Evidence Based Library and Information Practice

Review Article

Individualized Research Consultations in Academic Libraries: A Scoping Review of Practice and Evaluation Methods

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Abstract

Introduction – Librarians in academic institutions have been providing personalized services to the student population by offering individualized research consultations (IRC) for decades. These consultations usually consume many hours of librarians' busy schedules, and yet the impact of these consultations is unknown. Therefore, it's worth asking the question: what assessment methods have been used in academic libraries to evaluate the impact of IRC?

Methods – A retrospective scoping review of the literature was performed using the following databases: Library and Information Science Abstracts (LISA), Educational Resources Information Center (ERIC), Library and Information Technology Abstracts (LISTA), Scopus, and Web of Science. Additionally, a manual search of the included papers reference lists was conducted to locate additional relevant papers. Articles that mentioned a format of evaluation or assessment

and were based within a library setting were included. Articles that discussed group instruction that were not in a library setting, or that did not include any form of evaluation or assessment, were excluded.

Results – Researchers located 578 articles and reviewed titles and abstracts. 523 titles were eliminated, while full text sources of the remaining 55 were examined to check inclusion and exclusion criteria. 20 articles remained for qualitative synthesis. Specific methods of assessment were reviewed and three overall assessment methods were identified: 1) usage statistics, 2) survey, and 3) objective quantitative methods.

Conclusion – Many articles using a usage statistics method stated that they wanted to further their assessment of individual consultations. Several authors using a survey method described the value of the information gathered by surveying their users for improving their service, but also mentioned that this method is subjective in nature. They mentioned that objective assessment methods would provide a better understanding of the impact of IRCs. The few articles using objective quantitative methods obtained mixed results. Overall, more research in the assessment of IRCs is needed, particularly those with objective quantitative methods.

Introduction

The purpose of reference services in academic libraries has always been to help users with their research endeavors. The manner in which help is provided differs from institution to institution and has evolved over time. Literature shows that in order to provide library patrons with help and guidance, librarians in most academic institutions have been transitioning away from a service point, such as the reference desk, into more specialized and advanced assistance through referrals made by library support staff (Arndt, 2010), or by the delivery of individualized consultation services to users. Studies have shown that staffing reference desks or one-point service desks with library support staff has been efficient; one study determined that 89% of questions could be efficiently answered by non-librarians (Ryan, 2008).

Individualized research consultation (IRC) services have had many names over the years: "term paper clinics", "term paper counseling", "research sessions", "term paper advisory service", "personalized research clinics", "research assistance programs", "individualized instruction" and so on. Essentially, an IRC is a one-on-one instructional session between a

librarian and a user in order to assess the user's specific research needs and help them find information. While group instruction is a great way to introduce students to various library skills, individual research consultations allow for more in-depth questions that are specific to a student's information needs. One advantage that this type of service provides over traditional reference services is that it gives "students the individualized attention and serves them at their points of need" (Yi, 2003, p. 343).

Aim

Academic librarians can spend many hours helping individuals with their research projects. While research has examined the ways in which information literacy (IL) skills have been taught in the classroom, research conducted for one-on-one consultations is reported less frequently. With this observation, a scoping review seemed appropriate to further enhance our knowledge of IRC assessment methods. As Arksey and O'Malley (2005) stated:

> Scoping studies might aim to map rapidly the key concepts underpinning a research area and the main sources and types of evidence available, and can be

undertaken as stand-alone projects in their own right, especially where an area is complex or has not been reviewed comprehensively before. (p. 21)

Colquhoun et al. (2014) further formalize the definition of scoping reviews:

A scoping review or scoping study is a form of knowledge synthesis that addresses an exploratory research question aimed at mapping key concepts, types of evidence, and gaps in research related to a defined area or field by systematically searching, selecting, and synthesizing existing knowledge. This definition builds on the descriptions of Arksey and O'Malley, and Daudt to provide a clear definition of the methodology while describing the key characteristics that make scoping reviews distinct from other forms of syntheses. (p.1292)

This scoping review attempts to answer the following question: Which evaluation methods are used to measure impact and improve individualized research consultations in academic libraries?

Method

Researchers conducted a systematic search of the following databases for the years 1990-2013: Library and Information Science Abstracts (LISA), Educational Resources Information Center (ERIC), Library and Information Technology Abstracts (LISTA), Scopus, and Web of Science. Search terms included: individual consultation, research consultation, one-on-one consultations, research clinics, personalized research, and evaluation, assessment, impact, with combinations of these terms. Researchers used the thesauri of individual databases alongside keyword searching.

Using a manual search of the included articles' reference lists, the authors located additional relevant articles. Some articles were found while searching the reference lists, dating back further than our original search date range. As they were key first articles on the topic and answered our inclusion criteria, we decided to keep them. Due to constraints with acquiring proper translation, we only included articles written in English or French, with English abstracts of articles in other languages assessed, if available. We searched Google Scholar for online grey literature in hopes of locating unpublished studies and other reports exploring individualized research consultations, with little additional information found.

We included descriptive articles, qualitative and quantitative studies, single case studies, and review articles if they discussed evaluating or assessing individual consultations. We excluded book chapters, policy papers and documents, commentaries, essays, and non-published theses, as these types of documents did not address evaluating/assessing IRCs as primary studies. We included articles that discussed individualized research consultations at the undergraduate or graduate level, included some form of evaluation or assessment, and were based within a library setting. We excluded articles that discussed group instruction, were not included in a library setting (such as consultation for profit), and which did not include any form of evaluation or assessment.

Both authors conducted data collection and synthesis, and collectively wrote the background, conceptualized the review, undertook the searches, and screened the articles. We each screened the articles, and then compared. We discussed disagreements between the inclusion and exclusion of the articles, and reached a decision for each situation. We both synthesized the data and crafted the findings.

Data collected from the reviewed articles included aims of the studies, type of evaluation/assessment involved, procedures and methods used, audience level (e.g.,

undergraduate, graduate, faculty, etc.), and main findings.

Results

The modified PRISMA flow chart (Moher, Liberati, Tetzlaff, & Altman, 2009) in Figure 1 demonstrates the number of articles and results from the selection and screening process. Researchers identified 543 potential articles through database searching (after duplicates removed), and found an additional 35 articles through cited reference searching of the references lists of the included articles. All titles and abstracts were reviewed, and 523 of the articles did not include any form of evaluation, or mention individual consultations, and were therefore excluded. We examined full text sources of the remaining 55 articles against inclusion and exclusion criteria, leaving 20 articles for our qualitative synthesis (Figure 1).

Qualitative thematic analysis

This section presents the analysis of the 20 included articles' extracted data, which are
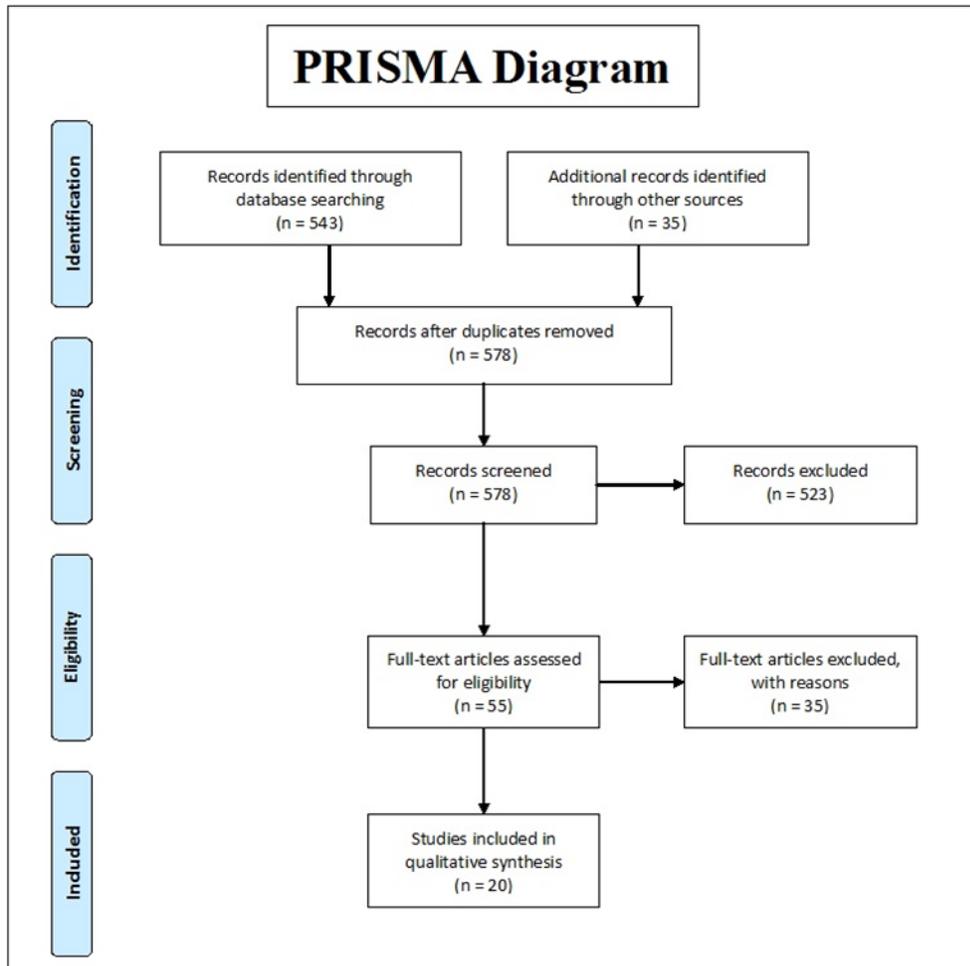

Figure 1
Modified PRISMA flow chart

Table 1
Assessment Methods and Included Articles

Assessment Methods	Usage Statistics	Survey	Objective Quantitative Methods
Included Articles	Attebury, Sprague, & Young, 2009	Auster, Devakos, & Meikle, 1994	Erickson & Warner, 1998
	Becker, 1993	Bean, 1995	Donegan, Domas, & Deosdade, 1989
	Hoskisson & Wentz, 2001	Cardwell, Furlong, & O'Keeffe, 2001	Reinsfelder, 2012
	Lee, 2004	Coniglio, 1984	
	Meyer, Forbes, & Bowers, 2010	Debreczeny, 1985	
	Yi, 2003	Gale & Evans, 2007	
		Gratch & York, 1991	
		Imamoto, 2006	
		Magi & Mardeusz, 2013	
		Rothstein, 1990	
		Schobert, 1982	
Total	6	11	3

compiled and organized in Table 1 for rapid review. An in-depth overview of each study is available in the Appendix.

We grouped articles into three overall types of assessment methods: usage statistics, survey, or objective quantitative methods. Table 1 lists the assessment methods with their affiliated articles. These categories were inspired by Attebury, Sprague and Young (2009), who previously classified such articles in two main categories: "Surveys as evaluation tools have been a popular means of assessment […] while for other authors analysis of statistics and writing about their program has served as a useful mean of evaluation" (p. 209).

Table 2 summarizes the specific methods of assessment, which articles they are correlated with, and the number of students surveyed/tested, if applicable. Where usage statistics were used, the type of statistics

gathered include number of students encountered, number of hours or sessions provided, librarian's preparation time, length of the meeting, student's affiliation (e.g., department or program), reason for requesting an appointment (e.g., course-related, paper, dissertation, etc.), and student's gender. When a survey was used, methods included the use of an evaluation form completed by patrons following the appointment, surveys sent to users of the service weeks or months later, and use of an evaluation form completed by the service's provider (e.g., librarian, MLS student). When the assessment was via an objective quantitative method, all three articles developed their own unique assessment methods to evaluate individual research consultations. In these cases, the methods all include a certain level of objectivity, as opposed to the more subjective nature found with assessment using surveys. The methods included assessment of assigned database searches performed by the patron,

Table 2

Specific Methods of Assessment Used

Assessment Methods	Specific methods of assessment	Articles	No. of students surveyed or tested
Usage statistics	1. Usage statistics compilation Stats acquired:		n/a
	No. of students seen	Attebury, Sprague, & Young, 2009	
		Yi, 2003	
	No. of hours or sessions provided	Attebury, Sprague, & Young, 2009	
		Becker, 1993	
		Hoskisson & Wentz, 2001	
		Lee, 2004	
		Meyer, Forbes, & Bowers, 2010	
		Yi, 2003	
	Librarian's preparation time	Attebury, Sprague, & Young, 2009	
		Lee, 2004	
	Length of meeting	Attebury, Sprague, & Young, 2009	
		Yi, 2003	
	Student affiliation (dept., or program)	Lee, 2004	
	Reason for request (course-related, paper, dissertation, etc.)	Attebury, Sprague, & Young, 2009	
		Yi, 2003	
	Student's gender	Attebury, Sprague, & Young, 2009	
Survey	1. Evaluation form filled by patrons after individual consultation	Auster, Devakos, & Meikle, 1994	39
		Bean, 1995	27
		Gale & Evans, 2007	23
		Magi & Mardeusz, 2013	52
		Imamoto, 2006	95
		Rothstein, 1990	77
	2. Surveys sent to users of the service weeks or months later	Cardwell, Furlong, & O'Keeffe, 2001	16 25
		Coniglio, 1984	57
		Debreczeny, 1985	60
		Gratch & York, 1991	17
		Shobert, 1982	19
	3. Evaluation form to be filled by the service's provider (librarian, MLS student)	Auster, Devakos, & Meikle, 1994	n/a
		Bean, 1995	45
		Gale & Evans, 2007	n/a
		Rothstein, 1990	n/a
Objective quantitative methods	1. Assessment of assigned database searches performed by the patron	Erickson & Warner, 1998	31
	2. Information literacy skills test (multiple choice questions)	Donegan, Domas, & Deosdade, 1989	156
	3. Citation analysis of students draft and final papers' bibliographies	Reinsfelder, 2012	103

Table 3
Populations that Used IRC Services per Assessment Method

Populations	No. of articles using usage statistics	No. of articles using a survey	No. of articles using objective quantitative methods	Total no. of articles
Undergraduate students only	1	5	2	8
Graduate students only		1	1	2
Undergraduate et graduate students	5	5		10
Faculty members or researchers (as an additional population)	3	1		4

information literacy skills test (multiple choice questions), and citation analysis of the draft and final papers' bibliographies from the students.

Additionally, we have determined how many papers provided IRC services to undergraduate students, graduate students, or both, along with faculty members or researchers, as shown in Table 3. Many articles mentioned having a specific population in mind when starting a service, but ended up serving additional populations. Ten articles described serving both the undergraduate and graduate population, and eight articles the undergraduate students only. Two articles were evaluating a service offered to graduate students only.

Most of the articles included in the detailed analysis are not "studies" per se, but rather a description of library services. Therefore, many of those articles do not use the intervention/comparison/outcome format. Table 4 is an attempt to categorize the extracted data using these categories, with the presumption that this is an interpretation exercise. The intervention is the assessment method used in the selected articles, the comparison is listed if used in the included articles, and the outcome is an overall summary of the benefits and outcomes for each assessment method.

Discussion

Several articles relied heavily on usage statistics to assess their individualized research consultation (IRC) services. Whether the number of students seen, or the number of hours librarians spent preparing or providing the consultations, these statistics can tell us how this service is used by the student population, but they do not describe the impact of such services except when anecdotal comments from users are recorded. In addition to usage statistics, Attebury, Sprague, & Young (2009), as well as Yi (2003), gathered and analyzed information about the content of IRCs. Yi noted that the most frequent themes discussed during an IRC were "topic assistance", "search skills", and "database selection", and these are just some of the elements covered in class presentations. This suggests that IRC could benefit from a better alignment with information literacy standards to develop students' information literacy skills. Overall, many articles using this method mentioned the need to further the assessment of IRC beyond usage statistical analysis. Attebury, Sprague & Young (2009), mention their intention of collecting information on student satisfaction to help evaluate and improve their service on a continuous basis.

Table 4
Interventions, Comparisons, and Outcomes

Intervention	Comparison	Outcome
Usage Statistics	N/A	Usage statistics method allows for an in-depth analysis of how the service is used and can contribute to decision-making for the future or the modification of the service. Anecdotal comments are heavily used throughout the included articles and were a large part of the service' performance analysis.
Survey	N/A	Surveys were used to mainly acquire information on users' satisfaction. Other information of interest for survey's creators related to the service's marketing, and users' affiliation. All of the included articles had positive feedback (satisfaction level) from their users.
Objective Quantitative Methods: Specific Interventions		
Individualized Medline Tutorial (Erickson & Warner, 1998)	1) Group tutorial 2) Control group: No tutorial	No statistically significance differences were found for the search duration, the quantity of articles retrieved, the recall, and the precision rate. There were many limitations to the study, such as a small group of participants, low compliance rates, and a change in the database platform at the study's mid-point. Participants felt satisfied with their searches, and were interested in improving their MEDLINE search skills. The authors concluded that time constraints is a major obstacle for information professionals to provide individual tutorials to hundreds of residents, who themselves struggle to free some time from their busy hospital schedule to receive adequate database search skills training.
Term Paper Counselling (TPC) (Donegan, Domas, & Deosdade, 1989)	1) Group instruction session 2) Control group: No instruction	Statistically significant differences appeared between TPC and the control group, and between group instructions and the control group. No statically significant differences were found between TPC and group instruction. The authors concluded that either type of intervention (group or individual) is appropriate when teaching basic library search skills.
Individualized Consultation (Reinsfelder, 2012)	1) Control group: no consultation	Using citation analysis and comparing students' draft and final papers using a rating scale allowed the author to run nonparametric statistical tests. Statistically significant differences were found between draft and final papers for the experimental group, but no significant difference were found for the control group. The author concluded that students benefited from an individualized consultation and showed an improvement in their sources' quality, relevance, currency, and scope.

The set of articles relying on survey methods is large, and some date back to the 1980's. Most surveys or evaluation forms focus on user satisfaction, and many authors suggest this gives an indication of the success of the service provided and helps to adjust the service delivery if needed. However, this is still based on user sense of satisfaction and not on actual performance outcomes. Cardwell, Furlong & O'Keeffe (2001) indicate that "because of the nature of [personalized research clinics], it is difficult to truly assess student learning and isolate the long-term impact that an individual session has on a student's knowledge and skills" (p. 108). Also, as stated by several authors, but well-phrased by Shobert (1984), "evaluating a project like this objectively is nearly impossible. There is a built-in bias in its favor: where there was nothing, suddenly there is an individualized instruction program; the responses are bound to be positive" (p.149). Whether it is a new service or not, providing tailored individual help to students will always be appreciated, which skews user satisfaction in survey results. Recently, Magi and Mardeusz (2013) surveyed students on their feelings before and after the individual consultation, and the comments they received demonstrate the value of individual consultation. It relieves students' anxiety, and instead of feeling overwhelmed, students felt encouraged and more focused. The psychological well-being of students is less frequently studied in relation to the impact of individual consultations, but this study demonstrated a less obvious impact, one certainly worth mentioning when it comes to the value of the time spent with students individually.

As stated earlier, Shobert (1984) mentioned that it would be nearly impossible to objectively evaluate an individual research consultation service. The three articles using objective quantitative methods have attempted to do just that by measuring, in an objective manner, the impact individualized research consultations have on student's information literacy skills. They all have taken different paths to evaluate

this impact. Results were unsuccessful in demonstrating a statistically significant difference on the impact of individual consultation between group instruction and term paper counselling (TPC) (Donegan, Domas, & Deosdade, 1989), and between getting an individual tutorial or not (Erickson & Warner, 1998). These authors explained that many reasons could account for these results, such as low compliance at performing the tasks requested, and test validity and reliability. In the Donegan, Domas, and Deosdade (1989) study, results showed no statistically significant difference between group instruction and term paper clinics. This study focused on introductory material, such as that usually taught in a first year undergraduate class. One could venture to say that basic library skills can easily be provided to students in a group setting, and that perhaps individual consultations are more appropriate for advance skills development. Reinsfelder (2012) found a statistically significant difference in his study, which he concludes "[provides] some quantitative evidence demonstrating the positive impact of individual research consultation" (p. 263). He also stated that "librarians were frequently able to make more meaningful connections with students by addressing the specific needs of each individual" (p. 275), which speaks to the very nature of individual research consultations.

Our scoping review was not without its limitations. Firstly, our review is only descriptive, with limited information to quantify our findings. Further research would be required to assess the impact of individualized research consultations to correctly identify specific methods that increase the searcher's success. Secondly, none of the articles included in our study were critically appraised, limiting the reproducibility, completeness, and transparency of reporting the methods and results of our scoping review. However, as there is already limited information available regarding IRCs, we did not want to exclude any articles on the topic.

Future research should focus on quantifying the impact of individualized research consultations. As our scoping review demonstrates, we were only able to find three studies that used objective quantitative assessment methods. Not only will gathering more quantitative information further inform IRCs' practices, but it will also complement the descriptive information obtained from surveys and usage statistics. It should be noted that there are different methods that may need to be considered when examining IRCs between disciplines. Further research should also examine these differences, attempting to find the best methods for individual disciplines. Lastly, a more in-depth examination of the evaluation of the quality of the studies that we found should be undertaken.

Conclusion

Our research question asked, which evaluation methods are used to measure impact and improve IRCs in academic libraries? We were able to identify usage statistics and surveys as the main methods of assessment used to evaluate IRCs. In addition, three articles attempted to objectively and quantitatively measure the impact of individual consultations. This amounts to very few studies compared to the wealth of articles on the assessment of group instruction.

Individual research consultations have been around for decades and help students at various stages of their research activities. Providing this personalized service one-on-one is time consuming for librarians, and should be better acknowledged and assessed.

Future research should address the need for more objective assessment methods of studies on IRCs. In combination with usage statistics and surveys, objective quantitative studies would yield a greater quality of evaluation for IRCs. Furthermore, as these evaluation methods become more valid, a closer inspection of IRCs

across disciplines could be explored with greater success.

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Appendix
Descriptive Summary Analysis of Included Articles

This appendix presents the included articles' extracted data as an in-depth review of each study, organized by the three categories used in this review: usage statistics, survey, and objective quantitative methods.

Usage Statistics

Attebury, Sprague, & Young, 2009; University of Idaho Library

The University of Idaho Library created a "Research Assistance Program" (RAP) for its patrons in 1998. Usage statistics compiled over 10 years were used to determine if the service still effectively met the needs of its users. Using quantitative and qualitative data, the authors examined consistencies in usage patterns (i.e., male to female ratio, on-campus vs. remote users, undergraduate vs. graduate students), average amount of time librarians spent preparing for the individual consultation, the length of the consultation, how advanced in the research process students were, types of assignments and sources, along with challenges encountered (e.g., "no shows" and communication issues). Students were required to fill out a form, either online or at the information desk, requesting information on their topic, a description of their assignment, the due date, and the number and types of sources required. Once the session was completed, the librarian who met with the student completed a brief form indicating how much time was spent preparing for the session, along with the actual meeting time and follow-up (if any), how they communicated with the student and any other problems that were encountered. The service was offered to both undergraduate and graduate students, but the majority of students using the service were undergraduate students. The authors concluded that the service's assessment process helped to better understand what direction to take for the future of the service.

Becker, 1993; Northern Illinois University (NIU)

The library offered research clinics for a large-scale first year English program, with two groups targeted: honour students and educationally disadvantaged students. Librarians met with one or two students simultaneously, using their term papers to introduce them to basic reference sources for locating books and articles pertinent to their topic. It was noted that disadvantaged students appeared to respond best to the sessions. While the honour students also benefited from the sessions, authors noted that a different skill set were required for these groups. Honour students had more sophisticated library research skills, so their instruction needs were different than those of the educationally disadvantaged students. Both the instructors and student feedback were given anecdotally. While the librarians met and reviewed the program after the first semester of implementation, the article provide a narrative evaluation of the program using anecdotal feedback obtained from librarians and students, along with the statistics acquired on attendance and hours. The author concluded that the research clinics provided the needed follow-up to library labs already offered to freshman students. It is also noted that staffing is the major challenge identified in the pursuit of this particular service.

Hoskisson & Wentz, 2001; Utah State University

A formal program was created to address an increased need for individualized attention for students needing assistance from a librarian at Utah State University. Authors noted that demanding users complete a detailed information form may act as a barrier to this service, so they avoided these forms and direct email queries were used via web form. Unsolicited feedback from students came mostly in the form of appreciation but also some mentioned they actually learned library skills that they would reuse. Librarians provided anecdotal feedback, indicating that if the "student did not respond with feedback, they could not gauge how helpful they had been" (p. 99). While the article reported statistics regarding the number of users per month, as well as librarian participation (number of students met per month), no formal statistics were available regarding the number of appointments versus email transactions per librarian. In order to strengthen their students' information literacy skills, the authors mentioned that:

> An accurate, formal evaluation system is always difficult to implement. Perhaps a class will be taught and term paper consultations set up with an equal number of students in order to make a comparison of the two groups' abilities to obtain pertinent research articles. Pre- and post-tests would lend data with which to judge the value of the program (p.100-101).

The authors concluded that this new hybrid service exceeded their expectations since it held a large number of queries, many positive comments from students.

Lee, 2004; Mississippi State University Libraries

The Mississippi State University Libraries provided individualized instructional sessions to undergraduates, graduates, and faculty members. These sessions were managed via an official service, where users must complete a form to request an appointment. Librarians are expected to respond within 24 hours and to prepare before the appointment (as per the institution's reference department's performance standards). The form included information about referral source and user's department affiliation, which allowed the author to analyze one year of usage statistics. The library was interested in the referral source in order to evaluate their marketing strategy. Librarians (40.5%), faculty members (23%), and outreach programs (16.2%) represent the most frequent referral methods. The findings showed that users of the service were mostly graduate students (64.9%), represented a variety of departments, with the department of education being the most represented (32.4%). The author concluded that a

different promotion approach is needed for the undergraduate clientele, but the service's overall assessment is positive, since it provided extended research support to its users.

Meyer, Forbes, & Bowers, 2010; Penrose Library, University of Denver

Authors described the implementation of a reinvented reference service divided in two distinctive services: a research desk staffed with trained graduates students, and a dedicated space with dual computers for one-on-one consultation, where students can book an appointment with a subject-specialist librarian. The service was inspired by the general design of writing centres, where students can get help privately but yet in a visible open-space, which can ease students' anxiety when in need of help. Usage statistics show that both undergraduate and graduate students were users of the service, as well as faculty members. Social sciences and business students were the heaviest users of the service. Anecdotal comments from users were recorded, which showed a positive reaction to the new service. Librarians were also satisfied with this new model, as it allowed them to better use their expertise rather than simply staffing the reference desk. This unique model, with dual computers, allows students to lead the interaction and to go at their own pace which helps develop their research skills. The authors concluded "the consultation model is more effective for student learning, more fulfilling for librarians, and more efficient use of time for both" (p. 66).

Yi, 2003; California State University San Marcos (CSUSM) Library

The author described this article as case study of the CSUSM Library's Individual Research Consultation Service (IRCS). Eight advantages of IRCS over traditional reference service are summarized. The author states that the IRCS provided a channel for students to get in-depth individualized research assistance for their projects with a subject information specialist. The IRCS was part of the library reference service for several years, and it was offered to both undergraduates and graduates. Students completed an individual appointment form, where they indicated their research question and the nature of assistance requested, then the student was matched with a subject librarian. The librarians had to record the main topics covered on the appointment form, and these forms were archived since 1996. The author analyzed two years of these archived forms, coded the data and added it to a database. Direct observations of IRCS, and interviews with three librarians, were additional methods used. Usage statistics recorded the number of sessions, the hours provided, and the number of students seen. The author also gathered the number of hours librarians taught information literacy sessions, and determined that librarians spent 32% of their teaching time, with IRCS being a type of teaching, doing IRCS. Additional information extracted from the performed data analysis indicated that 87% of IRCS sessions were course-project related, which, the author emphasized, allowed for teachable moments as students had an immediate need to be filled. Also, 31% of students had attended a library class previous to requesting an IRCS, and 77% of these sessions were for students requesting help for 300-level courses or above. The most frequent topics covered during an IRCS were: "topic assistance", "search skills", "database selection". The author suggested that IRCS sessions have the potential to be a teaching medium where information literacy goals could be better addressed if the librarians involved are conscious of their role in that matter. The author concluded that the IRCS could be developed as a multi-level, multi-phased IL program, instead of an extension of the reference service.

Survey

Auster, E., Devakos, & Meikle, 1994; University of Toronto

The authors outlined the planning, implementation, and assessment of a "Term Paper Clinic" (TPC) for undergraduate students only. The TPC was the result of collaboration between the Faculty of Library and Information Science and the Sigmund Samuel Library, the main undergraduate library at the University of Toronto. MLS students were the sole providers of individual consultations to undergraduate students. The project was interesting for the library as it provided individual consultations to undergraduate students as an extension of the existing consultation service in place for graduate students and faculty members. MLS students received a three-hour orientation (two hours in-class, and one hour in the library). The TPC was scheduled for two-hour periods over three weeks during the spring semester in 1993, where two MLS students were scheduled to work each period. A designated desk near the reference desk was dedicated to TPC, and the service was provided on a walk-in basis. The MLS student first spent approximately twenty minutes with the undergraduate student and filled in the *TPC Library Research Guide Form* to record the needed information. The MLS student then created a tailored *TPC Library Research Guide*, and met with the undergraduate student usually within twenty-four hours of the initial meeting to provide the guide. To assess this new service, every undergraduate student received a survey at the end of the second meeting, and asked to return it to the reference desk. The survey had a 49% response rate. The service was originally designed for first and second year students, but other academic levels used the service as well, which showed that many students needed individual in-depth assistance, and should not be denied that specific type of service. Additional information extracted from the survey included: how students learned about the service (77% from posters), their satisfaction level (68% assessed the service as being very useful or somewhat useful), and what skills were learned from the clinic (e.g. the need to focus, using different research approaches, using keywords and subject headings). MLS students were also asked to provide feedback on their experience. A content analysis of their reports described the experience as a success and the MLS students commented that they would like to see this service continued, they found it rewarding as it provided them with practical experience. The overall analysis of the experience also underlined some problems. Mainly, the MLS students' inexperience was a barrier to provide an adequate service. Also, some undergraduate students misunderstood the TPC's goal and believed it would provide essay-writing assistance. The author concluded that both the MLS students and the librarians benefitted from this experience.

Bean, 1995; DePaul University.

The author describes the implementation and evaluation of DePaul's research consultation service, offered to both the undergraduate and graduate student population. The implementation process included the creation of a "Research Consultation Appointment Request Form", and the development of procedures, such as length of sessions to be provided. An evaluation process was put in place after the service had been running for one year. Goals were set before the start of the evaluation process. The method used was in two parts: 1) the librarian would complete an evaluation form, then 2) the patron would fill out a separate evaluation form. The response rate was of 91% for librarians, 55% for students. Results from the librarians' forms revealed that 86% of the time librarians rated their sessions either "excellent" or "good". Other information gathered was "preparation time" and "sources used". Students' forms showed that 100% of students surveyed rated sessions either "very helpful" or "helpful". Other information included the student's program or department, and where they learned about the service.

Cardwell, Furlong, & O'Keeffe, 2001; Gettysburg College, Marquette University, and Bowling Green State University (BGSU)

The authors analysed the personalized research clinics (PRCs) program offered at three different institutions, and address logistics, assessment methods, and publicity. At BGSU, PRCs are offered to

undergraduate students. A similar service is offered to graduate students and faculty members, but is managed differently. PRCs are most utilized during a four-week period, but are also offered throughout the semester. For that four-week period, a schedule is organized with librarians' availabilities. Students booked their appointment at the reference desk and provided information about their research project. Evaluation forms were given to students since the implementation of the service. To strengthen the evaluation process, evaluation forms to be filled by librarians were added to the mix, and paired with the student's evaluation forms. Data from this comparison exercise is not provided in the article. A general comment is mentioned, where the authors state that after the implementation of the two-part evaluation form, students' comments were "strong" (i.e., they were satisfied by the service).

The Marquette University libraries provided PRCs to undergraduate students, graduate students, and faculty members. Students booked appointments either on the library website, by phone, or in-person. The requests were sent to either the contact person for the humanities and social sciences, or for the sciences. The contact person decided which subject librarian was the most appropriate for each request. The librarian and the requestor then set up a meeting time. Usage statistics were collected over the years including gender, affiliation, academic level, and field of study. An eighteen-question survey was sent by mail to all PRC attendees for one calendar year (2000). Twenty-five attendees answered the survey, of which 70% were graduates students, and 30% were undergraduate students. Results showed that 24 out of 25 respondents indicated the session was "definitely" worth their time, while 22 indicated they would "definitely" use the service again. The authors also stated that the service seemed useful for students and seemed to meet their expectations. They concluded that Marquette's libraries would continue to provide the service.

The Gettysburg College library underwent reorganization, thus readjusted how PRCs were provided. Different assessment methods were used to evaluate the service. Printed surveys were used. Details about this assessment are not available in this article.

Coniglio, 1984; Iowa State University

The author described the staffing, scheduling, publicity and evaluation of the "Term Paper Advisory Service" (TPAS) at the Iowa State University Library. This service was designed for undergraduate students, but graduate students and faculty members used the service as well. A steering committee was formed to plan the TPAS's structure. Fourteen librarians offered the service, from which some were non-reference librarians. A training session was held specifically for them before TPAS started. Their procedure stated that there would be no effort to match student's topic to a librarian's specialty, as the author pointed out, in order to mimic common reference desk interactions. TPAS were scheduled for two two-week periods, around mid-terms and finals. Students were requested to fill a worksheet asking information about their topic. The appointment was then booked the next day, for fifteen minutes. The librarian created a customized pathfinder before the appointment, identifying relevant sources for the student. The meeting started at the reference desk, and the librarian then took the student to the physical location of the relevant sources listed. To assess the service, an open-ended questionnaire was sent to the one hundred students who participated to the first two-week period. Fifty-seven completed questionnaires were returned. The author summarized the results, saying that students were very favorable to the TPAS service. Students would recommend the service to a friend. After the service's revision, TPAS was to be offered all semester long, and four additional librarians joined the team. Meeting length was also adjusted to thirty minutes, and librarians' preparation time was increased to 48

hours. The author concludes "TPAS complements and supplements the basic work done with students in library instruction classes and lectures" (Coniglio, 1984, p. 82).

Debreczeny, 1985; University of North Carolina

The author describes the development of the "Term Paper Consultations" (TPC) at the University of North Carolina's Undergraduate Library. The TPC program did not provide a bibliography to students, but rather a search strategy, along with reference material. Students were also shown how to use the LC Subject Heading Guide, and are shown potentially relevant periodical and newspaper indexes. Students booked a thirty-minute appointment on a sign-up sheet, and each day librarians selected appointments that worked with their schedule. The service was offered year long, with busy periods of four weeks each semester. Four and a half professional librarians, library school assistants, and one graduate student staffed the TPC. With increased demands, the staff decided to record the TPC appointments' content on a form, which was designed to describe each step of the research process. Eventually, an index of those TPC files was produced, and was used both for TPC and for the reference desk. To assess the service, a survey was conducted, which 60 students answered. Results show that 100% of respondents would have recommended the service to someone else, 90% said they would have used TPC for another assignment, and 92% mentioned that it fulfilled their expectations. The author pointed out that the TPC subject files and the indexes developed over the years were extremely useful not only for the TPC service, but also for everyday reference questions.

Gale and Evans, 2007; Missouri State University

The Meyer Library's research consultation service was offered to all undergraduate and graduate students, staff, and faculty. Requests were made through an electronic form on the library website. These requests were routed to the appropriate librarian according to subject expertise and availability. The form asked specific questions about the student's topic, resources already consulted, and so forth, which allowed librarians to prepare before meeting the student. Two surveys were designed to assess the research consultation service. The patron's survey, which consisted of both open-ended and Likert scale questions, was sent to all of the service's participants during one year. Results from 23 students who answered the survey (31% response rate) showed that 52% of the respondents strongly agreed that the library's material selection met their research needs, while 88% of respondents strongly agreed the consultation helped them with their research. In addition, 60% of respondents strongly agreed they felt more confident in their ability to use the library's resources. The second survey, consisting of six open-ended questions, was distributed to librarians providing the service. The main results showed that all librarians spent at least 30 minutes preparing, and all respondents felt satisfied to have helped the majority of the students. Librarians also commented that the service was beneficial to the university community, and a valuable use of faculty time. The authors concluded, in light of both surveys, that this kind of tailored one-on-one service was worth continuing.

Gratch & York, 1991; Bowling Green State University

The Bowling Green State University (BGSU) Libraries were offering individual consultations to all students for many years. These consultations were not specifically tailored to graduate students' needs, and were not highly publicized. A pilot project, the Personalized Research Consultation Service (PERCS), provided individual consultation to graduate students specifically. Four departments were included in the pilot project, and 30 students used the PERCS in the first year. A survey was sent to the participating students. Additionally, phone interviews were carried out with faculty advisors to ask their opinion of

the service. The survey produced a 56.7% response rate. Results show that all respondents found the consultation helpful, and they would recommend the service to a friend, and 76.5% of the respondents used PERCS to get help with a thesis or dissertation. Once the pilot project was over, it was decided to continue the PERCS and to make it available to all graduate students.

Imamoto, 2006; University of Colorado

The Boulder library at the University of Colorado embarked on a partnership with the University's Program for Writing and Rhetoric (PWR) to integrate information literacy concepts in the first-year course, which consisted of four parts: 1) online tutorial on basic library research, 2) course-integrated library seminar, 3) theme-based course reader, and 4) drop-in "Research Center". The Research Center is different from the library's usual individual consultation services because no appointments are needed, only graduate students staff the Center, and it is available only to undergraduate students registered in a specific writing course. The graduate students are provided with a comprehensive training at the beginning of the school year. To assess the Research Center, an evaluation form with three open-ended questions was given to each student at the end of the interaction. Two questions were added the following semester. Completed forms were to be dropped off at the Research Center. In total 95 students filled out the evaluation form, for a response rate of 23%. Results show that 95% of respondents felt the graduate student providing the consultation was helpful, 15 respondents requested more hours as an area of improvement, and 6 respondents asked for more tutors (graduate students). Students' experience of the Research Center scored 4 or 5 out of 5 for 83% of respondents. In conclusion, the author articulates additional information that would be helpful to gather in a future survey, such as students' backgrounds, which could help understand better what students need in order to improve the service.

Magi & Mardeusz, 2013; University of Vermont

This study used a qualitative approach to investigate students' views on individual research consultation value, and what motivates students to request this particular type of assistance. Both undergraduate and graduate students requesting research help were included in the study. Moments after the consultation was completed, students were invited to answer an open-ended question survey. The authors expressed how this study is not about the "effectiveness of consultations in terms of student learning outcomes" (p. 608), but rather why individual research consultations are valuable to students. In total 52 students responded to the survey. Results show that students learned about the research individual consultation service mostly through professors, and from in-class library presentations. All respondents said they would use this service again. More than one-third of respondents said that their motivation for booking a consultation "was the need for help finding information and choosing and using resources" (p. 610). When the students were asked about the type of assistance that the librarians provided during research consultation, three-quarters of respondents answered: "by selecting and recommending sources, including databases and reference books, and brainstorming about places to search" (p. 611). The authors also asked: *What do students who use individual consultations find valuable about face-to-face interaction with librarians, even with the availability of online help?* The authors summarized results in this way: "a face-to-face interaction allows for clear, quick, efficient, and helpful dialogue; can ask questions and get immediate responses" (p. 612). Students also mentioned how a face-to-face meeting allows for a replication of the steps taken by the librarians in the resources navigation. Lastly, the authors asked the students to describe their feelings before and after the consultation. Before the appointment, one-third of the respondents used the words "overwhelmed", "stressed" and "concerned". "Relieved" is the word most frequently used by students to describe their feeling after the consultation, and "confident" and "excited" were also popular expressions. The authors concluded that reference librarians, who care

deeply about students' information literacy competency development, should consider making individual research consultation part of their reference service.

Rothstein, 1990; University of British Columbia

This article is a reproduction of a presentation the author offered in 1979 about a "Term Paper Clinic" (TPC) conducted at the UBC Sedgewick Library for a number of years, with MLS students staffing the Clinic. The TPC was offered twice a year for a two-week period to undergraduate students only. MLS students had a five-week preparation period that comprised of instructions in reference sources and strategies, a lecture by the professor, an accompanying written guide called *The TCP Literature Search: Approaches and Sources*, a library tour, in-class sample question practices, and access to TCP guides previously produced. During the TPC's operation period, students (called "recipients" by the author) would meet twice with the MLS student; they would first register and provide information about their needs, then a second meeting would be scheduled to provide the recipient with the desired information in form of a *search guide*. To assess the TCP's success, three feedback methods were used. First, the MLS students submitted a report on their experience. Second, the Sedgewick librarians' anecdotal comments were captured. Third, recipients were asked to fill out a questionnaire. MLS students' comments were summarized as followed: "TPC gave them a sense of confidence as they realized that they did indeed have a great deal of knowledge which laymen did not possess; they began to think of themselves as professionals" (p. 263). One downside of this project for MLS students was time, as it was more work than anticipated for them to produce the search guides. Sedgewick librarians, on the other hand, had almost all favourable comments for the TPC. Recipients' feedback was taken through a questionnaire that was sent out to all TPC's participants every semester. The author analyzed the results of one particular semester (fall of 1976). The evaluation form held a 30% response rate (77 students). Main results showed that 90% of respondents answered that the service provided was either extremely or very useful, that 94% of respondents said that the TPC helped them improve their knowledge of library resources, and that 92% of respondents mentioned that they feel better prepared to use the library on their own. As an additional evaluation, in 1976 an MLS student conducted 60 interviews with recipients of the service. Her findings support the results obtained by the recipients' evaluation forms, MLS students', and librarians' feedback. The author concludes that a "personalized, extensive reference service provided at the point of need is a very effective method of teaching the use of the library" (p. 269).

Schobert, 1982; University of Ottawa

The author describes the planning, execution, and evaluation of a pilot project held at the University of Ottawa's Morisset Library called "Term Paper Counselling" (TPC). The TPC was held once during the academic year, for a two-week period in the winter semester, and was to be provided only to undergraduate students. Students had to first book an appointment and fill out a form providing information about their topic. Librarians would then prepare a search guide that provided a selection of indexes, bibliographies, etc. During the appointment, the librarian would go through the guide showing the student how to use the various suggested bibliographies and indexes. To evaluate this new program, the author sent a questionnaire to all participants one month after the TPC was over. Only 19, students answered, though almost all respondents were enthusiastic about the new service. The author concluded that TPC is a worthwhile service, and will continue providing it.

Objective Quantitative Methods

Erickson & Warner, 1998; Thomas Jefferson University

The authors conducted a one-of-a-kind study, where the impact of a one-hour MEDLINE individual tutorial was assessed with specific outcomes measured (i.e., search frequency, duration, recall, precision, and students' satisfaction level). These individual sessions were specifically designed for obstetrics and gynaecology residents. This was a randomized, controlled, blinded study, conducted with 31 residents. These students were divided in three groups. Group A was the control group that received no formal MEDLINE tutorial. Group B and Group C received one-hour individual tutorials, including advanced MEDLINE search features, such as MeSH searching, focus and explode functions, and so forth. Group B had their tutorial in a hands-on format, where the residents performed the search themselves. Group C received a tutorial where the instructor performed the searches. All participants answered a survey before and after their searches, asking them about their computer experience, what they thought was a reasonable number of articles retrieved when searching MEDLINE, and how long a search should take. No statistically significance differences were detected among participants. All residents had to perform four assigned searches; two before the tutorial, and two after. Three faculty members independently rated the citations retrieved for relevance. A seven-point relevance scale was developed for this purpose at McMaster University (Haynes et al., 1990). The primary investigator rated recall and precision. Results show that there were no statistically significant differences between the pre-tutorial assigned searches and the after-tutorial assigned searches for the search duration, the number of articles retrieved, the recall rates, the precision rates, or the searcher's satisfaction level. Limits to the study included the small group of participants, low compliance rates, and a change in the database platform at the study's mid-point. Participants felt satisfied with their searches both assigned (85%) and unassigned (64%), and were interested in improving their MEDLINE search skills (60% wanted further formal training). The authors concluded that time constraints is a major obstacle for information professionals to provide individual tutorials, especially since there were 700 residents and fellows at this institution that particular year, and for residents who struggle to free some time from their busy hospital schedule to receive adequate database search skills training.

Donegan, Domas, & Deosdade, 1989; San Antonio College

Authors describe a bibliographic instruction experiment comparing two instructional methods: group instruction sessions vs, individual instruction sessions called "Term Paper Counselling" (TPC). Participants included 156 students enrolled in an introductory management. The authors first developed learning objectives that would be used to measure students information literacy skills for both instructional methods. Then, they created and tested two versions of multiple choices questions, which they trialed with two groups of students (one having had library instruction, and the other did not). Data from the testing was compiled, and no difference appeared between the two versions. However, a difference was noted between the two groups regarding the students' IL knowledge, which was expected since one group had not received a library instruction course yet. In the fall semester, students from the management course were divided in three groups. Group 1 received group instruction, Group 2 received TPC, and Group 3 received no instruction as the control group. All students were informed that a library skills test would be administered and it would be worth 5% of their grade. For Group 1, the test was administered right after the library instruction. For Group 2, librarians had to prepare a pathfinder first on each student's topic, followed by a meeting with the student (individually), then students would be given 25 minutes (same length of time for all groups) at the end of the meeting to answer the test. Group 3 was given the test in the classroom. Once their test was completed, the librarian would inform them that they were part of an experiment, and they would be allowed to retake the test after they were provided with a library instruction session. Using Tukey's HSD (Honestly Significant Difference) Test, results show that a significant difference existed between TPC and the control group, as well as between

group instruction and the control group; but no significant difference was found between TPC sessions and group instruction sessions. The authors conclude that "Term Paper Counselling and group instruction are comparably effective techniques for teaching basic library search strategy" (p. 201).

Reinsfelder, 2012; Penn State Mont Alto

This author used citation analysis to evaluate the quality of students' sources included in draft papers before meeting a librarian, and again with the final paper after the meeting with a librarian. Criteria used were currency, authority, relevance and scope. Faculty members teaching various undergraduate courses were invited to participate in the study by inviting their students to book an appointment with a librarian, and by sharing their students' drafts and final papers for citation analysis. In total 10 classes were included in the study, 3 of which were part of the control group, where students' draft and final papers would be assessed, but students would not meet with a librarian. Additionally, faculty members were asked three open-ended questions to provide their observation and perception of the process. Nonparametric statistical tests were used for data analysis. For the experimental group, those who met with a librarian), a significant difference between draft and final papers was found in all criteria except for authority. No significant difference was found for the control group. Faculty commented that this approach was worthwhile. The author indicated that using a rating scale is useful to measure objectively students' sources' quality, but there is room for subjective interpretation. The author concluded that students who partook in an individual research consultation with a librarian showed an improvement in their sources' quality, relevance, currency and scope.