From the Outside In: Using Environmental Scanning for Evidence-based Planning

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Academic librarians serving as liaisons to colleges or departmental units are continuously seeking to locate quantitative data to support decision-making processes or to close the gaps created by information shortfalls. A trio of University of Houston subject librarians decided to explore the prospect of using the information gathered through environmental scans to assess and develop plans for action based upon the evidence obtained. The group used surveys and face-to-face interviews to gather intelligence from students as well as faculty. The environmental scan process helped the librarians focus on various methods of collecting specific types of information. These surveys and interviews ultimately led to the development of a unique tool for compiling and analyzing the data in order to incorporate it into evidence-based planning. Though the main aim of the project was to develop methodology to reveal tangible information that could be developed into services offered to the faculty, students, and administrators of the departments involved, the relationships fostered by these interactions proved to be the project's major contribution to ongoing strategic planning and assessment of programs.

Background and Introduction

Environmental scanning is a systematic information-gathering practice for the purpose of strategic planning. Kendra Albright, a researcher focusing on using information for problem solving, defines environmental scanning as "the internal communication of external information about issues that may potentially influence an organization's decision making process."[1] This practice informs decision makers about emerging issues, potential pitfalls and areas for growth so that companies can stay vigilant and flexible.[2] As with corporations, in recent years academic libraries have faced unprecedented changes and challenges. We are experiencing a big shift in users' information-seeking behavior patterns, facing an ever-diversified user population, and adjusting to rapid technological advancements. As if these challenges aren't enough, we are also facing greater competition from for-profit entities like Google, and a growing demand for accountability in higher education as a whole. In the meantime, changing economic realities are forcing libraries to deal with extremely tight budget situations. All of this can be overwhelming, especially for librarians who are accustomed to performing traditional roles and services, mainly reference and collection development. In light of these challenges, academic librarians as a whole have been working to identify ways to transform the library into a more robust organization that better meets the needs of a new generation of patrons and the academic community.

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In 2011 the ACRL Research Planning and Review Committee reported their own environmental scan results. The document informed librarians about the major trends and changes in higher education and in academic libraries.[3] However, while the report was insightful at the macro-level, it did not touch on the unique challenges individual libraries are facing on their own campuses. Here at the University of Houston, major changes have been occurring at all levels of the institution. In 2007, the university appointed a new president, Dr. Renu Khator. With her determination to push the university's standing to tier-one status, the university embarked on a number of initiatives aimed at realizing that goal. The UH Libraries as a whole, and subject librarians in particular, have been active participants in these efforts, working hard to provide higher levels of research support and services in line with tier-one aspirations. Librarians have also observed fundamental changes in their assigned academic departments, such as faculty transitioning from practice-oriented to more research-oriented departmental objectives. On campus, research centers are being created and new research programs are springing up. There also is more pressure on faculty to publish their research. Subject librarians are cognizant of these changes and realize that they can present new service opportunities. But we also know that not having a clear picture of the changes in our assigned departments hampers our efforts to develop strategic service plans.

In order to gain a comprehensive understanding of these changing user needs, three subject librarians, one in the humanities (History) and two in the social sciences (Business and Social Work), decided to conduct environmental scans identifying what was actually happening. Our environmental scans had two major objectives: first, to gather information that could help us enhance our services or create new service opportunities; and second, to develop a generic toolkit that could be easily adapted by other subject librarians. This paper describes how we conducted the environmental scans, our successes and lessons learned and discusses how we used the results to formulate evidence-based action plans.

Scanning Design

Environmental scans can be conducted using a variety of methods. The selection of these methods depends on the purpose of the scanning and one's particular situation. For example, surveys, focus groups, interviews, and literature reviews are all viable ways to gather information. But the choice of a survey, a focus group, or other methods must be determined by the objectives of the scanning and the potential of getting the qualified participants you need to conduct an effective scan.

In our effort to ensure we could generate data that would accurately inform our action plans we adopted a "backward glance approach" in our method design. We felt that this method would help us review the many issues actually impacting the environment under review, and to retain focus on the critical facets of the project. Thus, before delving into the project, we first asked ourselves: What don't we already know about our users? What specific information do we need that could have a direct impact on the way we provide services to them? We wanted to focus specifically on getting this type of information because we believed it would lead us to the most effective service models. After clarifying our goals, we divided the work into five stages: setting the scanning parameters, developing tools, implementing the scans (data gathering), data analysis, and service model redesign.

Setting Scanning Parameters

Since each team member is assigned more than one academic department, some of which are large and have several academic divisions, we decided to focus only on our own specific divisions to run the scans. We selected them based on the following parameters:

- The department or division we felt has experienced significant changes, but about which we don't have sufficient details
- The key groups in our assigned departments that are, or will be most impacted by current (and future) changes on campus

Based on these parameters the history librarian decided to find out more about the graduate studies program; the business librarian focused on the Supply Chain Management program at the College of Business; the social work librarian developed a scan of the Graduate School of Social Work.

Developing Scanning Tools

One of the objectives was to develop a generic "toolkit" that could be easily adapted by other subject librarians and for our own future use. Working together, we constructed generic tools that could be easily

modified to meet the specific needs of any subject librarians who wanted to use them. During the process, we investigated different methods of gathering information including surveys, interviews, and focus groups. We discussed the strengths and weaknesses of each method before deciding on what we felt would give us the most useful results.

The Survey

Surveying is an efficient way to gather information and feedback from large groups. However, we realize that there are potential pitfalls. Most obviously, if the questions aren't well thought-out, the survey won't yield the information one is trying to attain. Since language can be interpreted in a variety of ways, figuring out how to ask effective questions is a major challenge because surveys don't allow for follow-up or clarification opportunities. Survey fatigue was another concern for us because our library often sends out surveys to students and faculty. Despite these concerns, we settled on this method because we believed it was the easiest way to gather information from a large group of people, and that most of the information we needed could be effectively solicited this way. We invested much of our preparation time in weighing the wording of the questions and establishing the criteria that we felt would yield the most useful responses. We used Survey Monkey for its easy online distribution and its analysis tool.

While constructing the survey we considered these issues:

- What did we need to find out specifically? (Identify the objectives of the survey.)
- What should the length of the survey be? (Avoid unnecessary questions and keep the survey reasonably short.)
- What kind of answers would inform our action plans?
- How many questions should contain comment boxes? Were those responses measurable?
- Could it be adapted for use by all subject librarians in any discipline?

We developed a generic survey containing two parts (see appendix A). The questions in the first part focused on the demographics of our target groups, and the second focused on finding out their resource and research needs. While there was no set limit on the number of questions, we did design the survey so that it wouldn't take long to complete, most likely 10-15 minutes.

Interview Question Design and the Interview Process

The advantage of face-to-face interviews is that, if the questions are designed carefully, they generate in-depth responses. In addition, the interviewer has the opportunity to immediately follow up on answers requiring further clarification. However, designing and conducting effective interviews is time-consuming, and getting the necessary participants can be a challenge depending on the schedules of the interviewer and interviewee.

We discussed how to select faculty members for interviews. It was important to know who the most knowledgeable people would be regarding specific issues we needed to examine through the scanning process. As with the survey, while we didn't specify a set number of questions, we had to be mindful of the time constraints of our interviewees, and take into account the time the interviewees needed to thoroughly answer and follow up on certain questions. We also didn't set any limits on the number of faculty members one might need to interview. In some cases one interview is sufficient, but in others it might include a larger number to get a complete picture for the scans. Once we identified our pool of interviewees, we began designing interview questions most tailored to their positions, roles, and knowledge.

In designing the interviews, we asked ourselves:

- What do I (the interviewer) need to know? What do I hope to have discovered or uncovered?
- Why do I need to know?
- How can I use the information?
- Will the data gathered help with a problem or achieve a goal?

We again used the backward glance approach because this method guides the interviewer to focus on asking questions that elicit in-depth answers. For example, instead of asking "Do you like e-books?" it is more useful to ask "What has been your experience using the library's e-books? How does the process of accessing them work or not work for you?" This type of question results in a much more informative answer because it guides the interviewees to reflect on their own experience and enables them to provide answers with specifics examples.

After we set up the first drafts of our interviews, we practiced them with each other in order to identify and clarify the questions that had the best possibility of getting the most productive responses from our in-

terviewees. This helped us avoid asking yes/no questions that didn't allow for any kind of elaboration or follow up.

We also discussed guidelines for the interviews. In an interview setting, the primary role of an interviewer is to actively listen, clarify, follow up (as needed), and take accurate notes on the remarks made by the interviewee. Also, interviewers should try to keep their own personal views out of the discussion. Essentially, the purpose of the environmental scan is to find out what is actually going on, *not* what the interviewer thinks might be happening. The result is that the interviewer has a much better chance to address specific issues and perhaps elaborate on them during the interview, and as part of an action plan. Table 1 summarizes the plan we had for the scanning.

Conducting the Scans

Once we had thoroughly tested the surveys and interviews it was time to implement them and start gathering information. During the planning phase, we had contacted relevant faculty in our departments to go over the details of the scans and asked them to help us by participating in one-on-one interviews and to solicit students to participate in the surveys. Faculty were instrumental in helping distribute our surveys to the students directly from their own email accounts. Having faculty and departmental buy-in gave support and legitimacy to our project.

TABLE 1 Information Needs and Research Methods			
Librarian/ Subject Area	**Population Selected**	**Information Needed**	**Research Method**
• Business Librarian/ Supply Chain Management	• Core faculty • Students in Supply Chain Management program	• Faculty research needs • Level of instruction support from library • Student demographics • Student research preferences • Library print and e-resources support • Use of library resources • Department mission and goals • Challenges to program • Outside sponsors and partnerships of program • SCM and Tier One goals • Future trends and goals	• Survey • Faculty interview
• History Librarian/ Graduate Studies	• Faculty head of graduate studies • Masters & PhD students	• Faculty research needs • Student demographics • Student research preferences • Library print and e-resources support • Department mission and goals • Future trends and goals	• Survey • Faculty interview
• Social Work Librarian/ Graduate School of Social Work	• Dean of School of Social Work • Director of PhD Program • Faculty members • Masters & PhD students	• Faculty research needs • Student demographics • Student research needs • Students library usage pattern and preferences (service, location and building) • Library resource usage support • How the library provides support to the department mission and goals • Upcoming initiatives and changes due to Tier-One	• Survey • Interview • Systematic examination of publicly available information on Social Work's website

Data Gathering and Analysis

After the scans were completed we developed the Table for Data Gathering and Analysis (see Appendix B). The following is an overview of the structure of the tool used for the purpose of synthesizing the data gathered from the environmental scans. The tool was divided into four columns, with uniform headings which were incorporated into each of the scans. The participating librarians had the option to customize the sub categories in order to suit the scope of their own individual scans. By using the table we were able to group all the relevant information in one place for analysis.

- Column 1—Category of Investigation:
  — The following became the standard fact-finding protocols used: Department/School Data, Student Demographics, Information Use Preference, Use of the Library, Satisfaction of Library Services, and Impact of Campus Initiatives.
- Column 2—Results:
  — This column was populated with the information obtained during the "Category of Investigation" phase, i.e. findings from the surveys and interviews, etc.
- Column 3—Implications and Opportunities:
  — This column enabled the evaluator to review the outcomes systematically, allowing for a more comprehensive view of what those results entailed.
- Column 4—Potential Actions (Service Model)
  — This space was used to flesh out ideas for prospective actions based upon the evidence presented by the data gathered from the initial scan.

Findings and Implications

Analyzing the results of the scans was enlightening and informative. We now had solid evidence to work with, not assumptions.

About 10% of the social work graduate students responded to the social work librarian's survey. She found that they rarely use the physical library, and if they did come it was to study or just pick up books. Students also indicated that they wanted to find a quiet place to reflect and focus on their studies. Through both the survey and faculty interviews, she realized that the majority of the graduate students in Social Work have family obligations and also hold full or part-time jobs. They work on their studies when they can, and most of

them rely heavily on the library's e-resources to do so. It became clear to the librarian that general library instruction workshops don't work for her students. The only way to build students information literacy skills is to work with faculty to insert library instruction into the curriculum. She also learned that students have mixed feelings about e-books. While they welcome them in theory, most expressed frustrations about actually using them. She also learned from the faculty interviews of a potential online program to be built in three or four years, and the program will require library materials to provide online support.

The history librarian found that the graduate students and faculty were heavy users of the library's interlibrary loan (ILL) service, but were unhappy that they could not keep the books out longer, or renew them. They also do a lot of research with primary documents, and while they are aware that the library has a special collections department, they need more guidance on how to locate archival material from other institutions. The library has a number of primary source databases, many of which have limited usage because students and faculty don't know about them. Faculty and students, however, are using many of the subject-specific guides (LibGuides) the history librarian designed to highlight these databases. While some students were familiar with citation management tools, such as RefWorks and Zotero, they also indicated a need for training with these kinds of tools. Oral and digital history projects are also growing areas in the History department, so faculty and students need more information about library resources that support these programs. As for physical library use, many of the students do come to the library to study, but most find it too noisy. They also mentioned the lack of study carrels and storage space. Despite these issues, the student and faculty feedback on the library's resources and personnel was favorable overall. The history librarian now sees opportunities to work with the graduate studies program to work on solutions to these specific issues, and to become more embedded into the program.

For the business librarian, the scan results indicated that the Supply Chain Management program is large and fast growing, positioning itself to be a nationally recognized tier-one program. The program is working with a number of local and international businesses located in the Houston area as sponsors and partners, and these partners are working with students to help them gain real-world experience and tailor their job

skills to the needs of the marketplace. Class size and instruction are issues due to the rapid growth of the program. The faculty is also concerned that students are not prepared for college-level research assignments. For faculty research needs, e-resources and ILL are heavily used, but physical use of the library is limited. Students are big users of e-resources, and do come to the library to study, however, they need help from the business librarian to better understand how to search when using the library's catalog and/or discovery platform. The business librarian also identified opportunities to embed herself into the program by working with the program's advisors on outreach, and by designing research instruction that ties into the school's overall instruction. She can also reach out to the corporate librarians working for the sponsors and partners.

Action Plans

Based on our findings, we were able to come up with realistic short- and long-term action plans for our departments. For example, the history librarian has been participating for several years in the one-day History Grad Camp prior to the start of the fall semester. Since the introduction to the library section usually takes place late in the day, many students have already left or are distracted. The result of the scan showed that the students would prefer library instruction sessions separate from the Grad Camp, and this was conveyed to the faculty head of the program. The history librarian is now conducting these sessions early in the fall semester and as a result the students are much more engaged and open to learning about what the library can do for them.

The social work librarian learned that she needs to build up the online collection, in all material formats, because the faculty and students have told her, loudly and clearly, that they want and need e-resources. This is especially important because they can rarely come to the library. Knowing that students are frustrated about accessing and using e-books, the librarian is looking into various ways to demonstrate to students how to use them. She also needs to work on online teaching because the school will have an online teaching component. Since the online component won't be in place right away, she plans to gradually build online tutorials and also building her skills in online teaching pedagogy to meet the new needs. In the meantime, she gained much better understanding of the research requirement of the PhD students. As a result the interview, the Director of the PhD program decided to have a two-hour library training as part of their PhD student orientation. The librarian also learned that social work students have a variety academic background and levels of academic training. Their needs for library and information literacy training differ very much from student to student, so individualized consultation seems the best way to provide research support.

In assessing the possible actions arising from the scan of the Supply Chain Management (SCM) department the business librarian learned overall that there was a need to increase outreach and cultivate opportunities for instruction. The scan provided essential information about the SCM department's mission and overall goals which are aligned with the University of Houston's tier-one initiatives. Knowledge of these goals will aid in the development of strategies to support those objectives as well as focus on the types of resources required to sustain them. One of the ambitions of the department's faculty is to publish in subject-related top-tier journals. This presents an opportunity to help faculty in obtaining those publications as well as assisting them in utilizing resources such as Elsevier's SCOPUS and Thomson Reuters' Journal Citation Reports to evaluate the citation rates and impact factors of those journals. SCM's high enrollment and large class sizes render most conventional instruction methods ineffective. In order to overcome this obstacle, incorporating virtual methods for providing instruction in the form of webinars and other types of online-based training will have to be explored.

Conclusion

As a result of the scans, we now have tangible ways to engage in short- and long-range planning. We believe that the time and effort we spent crafting and testing the surveys and interview questions significantly contributed to the usefulness of the results. The table we created for data gathering and analysis also made our work much more efficient. The results gathered from these tools proved to be instrumental in directing how we could be more effective, especially with collection building and library instruction. It was also very gratifying to talk to and build new relationships with faculty—they got a chance to learn more about what we do, and were excited to hear how we could help them and their departments.

When we presented the results of our project to the other subject librarians in our department, it generated a lot of interest for them to develop their own scans using the tools we developed. We were happy to hear this because subject librarians have an inherent advantage in conducting environmental scans for library service enhancement. They are at the forefront of working with students and faculty, and play a central role in marketing library services to their departments.

In an academic environment that is going through many changes, we need to understand how our users and their needs are changing, too. It is essential that we don't just assume that we know what they need, but rather gather evidence. We found that through scanning we got a much clearer picture of the needs and demographics of our user groups, and by having effective tools and factual information in place, it is much easier to plan realistic responses to the needs of our departments and support the university's goals. We believe that the role of subject librarians is to provide support to the information needs of library users, whether they need access to information itself or the skills needed to search, use and organize it. We also feel that although it takes time to conduct an environmental scan, it is one of the essential tasks we need to do to make our work effective. After all, we can only plan for the future when we have a clear picture of the present.

Appendix A. Generic Survey Page 1

File   Edit   View   History   Bookmarks   Tools   Help

www.surveymonkey.com/s.aspx?PREVIEW_MODE=DO_NOT_USE_THIS_LINK_FOR_COLLECTION&sm=RqFVwhvJxiYyj1l8NwfY2PgrGH2Er3mIefhaJmaN98E%3d

Environmental Scan   Exit this survey

Graduate Students and Library Resources

The purpose of this survey is to gain a better understanding of how the UH Libraries can help you find and access useful resources.

The aim of the first section is to find out about the characteristics of current students in the grad program, while the second section deals more specifically with your research needs. Thank you for participating in this survey.

＊**1. Are you in the Masters or PhD program? (Note: Subject to change based on the population to be scanned.)**

○ Masters

○ PhD

＊**2. Are you a full-time or part-time student?**

○ Full-time

○ Part-time

3. Where did you receive your undergraduate degree?

<div style="border:1px solid #000; height:80px; width:370px"></div>

＊**4. Did you come to grad school directly after receiving your undergraduate degree?**

○ Yes

○ No

5. If you answered NO to the above question, how many years have you been out of school?

○ 1-5

○ 6-10

○ 11-20

○ 20+

＊**6. In what subject area did you receive your undergraduate degree?**

<div style="border:1px solid #000; height:80px; width:370px"></div>

＊**7. Are you currently employed?**

○ Yes, part-time

○ Yes, full-time

○ No

Other (please specify)

<div style="border:1px solid #000; height:20px; width:350px"></div>

Appendix A. Generic Survey Page 2

Research and Resource Needs

*8. How often do you come to the library to study or do research?

☐ Once or twice a week

☐ Several times a month

☐ A few times during the semester

☐ Never

9. If you do come to the library, what time of day?

☐ Morning

☐ Daytime

☐ Evening

☐ Weekends

*10. Do you feel that the UH Libraries' print collection, including books, journals, and microforms, support your research needs?

○ Yes

○ No

Other (please specify)

[   ]

11. Do you feel that the UH Libraries' online resources support your research needs?

○ Yes

○ No

Other (please specify)

[   ]

*12. How often do you use the UH Libraries' online resources to do research?

○ Frequently

○ Seldom

○ Rarely

○ Never

Other (please specify)

[   ]

*13. Do you have an Interlibrary Loan (ILL) account?

○ Yes

○ No

14. If you are using Interlibrary Loan, are you getting the resources you need in a timely way?

○ Yes

○ No

Other (please specify)

[   ]

15. Did you know that specific history "research guides" are available through the UH Libraries website?

☐ Yes, I'm using them

☐ No, I am not familiar with them

16. Are you using a citation management tool?

○ Yes

○ No

○ What is a citation management tool?

17. If you are using a citation management tool, what software do you use?

☐ RefWorks (through the UH Libraries site)

☐ EndNote Web (through the UH Libraries site)

☐ Zotero (free Firefox add on)

☐ Mendeley (free website)

Other (please specify)

[   ]

18. Do you need training on how to use citation management tools?

○ Yes

○ No

Appendix A. Generic Survey Page 3

19. I you answered Yes to the above question, do you want to have training on any of the following?

☐ RefWorks

☐ EndNote Web

☐ Zotero

☐ Mendeley

20. Are you using mobile devices to download books and articles from the UH Libraries?

○ Yes

○ No

21. If you answered yes to question 16, what mobile device(s) are you using?

☐ iPad

☐ iPod

☐ iPhone

☐ Droid smartphone

☐ Droid pad

Other smartphone or pad

[   ]

22. If you are using mobile devices, what is your experience downloading articles and books from the library?

[   ]

23. If you have any other comments about the library and/or your research needs, please let us know. Thank you for participating in this survey.

[   ]

[Prev] [Done]

Appendix B. E-Scan: Table for Data Gathering and Analysis

Category of Investigation	Results	Implications and Opportunities	Potential Actions (Service Model)
Department/ School data	• Population of faculty (numbers, status etc.) • Current research/teaching areas • Funding situation (Funding) • Ph.D programs • Accreditation requirement • Student graduation requirement • School tradition • How prepared students are for research • Most published faculty • Most research intensive classes • Internship requirement		
Student Demographics	• Population of students: Full/part time students • How many years before they come back to school • Undergraduate majors • How many international students • Employment status		
Information Use Preference	• Preference of book format • Experience of using ebooks • Preference of finding and using information • Where/how to find information (Faculty vs. Students)		
Use of the Library	• How often they use the library • How they use the library (study, check out books, etc.) • Time of day/week using the library • Purposes of using the library		
Satisfaction of Library services	• Online access • Librarian/staff service • Training need • Collection level		
Impact of Campus Initiatives	• Tier-One impact • Future trends • Major challenges regarding teaching and research		

Notes

1. Kendra S. Albright, "Environmental scanning: radar for success," *Information Management Journal*, 38. No. 3 (2004): 38.
2. Ibid., 40
3. Association of College & Research Libraries, "Environmental Scan 2010 by the ACRL Research Planning and Review Committee," February, 2013. http://www.ala.org/acrl/sites/ala.org.acrl/files/content/publications/whitepapers/EnvironmentalScan201.pdf