project of the U.S. Department of Education – is to improve American education; the specific country in which a user is located, if it is not the United States, may therefore be seen to be irrelevant. Users' locations are presented in Table 2.

Table 2: User's Location

	Within the US	**Outside of the US**
2000	59	13
2002	291	160

Because of the large value of N in the 2 x 2 table for this data, the data from this question was analyzed using χ^2 corrected for continuity. The value of χ^2 corrected for continuity = 7.74, which is significant at the 0.05 level. In other words, there was a significant change in the relative percentages of AskERIC users within and outside of the United States from 2000 to 2002.

This finding is particularly interesting since AskERIC's contract with the U.S. Department of Education does not provide funding to market the service. A distinction is made, however, in that dissemination of information, in the form of publications, the

AskERIC web site, posters, brochures, bookmarks, and presentations at conferences is encouraged. This begs the question of how users come to know about the AskERIC service, but no data exists from the AskERIC surveys that may be used to answer this question. A further question is why an increasingly greater percentage of users outside of the United States are utilizing the AskERIC service while an increasingly smaller percentage of users within the United States are doing the same. No data collected by the AskERIC surveys can answer this question; an interesting avenue for future research would be to determine if the use of digital reference services is decreasing within the United States and increasing internationally across all services, or if AskERIC is a unique case in this regard. Further, it would be interesting to identify the specific nations whose citizens are submitting increasing numbers of questions, since the state of network infrastructure around the world improved considerably in many nations between 2000 and 2002.

Knowing the geographic locations of the users of a digital reference service is interesting, but given the electronic nature of digital reference services, it is unclear how useful such information really is. After all, it may be as easy for a user to lie about their location as to tell the truth – on the AskERIC submission form, for example, there is no mechanism to determine the veracity of a patron's responses (short of, for example, the patron specifying their state as North Carolina and their country as Bolivia). One method of verifying the location of the patron is that utilized by the KnowItNow24x7 digital reference service of the Cleveland, Ohio Public Library: the user is required to enter their zip code to use the service, thus attempting to insure that the patron is actually a resident of the Cleveland area. It would not, however, be difficult for a patron in North Carolina or even Bolivia to look up Cleveland area zip codes. It is therefore impossible to know with certainty that the user of a digital reference service is telling the truth when providing his or her location. This is, however, no different for any respondent of a self-administered survey; one simply has to take it on faith that one's respondents are truthful.

Janes (2002; 2003) proposes a reexamination of the role of the reference transaction in digital reference. It is unlikely that reference could be performed in any media without a

transaction between librarian and patron; it may, however, be that certain questions commonly asked in a desk reference transaction may prove to be unnecessary online. The patron's name, for example, is one piece of information that may not be necessary online, and raises privacy concerns besides. Is the patron's geographic location similarly of limited usefulness, particularly for AskA services, which are by nature not tied to any specific geographic location?

The AskERIC service asks for a patron's location on their web submission form in order to determine what local resources are available to the patron: for example, if the patron's question is about educational standards, it is important for AskERIC to be able to direct the patron to resources from the appropriate state's education department. Thus, AskERIC makes use of information about a patron's geographic location in formulating an appropriate answer. For digital reference services serving a patron community distributed geographically – AskERIC receives questions from literally all over the world – knowing a patron's location may be crucial to formulating an answer.

Furthermore, AskA services do not stand alone: a consequence of existing entirely electronically is a necessarily heavy reliance on networking. One of the primary uses to which AskA services – and digital reference services in general – put networking technology is the routing and assignment of questions. This routing and assignment is referred to as triage (Virtual Reference Desk Project, 1998); a question is routed to a reference or subject expert "answerer" either within a service (when a question is received by a service, a "triager" assigns it to a specific reference or subject expert within that service) or between services (if a question is received by a service that for whatever reason it cannot or will not answer, the triager forwards that question to a different digital reference service). If a question is triaged outside of a service, the patron's geographic location may be quite important. For example, in a study of the triage process in digital reference services, Pomerantz (2003) found that the patron's geographic location was at times a critical element in the triage process. Pomerantz relates the following story:

> [A] respondent stated that his service will, whenever possible, forward questions about Texas to digital reference services in Texas, because libraries in Texas have state-wide access to databases about the state, and thus are able to provide more complete answers about Texas than any library outside of Texas would be able to do.

Thus, the patron's geographic location dictated to the triager the preferred geographic location of an answerer, and therefore narrowed the range of possible triage recipients for that particular question. Thus, the patron's location is useful in both triaging a question to the appropriate answerer, and in formulating an appropriate answer. Information about the patron's location may not be useful for every question or for every patron, but for certain questions it may be crucial.

Repeat Users

The question "Have you used AskERIC more than once?" is one of the few questions that appears on all four AskERIC surveys that is not on the AskERIC question submission webform. While this question was asked in all four years, however, only the 1998 and 2002 surveys collected the number of previous uses, if greater than zero. This question was therefore analyzed first according to whether or not the user had previously used the AskERIC service. This data is presented in Table 3.

Table 3: Previous use of AskERIC

	First-time users	**Returning users**
1998	94	97
2000	41	34
2001	301	241
2002	665	282

The data from this question was analyzed using the χ^2 statistic. The value of $\chi^2 = 51.75$ with df = 3, which is significant at the 0.05 level. By partitioning Table 3 into 2 x 2 tables, it was determined that the significant difference is between the combined values for the years 1998-2001 and the year 2002. In other words, between the years 1998-2001 the percentage of first-time and returning AskERIC users did not change significantly. Between 2001-2002, however, the relative percentages of first-time and returning AskERIC users changed significantly.

It is difficult to know how to interpret this finding. On the one hand, a single observation (the year 2002) is not enough to base a conclusion on. The increase of first-time and decrease of returning users is not a significant trend over all four years; it could be that the 2002 values are a fluke, and if the AskERIC survey were conducted again, the percentages would return to approximately 50/50.

On the other hand, the interpretation that the increase of first-time and decrease of returning users is a trend is borne out by the following findings. As mentioned above, the 1998 and 2002 reports provide the number of previous uses a user has made of the AskERIC service. This follow-up question was as follows: "If yes [to 'Have you used AskERIC more than once?'], how many times have you used the service in the past year?" Unfortunately, the data from this question was collected in different units for these two surveys: the 1998 survey grouped numbers of previous uses, while the 2002 survey offered integer values. To compensate for this, the 2002 values were grouped according to the same categories as the 1998 survey data. This data is presented in Table 4.

Table 4: Returning users' number of previous uses of AskERIC during the prior year

	1 – 3	**4 – 6**	**7– 10**	**10+**
1998	70	24	11	5
2002	200	46	15	21

It is evident from these values that the number of previous times that patrons have used the AskERIC service decreases rapidly. This bears out the interpretation that the increase of first-time and decrease of returning AskERIC users is a long-term trend. But this merely begs the question, why should this trend be occurring?

It is certainly desirable that AskERIC – or any digital reference service, for that matter – attract new users. It may not, however, be desirable that AskERIC users be predominantly new users. One well-known measure of satisfaction with a reference service is whether the patron would be willing to ask a question of that service or individual librarian again (Durrance, 1989; Dewdney and Ross, 1994). McClure and others (2002) argue that statistics on repeat users of a digital reference service "is one of the most important measures to collect" (p. 30), because it may be used as a stand-in for measures of user satisfaction. The use of this finding as a stand-in for user satisfaction, however, is extremely unreliable; a number of other interpretations are possible for the predominance of new users. McClure and others go on to suggest that to aid in interpretation, this statistic be correlated with data on patron's reasons for use of the digital reference service. In the absence of data that may be correlated with this, however, we must speculate. One possibility is that an increasing percentage of AskERIC users have "one-time" information needs: their information needs do not frequently include educational research, but they had a single information need that AskERIC could fulfill. Another possibility is that over time AskERIC users become educated about the ERIC database, search techniques, and the subject area resources available on the various ERIC system websites. Indeed, AskERIC responses have always contained elements of bibliographic instruction: a response usually includes the search strategy utilized by the subject or reference expert in searching the ERIC database, as well as annotations and explanations of the other resources provided. Thus, it would be hoped that over time AskERIC users become increasingly self-reliant in their information seeking and have less need to utilize the AskERIC service.

Use of AskERIC

Although the question about repeat use of AskERIC was asked on all four AskERIC surveys, a question about what patrons actually use AskERIC *for* was asked only on the 2000 and 2001 surveys. It is important to note that for the question "I use AskERIC for," respondents could check more than one checkbox, so the unit of analysis for this question is not the respondent, but the checkbox checked – that is, the uses of AskERIC. This data is presented in Table 5.

Table 5: Use of AskERIC

	2000	2001
Current research articles and documents	59	297
Graduate research (masters or doctoral thesis)	34	140
Practical teaching tips and strategies	27	197
Obtain information for a third party	21	64
Parenting advice	19	49
Homework assignments	18	132
Lesson plan ideas	17	274
Other	8	38
School board decision-making	7	29
My undergraduate education as a future teacher	4	81

The data from this question was analyzed using the χ^2 statistic. The value of $\chi^2 = 49.78$ with df = 9, which is significant at the 0.05 level. By partitioning Table 5 into 2 x 2 tables, it was determined that the significant difference is between the use "Lesson plan ideas" and the combined values for all other uses. In other words, the use of the AskERIC service to locate lesson plans and ideas for lesson plans increased significantly between 2000 and 2001, relative to all other uses of the service.

This question was asked of all survey respondents, so these findings must be interpreted carefully. It seems likely that repeat and first-time users of a digital reference service will answer this question differently: repeat users may answer this question in terms of the use

to which they put the service and the sorts of questions that they generally ask as a general rule, while it seems more likely that first-time users will answer this question in terms of the question at hand. It would therefore be useful to correlate the data from this question with data from the question about the patron's number of previous uses of the service. This is not possible here, however, as all data reported in the AskERIC survey reports was aggregated. Another way around this problem would be to collect data about a patron's use in terms of the question at hand. To elicit that data, the appropriate question might be the question that is frequently asked in reference transactions in desk reference services: "what is your planned use of the information?" This question is actually asked on the AskERIC question submission webform, but was not reported in the AskERIC surveys.

Role

The question "You are asking this question in your role as a(n)" appears on the AskERIC question submission webform, and was reported in all four AskERIC surveys. It is important to note that respondents could check more than one checkbox in response to this question, so again, the unit of analysis for this question is the checkbox checked (that is, the role selected), and not the respondent. This data is presented in Table 6.

Table 6: Role in which AskERIC patron asked a question

	1998	**2000**	**2001**	**2002**
K-12 Teacher	30	19	198	249
Student	71	22	180	226
Other	27	9	39	90
Parent	18	13	21	53
College Faculty	23	6	22	44
Administrator	8	6	15	67
Librarian	19	2	30	29
Preschool Teacher	4	2	19	25

The data from this question was analyzed using the χ^2 statistic. The value of $\chi^2 = 101.31$ with df = 21, which is significant at the 0.05 level. By partitioning Table 6 into 2 x 2 tables, it was determined that there were several significant differences. The most highly significant difference, however, is between K-12 teacher and the combined values for all other roles. In other words, between the years 1998-2002 the relative percentage of K-12 teachers using the AskERIC service increased significantly, more than any other change.

It is unsurprising that K-12 teachers have consistently been the greatest users of the AskERIC service, since that group is the primary audience for AskERIC, as a service dedicated to educational research and practice. (It is, therefore, perhaps unfortunate that educational administrators and college faculty are not greater users of AskERIC.) What is surprising, however, is the significant increase in the percentage of K-12 teachers making use of the AskERIC service. It begs the question of how users come to find out about a digital reference service in the first place; this question cannot, however, be answered from data reported in the AskERIC surveys. It would be a useful avenue for future research.

This finding is also consistent with the finding that the use of the AskERIC service to locate lesson plan ideas increased significantly between 2000 and 2001 – the same interval that shows the greatest increase in the percentage of K-12 teachers using the AskERIC service. This is also unsurprising, as most of the lesson plans on AskERIC's website are written for use in K-12 classrooms.

Most Useful

The subject and reference experts – called Network Information Specialists – who replied to questions for the AskERIC service provided a variety of resources in their replies, including bibliographic records from the ERIC database, Internet sites, discussion groups, and print resource information. A sample of AskERIC's responses is available online at: eduref.org/Virtual/Qa/archives. A question concerning the usefulness of these various

resources was asked on the 2000 and round 2 of the 2002 AskERIC surveys. This question had several variations: "If you received _____, please rate the following aspects of this portion of the response," where the blank was filled with one of three options: ERIC citations, Internet sites, Discussion groups. One of the aspects that the patron was asked to rate was the relevance of the citation, site, or group to the question. The rating was a Likert scale, with 1=poor and 5=excellent. This data is presented in Table 7.

Table 7: Ratings of the relevance of portions of AskERIC responses

Rating	2000			2002		
	ERIC citations	Internet sites	Discussion groups	ERIC citations	Internet sites	Discussion groups
1	0	3	0	4	6	0
2	0	2	0	3	6	0
3	5	7	3	15	19	2
4	19	14	3	27	19	7
5	30	35	4	43	50	11

All three portions of AskERIC responses were rated very highly by users as being relevant to their question. This measure is problematic for two reasons. First, relevance can mean different things to different people: an information source may be judged as relevant because it fully answers the patron's question, because it partially answers the question, because it points the patron to additional resources, or for other reasons. This question does not make that distinction, however, and treats all forms of relevance as equal. The second reason that this measure is problematic is that there is no way to determine what portions of AskERIC responses were rated highly by first-time or repeat users of AskERIC. Repeat users are likely to have an idea of what to expect in an AskERIC response, and so may judge the relevance of the resources provided differently than a first-time user would, who might have no prior expectations about what to expect.

The portion of AskERIC responses that had the greatest percentage of 5 ratings, both in 2000 and 2002, was Internet sites, though interestingly Internet sites also had the greatest

percentage of 1 and 2 ratings. While Internet sites were frequently the most relevant portion of the response, occasionally they were the least relevant. After Internet sites, the portions of AskERIC responses that had the greatest percentages of 5 ratings were ERIC citations and then Discussion groups. It might be hoped that ERIC citations would be the most highly-rated portion of AskERIC responses, but there are a number of reasons why this might not be the case: patrons might not have been interested in research articles, which many ERIC citations are; or patrons might simply have wanted to get access to the full text of materials immediately, which one can do with Internet sites but not ERIC citations. The accessibility of the full text of ERIC citations will be discussed further in the subsequent section. Unfortunately, no follow-up question was asked to elicit why certain portions of the response were relevant or not; an interesting avenue for future research would be to investigate what types of resources are useful for answering certain types of questions or relevant in fulfilling certain types of information needs.

ERIC Citations and Full Text

The ERIC database, as discussed above, is the largest education database in the world, containing more than a million bibliographic records. The limitation of the ERIC database, however, is that it contains *only* bibliographic records, and not the full text of any of these documents. The ERIC database contains two types of bibliographic records: ERIC documents (ED) and ERIC journal articles (EJ) (www.eric.ed.gov). EJs are articles that have been published in any of the journals indexed in the ERIC database, and selected by human source journal reviewers. EJs can be obtained from libraries or article reprint companies. EDs, on the other hand, are documents that have been submitted for inclusion in the ERIC database, and which may not have been published elsewhere. Most EDs can be obtained from any of the more than 900 libraries that maintain an ERIC microfiche collection, or from the ERIC Document Reproduction Service (EDRS) (www.edrs.com), though some EDs are only available from the publisher. Most EDs included in the ERIC database after 1992 are available in Adobe Acrobat format from EDRS. In order to obtain these EDs, however, one must have or be affiliated with an institution that has a subscription to EDRS' E*Subscribe service.

Thus, not all users of the ERIC database have easy access to the documents indexed therein. As mentioned above, AskERIC Network Information Specialists provide bibliographic records from the ERIC database in their replies to users' questions; however, it may be that the questioner will not have easy access to the records cited in the answer. The question "If you received ERIC citations, were you able to obtain the full-text of these journals/documents?" was therefore asked in the 1998 and 2002 surveys. Data from this question is presented in Table 8.

Table 8: Ability to obtain full-text of AskERIC documents

	1998	2002
Yes	80	52
No	52	43

The data from this question was analyzed using the χ^2 statistic. The value of $\chi^2 = 0.78$ with df = 1, which is not significant at the 0.05 level. In other words, between the years 1998-2002 there was no significant change in the relative percentages of AskERIC users who were and were not able to obtain the full-text of the bibliographic records from the ERIC database provided in the reply to their question.

Users who were able to obtain the full-text of the bibliographic records from the ERIC database provided in the reply to their question were then asked, "How did you obtain the full text?" This data is presented in Table 9.

Table 9: Ability to obtain full-text of AskERIC documents

	1998	2002
EDRS	21	15
Journal reprint provider	8	1
Public library	9	12
University library	65	41

The data from this question was analyzed using the χ^2 statistic. The value of $\chi^2 = 5.81$ with df = 3, which is not significant at the 0.05 level. In other words, between the years 1998-2002 there was no significant change in the relative percentages of AskERIC users who obtained the full-text of bibliographic records from the various sources available to them.

This finding is slightly disappointing, since between 1998-2002 EDRS has dramatically increased the number of ERIC documents available in Adobe Acrobat format, so that as of this writing, "approximately 92% of the documents abstracted in ERIC are available from EDRS" (edrs.com/Help/About.cfm). It might have been hoped that the percentage of ERIC users who obtained the full-text of documents from EDRS would have increased as EDRS made more of these documents available online. It may be, however, that many first-time users of AskERIC are unfamiliar with EDRS. It may also be that many AskERIC users are not affiliated with institutions that have subscriptions to the E*Subscribe service.

The final question on all four surveys was "What suggestions do you have for improving the service?" One of the most common suggestions offered by survey respondents was "access to full-text," or any number of variations on that sentiment. Of course the full-text of most EDs <u>are</u> available, through the E*Subscribe service. This suggestion therefore indicates that AskERIC users either are not aware that they can access the full-text of ERIC documents through E*Subscribe, or that they are not affiliated with an institution that has a subscription to E*Subscribe and are unable or unwilling to pay for access themselves. Another factor that no doubt influenced responses to this question is that EJs are <u>not</u> available from EDRS; EJs must be obtained from a library that has the journal in its collection, through interlibrary loan, or purchased from an article reproduction service.

This all raises an issue for librarianship in general, an issue for which digital reference services are on the front line: the issue of electronic materials and copyright. Copyright laws are complex and changing; patrons of digital reference services, and of libraries in general may not be fully aware of the copyright restrictions on various types of materials, and what can and cannot be made available electronically for free. Bibliographic instruction is a task that has been performed by reference librarians for as long as the profession has existed, and the need for instruction in copyright for digital reference service patrons reaffirms the need for bibliographic instruction in the online environment.

Discussion

The Methods section of this paper is full of explanations and caveats concerning inconsistently collected data. This is unfortunately necessary because, as mentioned above, these surveys were designed to present a snapshot of AskERIC at a single point in time and, at those points in time, little consideration was given to longer-term concerns. This fact throws into sharp relief the current difficulty of conducting rigorous research utilizing archival data from digital reference services: this data is often inconsistent, where it exists at all.

There is a long tradition in librarianship of collecting statistics about the reference service provided in physical libraries. A great deal of this collection, however, is simple tick-marks: how many questions were answered by which librarian during his or her shift, and perhaps the topic of the question. Few desk reference data collection instruments are much more detailed than this, and few desk reference services have conducted any sort of evaluation using this or any other data. Janes (2002) reports that a mere 9% of reference librarians in public and academic libraries state that their library have performed "any kind of systematic user evaluation of their digital reference service" (p. 552). Of this small percentage of libraries that have performed evaluations, fewer still have published the results. Saxton (1997), in a meta-analysis of reference service evaluation, identifies twelve measures that have been utilized in multiple studies, including: number of total volumes in the reference collection, number of hours service is offered per week, and size

of the service population. Saxton reviewed fifty-nine research studies of reference service and identified 162 variables that had been used in these studies, but was able to make comparisons across studies for only twelve of these variables. This makes it eminently clear that, while there is work being done to evaluate reference services, most of this work is local, intended to evaluate a single service at a single point in time, with little or no thought to longitudinal studies or generalizability.

As mentioned above, some early work has been conducted to create standards and measures for the evaluation of the quality of digital reference services. Some work has also been conducted to create standardized data collection instruments for digital reference evaluation; see, for example, the Patron Satisfaction Survey (PaSS)™ (www.vrtoolkit.net/PaSS.html), created by John Richardson and Matthew Schall. These standards and measures are, however, of very recent vintage, and not enough time has passed since their creation to know how widely they are being utilized in the digital reference community. A measure of success of these standards and measures will be if a meta-evaluation like Saxton's (1997) can be conducted in five or ten years, and more than twelve measures are found to be comparable, across many services both nationally and internationally.

Standalone surveys, such as the AskERIC surveys, are useful for providing data about a service at a single point in time. This sort of data is useful for formative evaluation of that one service. In order for research to be possible about a service over a longer period of time, or across multiple services, however, it is necessary that there be planning ahead of time concerning what data will be collected by services, and that it is collected consistently over time. It would, for example, have been interesting – as well as possibly useful to the AskERIC service – to know how users discovered the AskERIC service. Unfortunately, the question "How did you find out about the AskERIC service" was asked only on the 1998 survey. (53% of users answered that they found out about the AskERIC service from the ERIC website, and 14% answered that they were referred by a professor or other individual.) This data, aggregated across years, could have been useful

to the AskERIC service for marketing purposes, as well as interesting to other digital reference services looking to increase their "brand recognition."

One further point must be made concerning the difficulty of conducting rigorous scientific research utilizing data from digital reference services: in light of the current political climate and legitimate privacy concerns, any data collected by a digital reference service – indeed, by any library service at all – should be "anonymized" by removing any information that may serve to personally identify the patron or the librarian who participated in the transaction, before storing the transaction in any sort of an archive. This is a simple enough matter where email-based digital reference is concerned: deleting the To: and From: lines of the email message, as well as the patron's and the librarian's signature blocks, will go far towards anonymizing an email transaction. Some patrons put personally identifying information in the body of the email message, however, and it requires a judgment call for such emails to determine what to delete from the message or whether to simply delete the entire message from the archive. Chat-based digital reference services face this same set of problems of anonymizing the transaction before storage.

Sadly, instead of taking the time to anonymize transactions before storing them, many libraries are opting for the admittedly easier, but short-sighted course of simply deleting this rich source of data. Nicholson (2003) refers to this trend as "The Great Data-Wipe of Ought-Three," a potentially tragic loss of libraries' institutional memories. This policy of deleting all transaction data makes conducting rigorous research utilizing data from digital reference services difficult. Indeed, when no data at all exists because a service has decided to simply delete it, all research is impossible. Deleting all library data in order to prevent personal data from being misused, while understandable, is to lose an opportunity to study digital reference services both individually and collectively, and ultimately longitudinally. As Nicholson points out, if we delete our data-based library history, then it becomes impossible to discover patterns of use in library data. More than a hundred years of research exists on desk reference services. Because of the artifactual nature of the digital medium, however, this "shred first, ask questions later" policy

precludes the building of any similar body of research on digital reference services, almost before that building process has broken ground.

Conclusion

Four surveys of users of the AskERIC email reference service were conducted, during the years 1998, 2000, 2001, and 2002. This paper has reanalyzed the findings from these surveys utilizing repeated survey techniques. There are several interesting and unexpected findings from this reanalysis, such as the increase of first-time and decrease of returning users of the AskERIC service, and the increases in K-12 teachers using the AskERIC service and the use of the AskERIC service to find lesson plan ideas. There are, however, also several ambiguous findings from this reanalysis, such as the findings that there were no significant changes in the percentages of AskERIC users who were able to obtain the full-text of ERIC database citations, and users who obtained full-text from the various sources available to them.

As mentioned above, in January 2004 the Department of Education implemented a reengineering plan for ERIC, eliminating the ERIC system's 16 subject-specific clearinghouses and associated adjunct clearinghouses, as well as the AskERIC service. In response to this reengineering, many of the resources formerly available on AskERIC's website have been moved to a new website: www.eduref.org. While the resources created by the AskERIC service have survived the reengineering of the ERIC system, the AskERIC service itself sadly has not.

This paper is therefore AskERIC's eulogy. Like any eulogy, however, it hopefully will serve to inspire those that remain. AskERIC was perhaps the oldest AskA service in existence, having been launched in 1992. This analysis of AskERIC data should serve as a point of comparison for other digital reference services engaged in longitudinal analysis of their own data. The difficulties encountered in this analysis should also serve as a warning to other digital reference services who wish to study and evaluate their own service and patron community: consistency of measures over time is critical, but more

critical is the existence of data from these measures. Even if data is collected, it cannot be used for research or evaluation if it is not preserved. It is hoped that this paper has provided examples of the sorts of analyses that can be performed when the appropriate measures are collected. Different digital reference services may have different criteria for success: meeting the information needs of specific patron groups, providing access to specific types of resources, patron satisfaction, or any number of other possible measures. Evidence of success according to whatever criteria are important must be used to make the case to funding agencies that digital reference services are worth continued support and are an integral part of the future of reference and service to the patron community.

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