

Understanding the basis behind undergraduates' pre-existing
perceptions of the library in order to improve library help services

by
Veronica Ling Ling Ng
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[Lucy Holman, Thesis Advisor]

[Greg Walsh, Program Chair]

Abstract

Studies on the topic of library use by millennial students have called for more qualitative studies to support the quantitative data. This study used a survey and face-to-face interviews to collect qualitative data from freshmen students at the University of Baltimore, in order to better understand the mental model that students have of the library's information organization system as well as the basis of students' perceptions of the library and its services. The responses to the survey provided insight into students' basic understanding of the library online catalog's information organization system. Other findings from the survey and interviews generally support those in other similar studies and several new themes were identified in the students' perception of the library in relation to their academic work. Together, these insights offer suggestions into ways that librarians can better support students in terms of reference services and library information.

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Veronica Ling Ling Ng
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Table of Contents

List of Tables	iii
Introduction	1
Literature Review	3
Methodology	18
<i>Demographics of the Assessment in Action Fall 2014 survey respondents</i>	18
<i>Library perception and usage survey</i>	21
<i>Demographics of the library perception and usage survey respondents</i>	24
Results	28
<i>Assessment in Action 2014 survey results</i>	28
<i>Results from the library perception and usage survey</i>	30
<i>Survey responses to questions on mental models</i>	38
<i>Results of the follow-up interviews</i>	40
Discussion	48
<i>Mental model of the library's online search</i>	49
<i>Help seeking preferences</i>	50
<i>Schema of the library</i>	52
<i>Students' perception of the librarians' role</i>	53
<i>Students' sense of self-efficacy and impact of library instruction</i>	55
<i>Recommendations</i>	56
Conclusion	58
<i>Further research</i>	59

References	63
Appendix A: Questions from Assessment of Information Literacy Post-test Fall 2014	68
Appendix B: Library Perception and Usage Survey consent form and questionnaire.....	69
Appendix C: Interview consent form	76
Appendix D: Interview script, questions and analysis guide	79

List of Tables

Table 1. Breakdown of survey respondents	19
Table 2. Breakdown of survey respondents by college	19
Table 3. Breakdown of survey respondents by year of study.....	20
Table 4. Breakdown of respondents by previous library instruction.....	20
Table 5. Demographic breakdown of first year survey respondents	25
Table 6. Breakdown of first year survey respondents by age.....	25
Table 7. Breakdown of first year survey respondents by college.....	25
Table 8. Demographic summary of interview participants	26
Table 9. Self-reported literacy skills at the end of semester.....	28
Table 10. Self-reported changes in literacy skill	28
Table 11. Responses to Question 1: List three things you expect to find in a university library.....	30
Table 12. Responses to Question 2: List the things you would go to the university library and its website for. (Check all that apply)	32
Table 13. Responses to Question 3: What do you think a university librarian does? (Check all that apply)	32
Table 14. Responses to Question 4: Select the things you would ask a university librarian for. (Check all that apply).....	33
Table 15. Responses to Question 5: When given a class assignment, what is the first place you would look for research information?	34
Table 16. Responses to Question 6a: Have you used any library services before?.....	35

Table 17. Responses to Question 6b: Select all the services you have used (Check all that apply).....	35
Table 18. Responses to Question 7a: Have you ever asked a librarian for reference or research help?	36
Table 19. Responses to Question 7b: Where and how did you ask a librarian for help? (Select all that apply).....	36
Table 20. Responses to Question 7c: Did the librarian help answer your question?	37
Table 21. Responses to Question 7d: What led you to ask for help from a librarian? Please select a statement that best applies to your experience	38
Table 22. Responses to Question 6c: Choose ONE of the following metaphors that best describes the library online catalog	39
Table 23. Responses to Question 8: Which of the following metaphors best describes Internet search engines such as Google?	39
Table 24. Respondents who chose the same metaphor for both Question 6c and Question 8	40

Understanding the basis behind undergraduates' pre-existing perceptions of the library in order to improve library help services

Introduction

Reference transactions have been in decline in academic libraries nationwide over the past decade. Librarians and information science researchers have examined possible causes of this decline from various perspectives, in particular that of the academic library's main user group: students. The Online Computer Library Center (OCLC), a global co-operative that provides technology and research services to its members, published a user perception and library usage report in 2011 (Gauder, 2011) as a follow-up to a similar 2005 report (De Rosa, 2005). The report summarized the research findings on the effects of economic and technological changes in library usage and user behavior. The economic recession of the previous five years have led to increased library usage by the American public as they turned to the library for free resources. The report described an increase in the usage of both lending material and computer terminals with Internet access. In this way, the library provided support to job seekers and others who needed access to information and technology. Advances in technology enabled more people to own smartphones and other mobile devices that changed their information seeking behavior as they started to use more digital resources. Libraries began to offer more mobile services to enable patrons to connect to their catalogs and other web services through their mobile devices.

The research also showed an overall decline in the use of academic library electronic services from library websites to electronic journals and online databases by college students since 2005. This decline began around the same time the Internet started becoming an integral part of the information environment and a new generation of students known as “millennials” started entering colleges. This group differed from previous generations of college because millennials had grown up in an environment where information is mostly digitalized and connectivity to Internet is considered an essential part of school. These students would have been accustomed to using the Internet for schoolwork and using online search engines to find resources.

The hypothesis for this study is that most students enter university with a basic idea of the academic library collected from prior experiences with school and public libraries. However, this idea or schema does not seem to undergo further development during subsequent interactions with the library, leaving students still unsure on how to search for resources at the academic library. The study will also attempt to uncover in greater detail the initial ideas that students have about the academic library and how they perceive the way in which information is organized in the library. This knowledge can then be used to improve the design of existing library enquiry and research services so that it can support users' in developing a better understanding of how the library works as they make use of library services.

Literature Review

The existing literature on student information seeking behavior at the academic library show that students find difficulty in using the library's online catalog even though they use Internet search engines extensively (Griffiths & Brophy, 2005; Catalano, 2013). They have trouble finding resources in the catalog and often turn to Google instead. The numerous descriptions of the students' frustrations and lack of success in using the library could be attributed to their understanding or mental models of how information is organized in the library. Students seem to expect the library's online catalog to function the same as an Internet search engine and this is apparent in their search strategies (Augustine & Greene, 2002; Griffiths & Brophy, 2005). It is not clear when and how these mental models and perceptions were formed. By gaining a better understanding of the perceptions that students have about the library and its online catalog, librarians can develop more effective ways of correcting misconceptions during library instruction sessions or reference information. These findings can then be included in library information sessions and applied in the design and delivery of the different library services.

A mental model, as defined in the field of interaction design, is the understanding a user carries in his or her mind of how a system works. This understanding, or mental model, is "often partial and even incomplete" (Johnson & Henderson, 2011, p. 9). Norman (1988) describes the user's mental model as a construct that is created from the user's interaction with the system. Thus, mental models are personal and vary between individuals. Johnson and Henderson (2011) list the characteristics of mental models as

being “personal, partial and dynamic” (p.10), meaning that mental models are open to change and evolution. Conceptual models, on the other hand, are the “ideal mental model” (Norman, 1982) or “idealized view” (Johnson & Henderson, 2011). A conceptual model is the view adopted by the designers or architects of a system, which in this study also includes the librarians. Designers use this view to envision how users will navigate the system. However, users may not interact with the system in the way the designer intended. Although a user need not be aware of how a system is designed in order to use it (Crilly, 2011; Morville & Callender, 2010), a clearer understanding or richer mental model makes for more effective users. Norman (1988) points out that one indicator of a good mental model “lies in its ability to provide meaning to things” (p. 69). A mental model should help the user make sense of the logic behind the design, and a well-designed system responds in the way in which the user expects it to. Such a system should also support its users in learning how to use it from their interactions, without making the users go through a tutorial or help manual. Designers should also have an understanding of users’ mental models when designing a system, and Norman (1988) goes as far as to warn that if the designers’ conceptual model is not clear and consistent, the user may end up with the wrong mental model or wrong assumptions about how the system works. This could result in an experience that leaves the user feeling frustrated and confused.

The challenge in seeking a better understanding of the user’s mental model lies with gaining access to the mental model that a user has in his or her mind. Norman (19832) observes it is difficult for users to articulate their mental models of how

something works. Johnson and Henderson (2011) also note that “mental models cannot be observed directly and users can rarely describe them accurately” (p. 21). The fact that mental models are difficult for people to articulate makes the study of mental models a challenge. In order for researchers to attempt to create a description of users' mental models, they must do so by observing people's behavior and asking detailed questions about their actions and expectations. Holman (2009) attempted to get students to explain their mental model of how a search engine worked as part of a study on understanding the students' search strategies. In addition to verbal descriptions, the researcher asked participants to draw their mental models of the relationship between their search terms and results. Most drew flow diagrams but nothing that indicated the relative strength of relationships between search terms. The task of visualizing the relationship between search terms and results was too complicated for novice users. Another construct similar to the mental model is the schema or one's expectation of how something should work, based on information collected from prior experiences. This expectation of how a system works plays a large part in guiding user's behavior. According to Minsky (1988), we use “frames” to help us understand and navigate a new scenario. A frame is a data structure that contains information about the scenario. This information helps us expect what will happen next and know what to do if these expectations are not confirmed. In other words, this information is a type of script for user behavior. Today, this data structure is known as a “schema”. When a suitable frame cannot be found, we use the closest approximation available to us. In the context of the library, how does one find a frame for a novel situation for example, in the case of students who have never been to an academic library

before? In his paper, Minsky (1988) describes the cognitive process that occurs if a suitable frame cannot be found as “alteration and modification” (i.e. learning takes place). “View-changing”, as Minsky (1988) calls this process, is a form of problem-solving and learning. This process occurs when one enters a place with certain expectations of what to find in the place and what to do in that place. These expectations may have come from previous experiences or exposure. For instance, one might expect an academic library to use a layout that is similar to that in a public or school library where books on related subject matters are located close to each other.

The library usage studies reviewed here were conducted on populations in a variety of academic institutions within the United States and in the United Kingdom, but the themes and the participant responses are similar enough to form patterns about students' information-seeking behavior and how they impact library reference and research services. The findings from Catalano's (2013) meta-synthesis of studies on graduate students' information-seeking behavior showed that while the Internet was often the first destination for student research, students acknowledged that sources from the Internet were often unreliable and that they “contributed to information overload” (Catalano, 2013, p. 259). Another finding was that low usage of more authoritative library resources was often due to lack of knowledge and awareness about library services and research databases. A study by Washington-Hoagland and Cloughery (as cited in Catalano, 2013) reported that 70% of students surveyed rarely made use of interlibrary loan service or the library's webpage.

Studies on library usage in undergraduates have shown that students often have the perception that the academic library is complex and difficult to navigate. In Mellon's (2015) qualitative study on students' feelings about using the library for research, the terms "scary, overpowering, lost, helpless, confused, and fear of the unknown" (Mellon, 2015, p.278) appeared frequently in the participants' self-reports. One participant summed up the general feeling: "The library can be an overwhelming place to someone who doesn't understand how to use it." (p.279). This feeling of being overwhelmed stems from the students' unfamiliarity with the library and a lack of library research skills, which in turn affects the way students approach research work at the academic library. Students also perceive that conducting research in the academic library is time-consuming and requires more effort compared to doing a search online. A participant in a Web generation study by Holliday & Li (2004) had this to say about the information search preference of her peers:

As I said [the] Internet is, like, the main source for students ... I guess I thought that it was like the best place to find information, because it's so **easy** and you can just type it in, because we are from the microwave generation or whatever they call us. (p. 356).

In a study of 38 college students in the United Kingdom, Griffiths and Brophy (2005) investigated the ways in which students search for research-related information. They found that 45% of students used Google as a starting point for locating information whereas only 20% turned to the university library catalog (Griffiths & Brophy, 2005). According to the study, students preferred online search engines as sources of

information because they are familiar with them, and these search engines previously provided successful result, or “tried and tested” as described by a participant. Internet search engines were also described as being “simple but complete” and “very straightforward” to use (p. 545).

The choice of the Internet as the starting point for student research has been correlated with other studies since the mid-2000s (Fister, 2002; Sobel, 2009; Ismail, 2010) when Internet searching became another option to finding information at the library. Searching on the Internet through Google appeals to students because they can receive instant results with relatively low effort, and studies on the attitudes of the students have shown that students do value time savings above reliability of sources. In the study by Valentine (2001) compared undergraduate students' perceptions of academic effort with that of their professors, and found that both parties differed on what is considered “a legitimate effort”. The professors' expectation of a reasonable effort is closer to that which is described in Kuhlthau's (1993) framework of information search where the learner has to go through the various stages and experiences including uncertainty and frustration, in the quest for information. Investigations into students' information-seeking behavior frequently make reference to this model of information search process proposed by Kuhlthau (1993) in which the early stage of the information search process is described as an experience “fraught with uncertainty and confusion” (Kuhlthau, 1993, p. 344). The Kuhlthau model takes a constructivist approach to information-seeking and describes the information search process as one in which users progress through a series of six phases or stages beginning with the initiation stage,

followed by “selection, exploration, formulation, collection and presentation” (Kuhlthau, 1993, p. 342). These stages represent specific tasks and actions related to the process and are accompanied by related feelings and thoughts. For example, the feelings experienced in the first three stages include that of uncertainty, frustration and even doubt as the searcher or learner begins the information search before passing into the later stages as the search task becomes more focused, providing clarity, a sense of direction and confidence. This unavoidable “principle of uncertainty” in the search process seems to be the aspect with which students are most uncomfortable. Perhaps this is what contributes to the anxieties associated with research: the uncertainty and confusion during the exploratory stage that Kuhlthau describes as the being the “most difficult stage for users” (p. 343). As novice researchers, undergraduate students might not know that these feelings of uncertainty and frustration are unavoidable in the research process and must be experienced before one can arrive at the turning point of “formulation” when the information finally starts to make sense.

While the faculty may want students to experience all stages of the information-seeking process as part of the learning process, students preferred direct answers presumably to avoid the frustration of “uncertainty” and to save time. In the interviews with undergraduates, Valentine (2001) discovered that students were “pragmatic” in their approach to schoolwork, weighing the academic and personal value of each assignment, and allotting the corresponding effort spent. This finding is key because it reveals the decision-making process behind how much time and effort students are willing to invest in research for an assignment. A portion of this calculation includes the willingness to

seek reference help or be satisfied with the professor's expectation, otherwise as known as "WPW" – "What The Professor Wants" (Valentine, 2001, p. 109). This practical approach towards academic work has also been noted in more recent studies on students' attitudes towards research. Mizrachi and Bates (2013) observed that the primary motivating factor in undergraduates' academic goals were grades rather than studying for the "altruistic pursuit of knowledge for its own pleasure" (Mizrachi & Bates, 2013, p. 1954). Undergraduates were also primarily concerned with saving time and they expected "instant gratification" (Mizrachi & Bates, 2013, p. 1954) when conducting research work. These attitudes explain the rationale behind students' preference of Internet search versus using the academic library for research.

George, Bright, Hurlbert, Linke, St Clair and Stein (2006) conducted a study on the ways graduate students searched for information in which student search methods were described as "lacking in sophistication". The researchers observed that "convenience" in obtaining the information was a deciding factor on the selection of information resources. This behavior is not much different from that of undergraduate students in similar studies. The findings from this study showed that graduate students rely on librarians in locating and using resources and recommended that library information sessions cater different levels of research experience, even though they were all graduate students. In a comparative study between the research behavior of graduates and undergraduates, Georgas (2014) found that undergraduates believed that they were skilled at research when they were in fact being undiscerning with the credibility of their results and employing unsophisticated search methods. Catalano (2013) made a

comparison of both graduate and undergraduate information-seeking behavior and described the following as shared characteristics:

- Both groups used the Internet as starting point for research
- Both groups felt there was an “information overload”
- Both groups accepted materials of lower quality or reliability in relation to time-saving

The differences were that graduate students were able to employ coping mechanisms and strategies such as:

- Use of “chaining” or “chasing” (following of reference lists)
- Use of Google Scholar for quick reference retrieval (as compared to simply using the sources from Google Scholar)

The final point on the use of Google Scholar as a supplementary interface suggests that the process of retrieving sources through Google Scholar takes less time compared to using library's online search, even for non-novices. From these studies it appears that while students have no trouble in finding information online, they still need help in locating credible, relevant resources and evaluating the information that they have found. Young (2013) observes that as Google becomes the preferred starting point for students and libraries cannot match Google in terms of convenience and online accessibility, librarians should use the opportunity it presents as “teaching moments” instead of disapproving the use of online search engines for student research.

In an attempt to understand what motivates students to ask for help at the library, Sobel (2009) asked freshmen students what were the factors that led them to seek help from library services. Students cited explicit instructions to use the library from the professor as the most compelling reason to ask for reference help. Other factors such as library information sessions and library outreach were ranked much lower. The study's sample population had only been on campus for a few weeks when they were surveyed, and this condition meant that their responses are representative of incoming students who had not yet really experienced academic life and were in fact, relying on prior experience or possibly a library instruction session received as part of their freshmen orientation. Ren (2000) conducted a study to evaluate the extent of library instruction on student self-efficacy in the areas of performance and behavior when conducting electronic information searches at the library. The study involved 85 undergraduates enrolled in an introductory English composition class at Rutgers University. One of the conclusions from that study was that negative emotions such as confusion, irritation and frustration did have an adverse impact on students' self-efficacy (Ren, 2000). In other words, those who had a poor search experience due to lack of library instruction would be less likely to engage in future information searches at the library.

The issues of changing information-seeking behavior and needs have become more critical with each incoming student cohort that has grown up using the Internet extensively. A decade ago, Oblinger and Oblinger (2005) depicted the profile and information-gathering preferences of "Net Gen college students" as an implication for university libraries. They described a possible dichotomy between faculty, library

administrators and these “Net Gen” students in terms of attitudes towards scholarly research. This divergence in mindset has been reduced in recent years as other aspects of students' online information-seeking behavior began to emerge. Researchers in the topic of library use discovered behavior that was contrary to assumptions about the ability and preferences of net generation or millennial patrons. Holman (2009) found that despite their reliance on Internet search for school-related work, millennial students were not savvy with library e-resources such as databases. They had difficulty finding relevant databases and cross-searching between databases. Ismail (2010) also discovered trends in library help preferences that go against the net generation profile. The undergraduates who responded to the 2010 survey showed a preference for face-to-face or in-person research assistance, rather than through online channels such as chat or social networks. Mizrachi and Bates (2013) in their ethnographic study on undergraduates' academic information management habits also refer to first-year undergraduates as “digital natives”, who are thought to prefer their academic information world to be a completely digital one. However as the findings indicate, this is not always the case. The information world of a student can be described as an “ecology” of both physical and digital interfaces, with students employing a mix of both in their study worlds instead of a solely digital one. This conclusion has direct implications on library and research services in terms of the format and media in which they are best delivered to students. Insights like these highlight the need for observing, documenting and understanding patron behavior before designing services that cater to certain user profiles or certain trends.

Much research has been dedicated comparing the usability of the Internet search interface and that of the library online catalog and other online library systems. In one usability study on library websites, it was observed that the student participants' lack of understanding and awareness of library resources that affected their ability to complete the information-seeking tasks more than the layout of the website (Augustine & Greene, 2002). Studies on student search behavior in the library often make the comparison between Internet search and the electronic library catalog search system. Likewise, there have been attempts to make the library search experience seem more like an Internet search although this does not appear to be the solution if users do not understand what is going on behind the apparently simple interface (Lown, Sierra & Boyer, 2013).

Concealing the complexity of the library online catalog behind a single search box might increase library search utilization but does not improve the user's understanding of the library search process. The library's federated search and discovery layer collate results from the different sources such as external databases as well as the library's own collection. Users can make use of a controlled vocabulary (Holman, 2009), wildcard and Boolean searches for retrieving more relevant results. The journals contained within these databases do not always have titles that reflect their content, so the searcher needs to know which terms to use. New terms take time to be entered into the scholarly lexicon so certain search terms may not yield results in academic databases. The query systems used in the library search interfaces were originally designed for highly skilled searchers such as librarians and not for novices (Borgman, 1996), and so they remain difficult to use because they are not intended to mimic the information-seeking behavior of an

ordinary user. The user should have an idea of how the information is organized and an understanding of how the system works. This is a completely different approach from the design of a typical online search engine, where the intention is to simplify the interface and provide a low entry barrier for all users. For instance, Google employs a natural language search mechanism that provides results regardless of how the query is phrased.

Beyond the design of the library online services, libraries have over the past decade taken a more personal and pro-active approach to meet changing user demands. The literature on reference services includes investigations on taking a more pro-active and user-centered approach to reference services. These reference services include embedding librarians into courses and employing roving librarians, both of which involve an active engagement with the users, compared to the traditional reference help desk model. Another approach is the “personal librarian” where library services are customized to meet the user’s specific needs and requirements. Priestner and Tilley (2010) describe this “personalized boutique” approach modeled after customer service in the retail and hospitality industry, with a focus on specialized knowledge. This involves investing time in learning about user needs, cultivating user relationships and customizing services to meet individual needs. Such highly personalized and customized services and programs are costly to maintain in terms of staff commitment and economics therefore it is important to establish what type of reference help service best meets students’ needs and preferences although the return on investment can also be high. The success factors in the boutique library model, as described by Tilley (2013) depend on knowledge of users’ specific needs, their preferences and methods of working (p. 83)

with the objective of providing service driven by user needs, not procedures. The guiding principles behind boutique library models often challenges assumptions the librarians might have about their users. Tilley (2013) describes how two libraries in Cambridge successfully adopted the boutique library model to better serve patrons. One library was situated in the English faculty and the other was located in the Judge Business School. Both libraries conducted user research and collected user feedback on a regular basis to keep up with user needs.

It is clear that libraries play an active role in helping students achieve academic success, which is a key institutional goal, thus student engagement in the library is an important issue for institutions for higher learning. Pellegrino (2012) reiterates the need to halt this decline of library use amongst students because the academic library is in real danger of becoming irrelevant to students in this age of instant information. Most of the research done on the topic of students and library has been conducted by librarians (Catalano, 2013), which could signify that more diverse views are needed in terms of the way the topic is approached, for instance from the perspective of user researchers and interaction designers. Many of the studies on library usage also recommend that more qualitative studies be conducted to better understand students' perceptions regarding the different aspects of the library services (Robinson & Reid, 2007). A comprehensive and regular study of user behavior and feedback such as the ones employed by the boutique libraries would be a key feature at every academic library. By gaining insight to the mental model that users have of the library, designers of the library experience will have a better understanding of what goes on in users' mind when they interact with the library

system. An in-depth knowledge of library users' pre-existing assumptions and perceptions can also help librarians improve the effectiveness of library instruction programs by focusing on specific library features in the order of users' priority and interest.

Methodology

This study takes a mixed -methods approach and employs both quantitative and qualitative methods in answering the research questions. Secondary data from two student surveys administered by Langsdale Library were used in the initial inquiry into students' perceptions of the library. The surveys were part of the University of Baltimore's project for the Association of College & Research Library's (ACRL) Assessment in Action grant aimed at developing assessment of the University's information literacy program. The primary data for this study was collected through a survey of freshmen students and face-o-face interviews with a smaller group of participants.

The Langsdale Library is part of the University of Baltimore (UB) and houses the physical collections and resources for all the academic programs except for the UB School of Law. Langsdale Library currently occupies two floors of the Learning Commons building. The library's physical collection is located on the first floor while the second floor contains computer workstations, group meeting rooms and individual study rooms. The research librarians at the Langsdale also teach INFO 110, a 3-credit information literacy class for freshmen as well as portions of WRIT 300, a writing and research class that is required for all students.

Demographics of the Assessment in Action Fall 2014 survey respondents

These information literacy surveys were conducted in two parts: as a pre-test the beginning of the semester and as a post-test at the end of the semester to collect baseline

data from which to improve student success in acquiring information literacy skills. The surveys were administered to students in the INFO 110 and WRIT 300 classes and participation was on a voluntary basis. The response rate to the survey is shown in Table 1.

Table 1

Breakdown of survey respondents

Students		
Number of students surveyed	Number of responses received	Percentage of response rate
394	93	23.6%

As both of these classes were compulsory, the participants came from all the undergraduate programs offered at the University of Baltimore. Table 2 shows the number of survey respondents from each college.

Table 2

Breakdown of survey respondents by college

College	Number	Percentage
College of Public Affairs	30	32.3%
Merrick School of Business	46	49.5%
Yale Gordon College of Arts and Sciences	17	18.3%

Students may choose to take these classes at any point in their program, so the actual enrollment includes freshmen and sophomores in INFO 110 and juniors and seniors in WRIT 300. Table 3 shows the number of respondents according to their year of study. More than half of respondents were in their senior year.

Table 3

Breakdown of survey respondents by year of study

Junior		Sophomore		Senior	
Number	Percentage	Number	Percentage	Number	Percentage
37	39.8%	3	3.2%	53	57.0%

Students were asked to indicate how much library instruction they had received so far and the majority of the respondents indicated they had received library instruction in at least one of their courses. The complete breakdown of library instruction received is shown in Table 4.

Table 4

Breakdown of respondents by previous library instruction

Previous library instruction received		
	Number	Percentage
No	21	22.6%
Yes, in only 1 course	37	39.8%
Yes, in only 2-4 courses	28	30.1%
Yes, in 5 or more courses	3	3.2%
Unsure	4	4.3%

The post-test survey was administered by Langsdale Library in the Fall 2014 semester and the full questionnaire is attached in Appendix A. The survey responses were collected via the University of Baltimore Sakai online course system. Students were asked to rate their information literacy skills, and most indicated there was an

improvement but did not provide an explanation for this improvement. This finding provided the basis for some of the questions in the survey and interviews for this current study, in terms of uncovering the role of the library in the self-rated improvement of student information literacy.

Library perception and usage survey

The primary data for this study was collected from the Spring 2016 cohorts of the INFO 110 and WRIT 300 classes. The goal of the survey was to learn about the mental model that students have of the library's online catalog. The survey also sought to verify existing knowledge and perceptions about library resources and services as well as to discover how students use the library. One of the considerations in the research design was that the data would be conducted by a single researcher, and due to limitations in time and resources, a survey was used as the first data collection method because it could reach a relatively large number of respondents. The survey consisted of demographic questions on the major, year of study, gender and age range of the respondent.

Information on race and ethnicity was not collected as they were not treated as variables in this study. It was not within the scope of this study to consider the effect of these variables. The other demographics were collected to ensure that was representation from the different majors in UB and from both sexes. The full survey can be found in Appendix B. The responses were collected from the questions listed below.

- Question 1: List three things you expect to find in a university library

- Question 2a. What are the things you would go to the Langsdale Library for
(Check all that apply)
- Question 2b. What are the things you would go to the Langsdale Library website for (Check all that apply)
- Question 3: What do you think a university librarian does? (Check all that apply)
- Question 4: What are the things you would ask a university librarian for (Check all that apply)
- Question 5: When given a class assignment, what is the first place you would look for research information?
- Question 6c: Which of the following metaphors best describes the library online catalog (Check all that apply):
 1. Filing cabinet: Everything is there in the cabinet but you have to know where it is filed
 2. Book shelves: You have to locate the right shelf to find the item you want
 3. Warehouse: You put in your request and someone finds the item for you
 4. Shopping catalog (printed): The “item” (i.e. information) you want is stored in different locations and they order it for you from the store where the “item” is located
- Question 8: Which of the following metaphors best describes Internet search engines, such as Google?
 1. Filing cabinet: Everything is there in the cabinet but you have to know where it is filed

2. Book shelves: You have to locate the right shelf to find the item you want
3. Warehouse: You put in your request and someone finds the item for you
4. Shopping catalog (printed): The "item" (i.e. information) you want is stored in different locations and they order it for you from the store where the "item" is located

Questions 1 to 5 focus on gathering data about students' expectations of what to find in the university libraries, the role of the librarians, in order to build an inventory of what is contained in the student's existing schema of the library. The responses to Question 6b and Question 8 form a rough idea of students' mental models of both Internet search engines and the library online catalog.

The second data collection method was a series of semi-structured, face-to-face interviews with a smaller number of participants recruited from the survey respondents. An incentive in the form of a \$10 gift card was advertised at the end of the survey and interested parties could leave their contact information along with their survey responses. The researcher then contacted these students and arranged for interview sessions on campus in late March and early April 2016. The students were interviewed individually, and the researcher took notes and made audio recordings for transcription. Each session lasted between 30 to 40 minutes with a total of seven interviews being conducted. The interviews were conducted in a semi-structured format and this gave the researcher flexibility to explore any interesting points that emerge. In this aspect, having a single researcher conduct and record all the interviews proved advantageous as the order of the questions had to be re-arranged, depending on the participant's response. The sole

interviewer was also able to keep track of the main goals in the interviews and to probe deeper if needed. The data was then transcribed and coded by the same researcher using the interview guide in Appendix D.

Demographics of the library perception and usage survey respondents

With the permission of the class instructors, the survey was publicized in the INFO 110 and WRIT 300 classes, to a group of approximately 552 students. Participation was voluntary; some instructors used the paper version, and there was also an online version for the eight WRIT 300 classes that were conducted online. In the survey for this study, a total of 106 responses were collected, out of which 57 were from first year students. Seventeen came from the online survey and the rest came from paper surveys administered by the instructor during class. The study is interested in the data from the group of students who at the time of the study had only been in UB for less than three semesters and were mostly fresh from high school. They would have some experience of the UB library and could still recall their first impressions of the university library. As this survey was introduced to the class by the instructors, the introduction states clearly that all information would be kept anonymous and participation had no effect on their grade. It is worth noting that several of the class instructors were also reference librarians and this could have had an effect on the participation rate and type of answers. The demographic breakdown of the first year survey participants appears in Table 5.

Table 5

Demographic breakdown of first year survey respondents

Total number of first year respondents: 57		
Gender		Percentage of total responses
Male	22	38.6%
Female	35	61.4%

Table 6

Breakdown of first year survey respondents by age

Total number of first year respondents: 57			
Age range		Number	Percentage of total
Between 18 - 23		51	89.5%
Between 24 – 29		0	0%
Between 30 - 35		3	5.3%
Between 36 - 41		2	3.5%
Between 41 - 55		1	1.8%

Table 7

Breakdown of first year survey respondents by college

Total number of first year respondents: 57			
College		Number	Percentage of total
College of Public Affairs		17	29.8%
Merrick School of Business		16	28.1%
Yale Gordon College of Arts and Sciences		24	42.1%

Most of the respondents were between 18 -23 years of age (89.5%) with a majority of females (61.4%). The majority of responses came from students in the Yale Gordon College of Arts and Sciences (42.1%), and the rest were almost equally divided between the Merrick School of Business (28.1%) and the College of Public Affairs (29.8%). The distribution of respondents differs from the population in the Assessment in Action Fall 2014 survey where the largest number of participants was from the Merrick School of Business and the fewest came from the Yale Gordon College of Arts and Sciences (Table 2). The second part of the study consisted of face-to-face interviews with seven participants recruited from the library usage survey and conducted on-campus over the period of a week. The participants came from all three colleges at UB. All seven participants were between the ages of 18 and 21. They had all started at UB the previous semester, straight from high school so they all had been at UB for the same length of time. Four of the participants were male and three were female. For the purpose of this study, each participant has been given a pseudonym. The participants' demographics are summarized in Table 8.

Table 8

Demographic summary of interview participants

Total number of participants: 7					
No.	Pseudonym	Gender	Age	Year of study	Major
1	Alice	Female	18	First Year	Business
2	Shaun	Male	19	First Year	Applied Information Technology
3	John	Male	20	First Year	Simulation & Digital Entertainment

4	Farah	Female	8	First Year	Finance
5	Rae	Female	19	First Year	Psychology
6	Noel	Male	19	First Year	Government & Public Policy
7	Lauren	Female	18	First Year	Jurisprudence

The follow-up interviews were arranged with participants of the survey as a means of gaining further insight into the responses from the survey questions. The interview questions were divided into three sections or topic areas:

1. Prior experience with libraries
2. Research habits and preferences
3. Experience with Langsdale Library

With the semi-structured format, the interviewer did not have to strictly adhere to the question sequence in the interview guide, but followed the flow of the conversation depending on the topics that emerged. The questions were also designed to encourage participants to share stories starting with their earliest experience with the library. All the participants had a prior experience with a library with the earliest experiences taking place in elementary school library. The other libraries that were mentioned were located in the participants' middle school and high school as well as public libraries.

Results

Assessment in Action 2014 survey results

The results of the Assessment in Action Fall 2014 post-test conducted by Langsdale Library are presented in the tables below. Almost 70% of the 394 respondents reported an increase of at least one level with 50.5% rating themselves one level higher at the end of the semester. About 30% of the respondents reported no change and one student rated their literacy skill as decreasing by one level. These self-ratings are summarized in Table 9 and Table 10.

Table 9

Self-reported literacy skills at the end of semester

	Self-rating on a scale of 1 to 5									
	1 - Poor		2 - Fair		3 - Good		4 – Very Good		5- Excellent	
	No.	%	No.	%	No.	%	No.	%	No.	%
Beginning of semester	2	2.2%	31	33.3%	39	41.9%	18	19.4%	3	4.8%
End of semester	0	0	2	2.2%	32	34.4%	45	48.4%	14	15.1%

Table 10

Self-reported changes in literacy skill

	Increase/Decrease											
	+1		+2		+3		+4		-1		No change	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
	47	50.5%	15	16.1%	1	1.1%	1	1.1%	1	1.1%	28	30.1%

The data of interest in this study are the responses to the self-evaluation section of the post-test attached in Appendix A and the responses to the optional open-ended question: "What do you think contributed most to this change (if any)". The "change" refers to the student's rating of their research and literacy skill at the start of the semester as compared to the end of the semester. Forty-four students provided a response to this question. Most of responses listed the class instruction, coursework and instructors as contributing factors to the positive change. The response below stands out not only because the participant put in the extra time to answer this question and was clearly interested in providing feedback, but also because it reflects the uncertainty that students feel in the early stages of information search process:

I rated myself as fair in both cases. I have less confidence in myself than I did at the beginning of the semester. Paradoxically, this is a good thing because my confidence was buoyed by ignorance. I still suffer from having to write and cite at the same time. At least I have a chance to improve in this area if I can keep passing classes and write more using the appropriate citation style (Survey respondent). The respondent was one of the only two students who rated themselves as "Fair" at the end of the semester. Coming from a third year student, the response also reflects the "false" sense of confidence that freshmen have about research because they are able to find information on the Internet. It is in college that students are challenged in their search methods.

Results from the library perception and usage survey

The aim of survey was to collect information on students' perceptions and usage of the university library. In the first half of the survey, students were asked about their perceptions and expectations of the library. The responses will help to establish what students know about the university library and librarians, in terms of resources and services. The questions in the second half were about students' actual use of the library including two questions on metaphors for the library online catalog and Internet search engines.

In Question 1, students were asked to list the first three items that they would expect to find in the library. The students' basic schema of the library would consist of these items. It was not surprising that almost half of the respondents (45.6%) listed "Books" as the first item they would expect to find in the library. The same number of respondents (45.6%) listed "Computers" as the second item, followed by "Librarians" as the third item. Other terms that frequently appeared in all three items were "Printers" and "Study spaces".

Table 11

Responses to Question 1: List three things you expect to find in a university library

	First item		Second item		Third item	
	Number	Percentage	Number	Percentage	Number	Percentage
Books	26	45.6%	10	17.5%	6	10.5%
Computers	12	21.1%	26	45.6%	0	0
Librarian	6	10.5%	2	3.5%	15	26.3%

Question 1 was an open-ended question and respondents were able to write anything that comes to mind. Although this would make coding more difficult, the rationale behind having an open-ended question was to allow participants to write anything that came to mind. Most participants entered physical items but a few used descriptive terms such as “great assistance” and “helpful resources”. The purpose of Questions 2 to 4 was to determine the type of services students expect from the library and librarians. The majority of responses indicated academic-related resources and help. Amongst the six open-ended responses were “quiet study space” and “wifi”. The responses shown in Table 12 reveal that the students mostly used the university library and its website for starting their information search (84.2%), locating a resource for class as instructed (82.4%) and for finding a specific resource (78.9%). The library as a resource for verifying information was also one of the top selection with 68.4% of the respondents indicating that they used the library and its website for that purpose.

Table 12

Responses to Question 2: List the things you would go to the university library and its website for. (Check all that apply)

Total number of respondents: 57		
	<i>Number</i>	<i>Percentage</i>
<i>To begin a search for information on a certain topic</i>	48	84.2%
<i>To verify facts or information</i>	39	68.4%
<i>Retrieve a resource that your class instructor asked you to find</i>	47	82.4%
<i>To find a specific resource (e.g. book, article)</i>	45	78.9%
<i>Entertainment – books and videos</i>	13	22.8%
<i>Other (Please specify)</i>	6	10.5%

Table 13 contains the responses to “Question 3: What do you think a university librarian does? (Check all that apply)” and suggests that the respondents viewed librarians primarily as custodians of resources and facilities (93.1%) and as guides for locating resources (94.7%). One entry in the open-ended section was “Keeps the library quiet”. Most respondents also indicated that they knew librarians help students with research (84.2%) although only 10 (19.6%) respondents had reported as having actually asked a librarian for research help in Question 6b.

Table 13

Responses to Question 3: What do you think a university librarian does? (Check all that apply)

Total number of respondents: 57		
	<i>Number</i>	<i>Percentage</i>
Organize and manage the library's collection of resources	53	93.0%
Make sure that the facilities in the library are in order	48	84.2%

Help students with locating resources	54	94.7%
Help students with research	48	84.2%
Keeps the library's collection up-to-date	45	78.9%
Other	2	3.5%

In Question 4, students were asked to indicate what they would ask the librarians for help with. Most of the responses indicated that students would approach a librarian for basic assistance such as locating a resource within the university library (89.3%). Almost three fourths (73.2%) of the respondents said they would approach a librarian for general research help. Only 62.5% of the respondents said they would ask a librarian for help in finding a resource online, compared to 83.9% and 71.4% for help in locating resources within the university library and other libraries, respectively.

Table 14

Responses to Question 4: Select the things you would ask a university librarian for. (Check all that apply)

Total number of respondents: 56		
	Number	Percentage
For help in how to do research	41	73.2%
For help in completing a WRIT 300 assignment	18	32.1%
For help in completing a specific assignment in a course other than WRIT 300	24	42.9%
For help in understanding the requirements for a research paper	34	60.7%
For assignment-related technical assistance e.g. how to format a Word document or other Microsoft Office software	27	48.2%
How to use a certain citation format e.g. APA or MLA style	38	67.9%
Help in locating a resource that is available in the UB library	47	83.9%

Help in retrieving a resource that is available in another university library	40	71.4%
For help in using the library's online catalog	42	75.0%
For help in finding a resource on the internet	35	62.5%
Other	0	0%

Question 5 asked students to select their first choice as a source for research.

Almost 37% cited the library website, while 54.4% said that it would be Google search.

Only four respondents cited instructors, and none chose "Librarians" or "Friends".

Table 15

Responses to Question 5: When given a class assignment, what is the first place you would look for research information?

Total number of respondents: 57		
	Number	Percentage
University Library website	21	36.8%
Academic librarian at the reference desk	0	0%
Google search	31	54.4%
Instructor	4	7.0%
Friends	0	0
Other	1	1.8%

Students who indicated in Question 6a that they have not used any of the university library services before were instructed to skip the following questions and proceed to Question 8. Most of the students (92.7%) indicated that they had used at least one of the library's services before.

Table 16

Responses to Question 6a: Have you used any library services before?

Total number of first year respondents: 55		
	Number	Percentage of total
Yes	51	92.7%
No	4	7.3%

The responses to the Question 6b are shown in Table 17. The majority of respondents (90.2%) indicated they used the computers and other hardware resources followed by study spaces (80.4%) and meeting rooms (58.8%). These numbers are high compared to the 47.2% who made use of the library's resources for school work. The use of the library as a computer lab is also a point which frequently appears in the follow-up interviews.

Table 17

Responses to Question 6b: Select all the services you have used (Check all that apply)

Total number of first year respondents: 51		
Services	Number	Percentage of total
Resource (books and/or multimedia items) loan for schoolwork	24	47.1%
Resource (books and/or multimedia items) loan for entertainment	10	19.6%
Specialized software	1	2.0%
Computers, printers and scanners	46	90.2%
Meeting rooms	30	58.8%
Study space	41	80.4%
Sought research help from a librarian	10	19.6%

Questions 7a, 7b and 7c were also about library help services. Thirty out of fifty-three participants said that they had asked a librarian for help before. In the responses to “Question 7b: Where and how did you ask for help?” (Table 19), the majority of respondents indicated they asked for help in-person at the library, a trend that is also reflected in the follow-up interviews. Only two students (6.7%) asked for help through email. None of the students had asked for help through the telephone or the online LiveChat feature.

Table 18

Responses to Question 7a: Have you ever asked a librarian for reference or research help?

Total number of respondents: 53		
	Number	Percentage of total
Yes	30	56.6%
No	23	43.4%

Table 19

Responses to Question 7b: Where and how did you ask a librarian for help? (Select all that apply)

Total number of respondents who have asked a librarian for help: 30		
	Number	Percentage of total
In-person	22	73.3%
Online through LiveChat	0	0%
Through email	2	6.7%
Through the telephone	0	0%
In class during a library instruction session	4	13.3%

From the responses to Question 7c, the majority of students found the reference help to be useful (78.3%) but 21.7% of the respondents felt that they had to figure out the rest of the answer by themselves. Of the five students who felt that they still had to figure out the rest of the answer to the question themselves, it is not known what was lacking in the help they received. It could be that because librarians do not simply provide the answer but give guidance and advice on how to find the information, the students might have felt that they had to do some additional searching on their own in order to answer the question.

Table 20

Responses to Question 7c: Did the librarian help answer your question?

Total number of respondents: 23		
	Number	Percentage of total
No, the help was not useful at all	0	0%
Yes, my question was answered	18	78.3%
Somewhat, I still had to figure out the rest for myself	5	21.7%

Question 7d attempts to discover the reasons behind asking the librarians for help. The results are shown in Table 21. The responses show that an equal number of students approach librarians for help with the library online catalog and online search (25.9%). Only 18.5% of the respondents felt that the librarian could find better answers than they could.

Table 21

Responses to Question 7d: What led you to ask for help from a librarian? Please select a statement that best applies to your experience

Total number of respondents: 27		
	Number	Percentage of total
Looked on the library online catalog/database, but I couldn't find the answer myself	7	25.9%
Had trouble using the library online catalog	1	3.7%
Looked online but could not find the answer	7	25.9%
My instructor told us to	4	14.8%
The librarian can probably find better answers than I can	5	18.5%
Library instruction session	1	3.7%

Survey responses to questions on mental models

In Question 6c, the respondent is asked to select the metaphor which they feel best describes the information organization system used by the library online catalog. The four options are mapped to the following perceptions:

- Option 1 - Filing cabinet: Single source of information
- Option 2 - Book shelves: Multiple sources of information, some knowledge and self-service is required
- Option 3 - Warehouse : Multiple sources of information, some knowledge and self-service is required but an agent does the retrieving
- Option 4 - Shopping catalog: An index to multiple sources of information

Table 22

Responses to Question 6c: Choose ONE of the following metaphors that best describes the library online catalog

Total number of first year respondents: 55

	Number	Percentage of total
Option 1- Filing cabinet	26	47.3%
Option 2 - Book shelves	12	21.8%
Option 3 - Warehouse	10	18.2%
Option 4 - Shopping catalog	7	12.7%

“Option 3 – Warehouse” is the most accurate mental model provided here and the students who selected this option demonstrate a relatively sophisticated understanding of the library catalog’s federated search system. The same four metaphors were used in Question 8 and the participants were asked to select the metaphor that they think best represents how internet search engines work.

Table 23

Responses to Question 8: Which of the following metaphors best describes Internet search engines such as Google?

Total number of first year respondents: 55

	Number	Percentage of total
Option 1- Filing cabinet	22	40%
Option 2 - Book shelves	8	14.5%
Option 3 - Warehouse	13	23.6%
Option 4 - Shopping catalog	10	18.2%

“Option 4 - Shopping catalog” is the most accurate mental model provided in this list of internet search engines. They function as indexers, but do not store the content. Most of the respondents chose “Option 1- Filing Cabinet”, a metaphor that describes the organization system as one where the information is stored in a single location. A closer analysis of the relationship between the responses to both question is shown in Table 24. The number of comparisons is taken from the number of participants who responded to both Questions 6c and 8. A total of fourteen respondents chose the same metaphor for both questions.

Table 24

Respondents who chose the same metaphor for both Question 6c and Question 8

Total number of first year respondents: 55			
Question 6a: Library catalog	Question 8 – Internet search engines	Number	Percentage of total
Option 1- Filing cabinet	Option 1- Filing cabinet	10	18.2%
Option 2 - Book shelves	Option 2 - Book shelves	1	1.8%
Option 3 - Warehouse	Option 3 - Warehouse	3	5.5%
Option 4 – Shopping Catalog	Option 4 – Shopping Catalog	0	0%

Results of the follow-up interviews

All of the seven participants in the interviews had prior experience with school or public libraries, with a few recalling their earliest experience with the library in elementary school. It was observed that during their first few weeks on campus, students tended not to explore library services but instead relied on information from class instructors and friends. When recounting their first experience of Langsdale Library, none of the participants mentioned exploring the library premises but went directly to the

computer workstations or help desk. Most of the participants had sought help at the university library and this usually took place in their first few weeks on campus. The students stated they want to do well in their first few assignments and were therefore willing to approach the library for help. One participant said she approached the librarian at the reference help desk for assistance in creating a reference list because “it was the first assignment and I wanted to do well.” Other participants recalled asking the librarians for help in locating books and in using the library online catalog. On the other hand, the participants who have never sought reference help tended to perceive their own research skills as being adequate.

Each participant was asked to compare their first experience with the university library to their prior experiences with libraries in general. The size of the library was mentioned as “surprisingly big for being on the third floor and just expanding out.” Another aspect of the physical library frequently mentioned by the students was the study spaces for individual use as well as group study areas. The majority of participants reported feelings of being lost during the first weeks of class. Their first assignments required them to use both the library online catalog and books as resources and one participant admitted that he did not know how to look for books at the university library during his first week on campus and had to ask for help at the front desk. Another participant said she asked for help in locating the resources that were listed in the library catalog search results, only to be told by the librarian that they were links to PDFs. Both appeared to have been somewhat embarrassed by the incidents and were quick to point out that they had since learned how to use the library's resources. Other comments about

first encounters with the library involved the association of the library with computers. This correlates with the responses in the survey where computers were listed the second item, after books, as things students expected to see in the library. Interviewees also mentioned that they made use of the library's printers and scanners. Two participants mentioned using other nearby university libraries, namely the Maryland Institute College of Art (MICA) and Towson University library for scholarly research. They made use of the physical resources located in those libraries. This shows that these students are willing to spend the time to travel to another location to access a special collection. The student who also uses the Towson University library does so because it is near his home. He makes use of the Langsdale Library website and catalog even when he is at the Towson library.

You can do that at home too, which kind of expands the length of the library's influence [...] if I could look up something here and continue at home, and still get access because I'm a UB student. (Noel, Government & Public Policy major)

Even though students were resourceful in using the different libraries in the university system, they did not make full use of the library services. The student who went to the MICA library had not made use of the interlibrary loan services. He had thought this service was only for physical books. He also assumed the loan request would take too long to arrive even though he typically starts his research a full week before the paper is due. He had not heard of interlibrary requests for digital resources. In another instance a student was unaware of the reference help offered by the librarians: "I wish I had known. If I had known I can get help from the librarians, I would go. There were many times when I needed help" (Alice, Business major).

The participant above uses Google as her primary source of information, and there were many occasions when she needed research help in assignments because she could not find resources on the topic. She did not think that the librarians were able to offer research help with class assignments. This is a case of missed opportunity where a student who would have gladly sought help from the librarians but did not do so because she was unaware that such help existed. However, not all participants were as uninformed about the library's research help services. Farah, a Finance major, had her first experience with the library when she approached the reference help desk for assistance in creating a reference list. She would not, however, ask the librarians for research help with an assignment because she felt that the librarians would not be as familiar with the assignment criteria compared to the tutors at the Achievement and Learning Center (ALC) whose role is to help students with schoolwork. Another issue related to student awareness of library services is the perception that librarians only assisted with physical resources such as books. Shaun, an Applied Information Technology major said, "They helped me find a book, but I never thought of them as helping me in research". He added that he did not think it was part of the librarian's job to provide research help. Three of the participants said they would ask for help with a book but not with digital resources. Four of the participants had never approached a librarian for help. When asked why, they said that they had not yet encountered any problems they could not solve by themselves. Rae, a Psychology major, offered the following explanation, "Pride, I want to do this by myself ... Feel like I kind of gave up." Rae's explanation reflects the attitudes of the students described in the study by Clegg, Bradley and Smith (2006) on help-seeking and

self-esteem among students. The students did not seek reference help because they wanted to complete the assignment by themselves and felt that asking for help would be an admission of defeat. The participants were also asked if they would consider asking for help through the other channels such online chat, email or phone. Rae said that although she would not have a problem with using these channels, she would prefer to ask for help in-person and “person-to-person interaction”. She explains why by adding, “... it’s easier to understand you than a computer can, you don’t just use keywords, you can describe what you are looking for and ask if they’ve helped anyone else with this assignment or subject.” Another participant, Lauren, had more to say about using the online help forum in Sakai, the learning management system used by all students at UB.

I hate doing that with them, like formal papers and whatnot. Just mainly I find myself asking technical questions and I’ll ask a billion questions which can be asked a lot faster in person (Lauren, Jurisprudence major).

All the participants preferred to seek help in-person, just like the students who were surveyed in the study on net-generation help seeking preferences (Ismail, 2010). Lauren offered this insight: “I’ve never asked a librarian [for help] online, I always feel that when I talk to them, I feel it’s easier to get my point across and understand what I’m trying to say.” Her explanation summarizes the main reasons why students prefer to ask for help in person. They find it easier to describe their question or problem when talking directly to the other party as compared to putting it into writing. In response to the question on how much time they would allocate to research work on an assignment, several participants said that they would first find out the professor’s grading criteria and

use that as a guide on how much research to do. The students were also pragmatic in their approach to assignments and this meant giving themselves ample time for research and stopping when they were tired, although one admitted to often “cramming the night before”. The preoccupation with the grading criteria matches Valentine’s (2001) account of how students were using “what the professor wants” as their main guide for research work. In fact, one of the participants said that she did not approach the librarians for research help because she thinks that although they can help in looking for information, but not to “satisfy the professor’s criteria”. She would rather approach the tutors at the Achievement and Learning Center “because they know the criteria and what the professor is looking for.” Thus, the students in the interview group are very mindful of meeting criteria and “fulfilling the teacher’s’ grading criteria.” However, students were not solely motivated by grades and meeting the professor’s criteria. When asked if they found any aspect of the research process rewarding, they provided a range of responses. One student liked how she develops the research question through the process of research and starts gaining a “vested interest” in the results. One student even compared the process of evaluating the credibility of resources to “investigative work.” Another felt triumphant when she found “the source or article in a journal that ties everything together.” The start of the information search process was frequently described as being confusing, overwhelming and frustrating. She described the difficulty of the process as, “having to sift through one by one, wade through piles of other people’s research trying to find something that you can use.”

Five of the participants reported that most time-consuming and tedious part of the research process was the actual reading of the resources and evaluating their credibility. In the response to the question on problems encountered during the research process, the participants often shared what they learned in the information literacy classes, and it was interesting to hear the ways in which they applied this knowledge. The students liked learning how to use advanced search methods, in particular, Boolean operators. In the response below, the student wishes they had been taught this search method earlier:

The Boolean operators are very interesting, I didn't know you could do that. I learned about them this semester, but it probably would've been helpful to learn that last semester just because they help broaden the way you research a lot, because you can say multiple things and expand and you can search multiple things at one time (Shaun, Applied Information Technology major).

Another student found that Boolean searches provided results that were "very quick and specific" when used in the library catalog. The topic of the library catalog came up in the responses to the questions on the research process. The participants described the problems they faced when using the online databases:

A lot of topics I tend to want to do are newer, environmental policies and topics that deal with the city of Baltimore specifically... very current or there isn't much of it at all or there hasn't been much research done on

it... hard to have new research put on the library database because it has to be peer-reviewed (Noel, Government & Public Policy major)

This student felt that there was more results in Google and fewer in the library catalog because they have to be peer-reviewed before being included in academic databases. He also said that it was hard to have “new research” put in the library catalog because it would have to be peer-reviewed and that takes time. Students were concerned with “peer-reviewed” articles and “scholarly journals”, two terms they seem to have acquired from the information literacy class. They also have the perception that only peer-reviewed articles are credible enough to use as sources. Lauren described the problem of finding credible sources online:

False information. There's a lot of websites where they don't say its .gov, .edu and .com, that's what really gets you. But they are the majority of websites that you'll find information [...] I have to compare their information with another website to make sure both add up. So sometimes I've had to go across three websites to make sure the information adds up, because they include advertisements on the side, and I'm not sure if they are credible or not.

It appears from her response that resources from websites which end in .com are automatically viewed as not credible as were web articles that had advertisements embedded in them. It also seems that students took a literal approach in evaluating online resources. The participants felt that information found in the library database was

credible and trusted the information they retrieved from the library search. When asked how he decided whether a particular journal was a credible source, the student replied:

I kind of trust the library on this one and say that maybe the ones that are brought up in the first page of the search would hopefully be most relevant - and if I go on and I read it and if it's not I'll go back and search. Usually the library is very trustworthy with its top sources (Shaun, Applied Information Technology major).

From his reply, it seems that this student trusts the library's search system to provide the most relevant and credible resources and the trust appears to have come from experience with using the results from the library catalog search.

Discussion

From their selection of metaphors, respondents to this survey revealed that they mostly had inaccurate mental models of the library's online information organization system. In response to Question 6c of the survey where participants were asked to select the metaphor that best described the library online catalog, the majority of the respondents chose Option 1 – Filing Cabinet (Table 22). This suggests that they think of the information organization system library online catalog as one where all the information comes from a single source or location. The selection also indicates that the respondents were unaware of the federated search system used in the library online catalog and their understanding or mental model of the catalog was incorrect. Other

results from the survey confirmed some of the existing knowledge about students' perceptions and usage of the library:

- Preferred to seek library help in person
- Felt that their search skills were adequate and had a sense of ownership in their work
- Used the library's technological support such as computer terminals, scanners and printers

During the course of the face-o-face interviews, some additional and interesting issues emerged:

- Students associated the librarians and library services with physical resources such as books
- Students tended not to explore the library by themselves
- Students appreciated learning advanced search methods from the library instruction

Mental model of the library's online search

In the survey, students were asked to select the metaphor that they thought best describes the way in which information is organized in the library online catalog. The top choice of metaphor for the library online catalog was the filing cabinet, which is mapped to the perception that the information is organized as a single source or database. The fact that this metaphor was the top choice amongst survey respondents indicated that most of them thought of the information in the library online catalog as coming from a single

source, rather than being collated from different databases. This choice of metaphor suggests that students have an incorrect mental model of how the library's online catalog works. They are unaware of the multiple sources indexed and this could have affected the way they searched the catalog. If students were aware that the results of their search query originated from different databases, they could improve their search results by selecting the most relevant databases to search. The filing cabinet was also the top choice for describing Internet search engines, although not many students chose the same metaphor for both search systems. This shows that they are aware that both systems are different even if the metaphors selected are incorrect. Library instruction could have an explanation on how a federated search works and how students could improve their results by specifying which databases to search when providing reference help. A comparison between the way information is collated in the library online catalog search and Internet search engines could be provided in a visual form to help students understand the differences. Having a more accurate representation of how their search query is interpreted by the library catalog search system could help students navigate the catalog and better understand how to retrieve relevant results.

Help seeking preferences

Most of those who sought help from the library had done so in person, and none of the survey participants used the telephone or via the LiveChat function. A few had used email for seeking library help. These findings match those of other studies on library help-seeking preferences of millennials (Ismail, 2010) in that they prefer to seek library

help in person despite attempts by the library to provide online channels. The main reason for this, as described by the interview participants was that they found it easier to communicate and describe their help request face-to-face. They felt they could better explain the problem in person. Although the participants in this study did not express any fear or anxiety about asking for reference help as described in some of the studies on help seeking at the library (Fister, 2002), a few did mention feeling self-conscious about walking up to the help desk and asking for help. If students do not like to use existing online channels and are also reluctant to approach the physical help desk, a third way of delivering reference help needs to be found. Perhaps the problem lies with the students' inability to describe a reference query in writing. This could be due to their inexperience as researchers and limited vocabulary in the area of reference search. One way to overcome this problem could be to provide users with an online template for creating a reference query. Students can select from the options in the template to construct their query instead of creating one from scratch. The use of auto-complete or suggested queries similar to those used in online forms would also help students in forming help queries.

Another finding related to help seeking was that few of the students felt that the librarian could provide a better answer than they did. The reason for this could be that they perceive librarians as mostly assisting with locating resources within the library such as books and not with reference search in general. Library instruction was not cited as a reason for seeking help. These findings have implications on the design of library instruction and outreach materials in terms of explaining the role of the librarian as well as the digital resources and services offered by the library. The information from the

interviews indicate that students' perceptions of the library are influenced by their prior experience with school and public libraries where books are the predominant and most visible resources. The expertise and role of the school or public librarian are also different from that of the reference librarian in a university library and students need to know that they can approach the librarians in the university library for research help. The participants in the interviews tend to seek help from the librarian as a last resort, choosing to go to other student support centers for help with academic work. The message on the types of help that students can get from the librarian should be made more explicit in library instruction sessions.

Schema of the library

Based on the responses to the survey, students expect to find the following items at the library: books, computers, librarians. The first and third items are not surprising, but it appears that students viewed the library as a place where they could get hardware support such as computers and printers. Almost all participants in the follow-up interviews mentioned using the computers and printers in library and it was often cited as the primary reason for going to the library. This perception of the library as a place for studying and technology support correlates with the finding from the OCLC 2011 report (Gauder, 2011) that showed more Americans were using the library to access technology such as computers and the Internet. The interview participants had all used the library as a study space even if they had not used the other library services and resources. They all knew that they would find computers and printers in the library and found it preferable

compared to using the computer labs and study lounges. One reason for this was the proximity of resources such as books, but even those who did not utilize the books found it conducive to study in the library. The library as a place for studying seems to be a natural extension of the library's function. Having students coming to the library voluntarily is a positive development as this means library outreach efforts can focus on publicizing other library services beyond access to technology. The concept of the library as a physical space for study could be a new way in which students perceive the reference library.

Students' perception of the librarians' role

The majority of survey respondents saw the librarian as both a custodian and manager of resources. In Question 4, students were asked to select what they think the librarian could help them with. The findings from the responses to this question (Table 14) showed that while the majority of respondents were aware of the help services provided by the librarian, only slightly more than half of the respondents would ask a librarian for help in finding an online resource. This lower percentage corresponds with the point that emerged from the interviews where the participants said they were more inclined to ask librarians for help with physical resources as compared to online resources. This could be due to the fact that the respondents felt that they did not need help with finding resources online. During the interview, most participants said they had not encountered a situation where they felt they needed help in finding information online. According to the participants, this was because they thought of librarians as

custodians of physical materials such as books and did not associate librarians with digital and online resources. This finding correlates to the observation in the OCLC user perception and library usage report that Americans “overwhelmingly” equate libraries with books (Gauder, 2011). According to the report, Americans mostly use community and public libraries for print books, CDs and DVDs. Teenagers were identified as the user group that most strongly associated the library with books (p. 38). Since the participants' only prior experience with libraries have been with school and public libraries, it is not surprising that they would have this perception.

From the responses to the Question 5 - “When given a class assignment, what is the first place you would look for research information?” it appears that the participants in the survey were generally aware of the research help available at the library even though not all of them made use of it. It could be that they only thought of the help rendered by librarians in terms of locating physical resources such books and not the other aspects of research. This is a point that librarians need to address in library outreach. It might seem obvious to those who are familiar with the academic library, but to a freshman student whose prior experience with library services is limited to high school and public libraries, it may not be apparent that librarians can help with more than locating books. One participant assumed that interlibrary loans were only available for physical resources and never thought to try requesting for digital interlibrary loans. Another participant thought that the resources listed in the library catalog search results were all physical items. She was surprised when the librarian told her that all she had to do was click on the link and open the PDF. This association could have been formed

during their experiences in public and school libraries where library transactions involved primarily around books and physical resources. The implication for librarians on this issue would be to make the library's digital resources more apparent to students. This could be in form of posters and signs advertising these other resources as well as messages in library instruction and outreach materials. Prominent displays and signage promoting library services are necessary because students tended not to explore the library. None of the interviewees mentioned exploring the library but went straight to the help desk or computers.

Students' sense of self-efficacy and impact of library instruction

The second part of the interview questions was focused on understanding students' research process and their methods for coping with the requirements of class assignments. In response to the question on how they determined the amount of research for an assignment, students tended to use the professor's grading criteria as a guide and this was also observed in earlier studies on undergraduate information-seeking behavior (Valentine, 2001; Mizrachi & Bates, 2013) where grades were the key motivators for academic work. However, the participants also expressed a sense of ownership and pride in completing the work on their own. This was one reason for not seeking reference help – they preferred to solve research problems by themselves. One of the participants even felt that asking for help in research was a sign of defeat. The satisfaction of finding the right source was one of the things that they liked about research. From the interview questions on research attitudes, the participants mentioned that the thing they disliked

most about research was the feeling of being overwhelmed and “not knowing where to start” during the initial process of research. This aligns with the thoughts and feelings that accompany the first stages of the information search process (Kuhlthau, 1993). None of the participants reported having reached a stage in their academic work where they felt they needed to seek reference help although a few did mention learning useful search methods such as Boolean operators, in their information literacy class. Studies have shown that library instruction and guidance offered by librarians do have an effect on students' information seeking behavior (Ren, 2000). This could be the reason why more than one-third of the survey respondents said that the library website would be their first stop for research information. This relatively high number could be a result of having reference librarians as class instructors who would have a direct influence on students' information search behavior.

Recommendations

To address the issue of students' self-efficacy as barrier to help seeking, librarians could be more specific in describing the kind of help they provide, just as the other student support centers explain clearly that they will only give critique but not do the assignment. Librarians can reassure students by stating they will give advice on improving search strategies but not answer the research question for them. The data from the interviews suggest that more can be done to help students differentiate between the types of academic help offered by the different centers. Students need to know what is entailed in research help: it does not mean that the reference librarian will answer the

research question for them. As for the finding on students' information seeking and research preferences, library instruction programs could be delivered throughout the academic year instead of during the first semester and the content could be mapped to the stages of the information search process. In this way, students can apply the library skills in their school work as research requirements get progressively more rigorous. Just as the Writing Center and learning support services specify how they will be offering guidance and feedback in specific areas and not doing their assignment, the library reference help services can be more descriptive about the type of help services offered or offer examples of the types of assistance available. This could help students make decisions on whether to seek reference help and at the same time provide students with guidance on how to frame their queries.

Conclusion

The results of the study suggests that students have an incomplete mental model or understanding of how the library online catalog works. They think of the information in the catalog as originating from a single source and are unaware of the federated search process. This has implications on the way they use the catalog because if students knew that their search results came from different databases, they could be more discerning in selecting which databases to search. The study also provided interesting findings on students' current perception of the library. These include the perception that the library and librarians deal exclusively with physical resources such as books. This perception extends to the online catalog as one interview participant even thought the library online catalog only contains books. The implication here is that students do not think of librarians as being able to help them with online resources.

On the topic of students' mental model of the library's information organization system, the metaphor that most of the survey respondents selected to represent the library online catalog was that of the filing cabinet where all the information comes from a single source. Although students think that the information comes from a single database, they recognize that the library's search system is different from online search engines. This misconception should be addressed in both information literacy and library instruction classes because knowing that the library's online catalog is a more robust discovery service indexing other sources could have an effect on their search strategies. By knowing that their search query is accessing multiple databases, students can improve their search results by opting to search within specific databases.

The library plays an important role in supporting student achievement, and the assistance it provides needs to be distinguished from the help that is offered by the other student support centers. One reason for students' reluctance to seek reference help is the perception that by doing so, they are "giving up" on the problem. The library could make it easier for students to understand what reference help entails, in library instruction and outreach materials. This will help assure students that seeking help from the librarian does not mean that they are compromising on the ownership of the work.

Further research

This study was conducted on a relatively small number of participants from the University of Baltimore, and the findings from this study are thus limited to users of Langsdale Library. The number of students who responded to the survey was a limitation factor in this study because a larger number of respondents would provide more conclusive data; for instance, in the question on whether students have the same mental model for both the library catalog and Internet search engines. Another limitation of this study was that the primary source of data came from participant self-reports. These self-reports need to be supported by data from other sources such as observational data or actual search logs. Future studies could make use of more quantitative data such as library database queries, reference help desk transactions and chat logs. The participants' self-reports on research habits could be corroborated with observations of their research and information search processes.

The issue of help seeking was also a topic in the survey and interviews. The results show that students prefer to seek reference help in person because they find it easier to describe their query in-person. Further investigation is also needed to find out which part of forming a reference query it is that students struggle with. A more comprehensive study into the issues of library perception and usage should take into consideration variables from the participants' demographics such as gender, race and ethnicity, family background, financial circumstances and prior education. As the population for this study was limited to the students at the University of Baltimore, subsequent studies should involve students in other colleges as well as students in different stages of college. The fact that some of the students had class instructors who were also librarians could have introduced some bias to their responses to survey questions, for instance, in the higher than expected number of students who said they used the library website not Google, as their first stop when seeking information (Table 15). The participants in the face-to-face interviews were also students who volunteered to take part in the study and they could have been a group who were especially motivated and engaged with schoolwork. This group of students also demonstrated the ability and willingness to reflect on their own research processes, which may or may not be representative of the larger student population. The participants were all fairly new to college life, having only been on campus for two full semesters at the time of the interview. Their short time in college could be part of the reason why they have not fully utilized the library's services. This lack of experience could be the reason behind some

of their current perceptions of the library. The responses from Langsdale Library's post-test survey also suggests that students enter college feeling fairly confident about their information search skills and subsequently discover that these self-perceived skills are not sufficient for college-level work. A longitudinal study that follows the students through their entire career in college and records their attitudes towards research would be needed to collect the information to form a more complete picture. Studies on the topic of student information search behavior and the library have mostly been conducted by librarians or library staff and this could be a source of researcher bias. More studies in the topic could be conducted or initiated by researchers from other fields for more diverse perspectives and different insights.

The existing literature highlights the need to conduct regular studies to "update our understanding of millennials" (Holliday & Lee, 2004) and to stay informed of each cohort's needs and expectations in order for library services to remain relevant to its users. The assumption that millennials prefer to go digital in all aspects of their information seeking habits is still untrue even as the internet has become even more ubiquitous in recent years, students still face the same hesitancy in using online channels to request for help and face the same problems in articulating their queries. The changing perception of the library as a service to the library as a physical space and place for technology access is another new theme which librarians need to keep track of as it has direct impact on library utilization and allocation of resources. More resources could be allocated to support this change in user needs and expectations of the library. For example, more space could be set aside for studying and more technology and hardware

support such as scanners, workstations, printers and projectors. Other resources that facilitate students studying in the library could be in the form of non-lending materials such as reference texts and guides.

It would be worthwhile to find out why students seem to associate librarians mainly with physical resources in this age of digital information. If these associations were created from their experience with school libraries, more research can be done in the area of middle- and high school libraries and the information seeking behavior of secondary school students. The results can then be used for comparison with these students' behavior when they enter college. The findings on students' perception of the library that have emerged from this study have direct implications for library outreach and instruction particularly in the areas of informing students about the library's digital resources and services. In terms of improving library help services, the findings from the study can be used to inform improvements to existing help interfaces, as mentioned in the discussion. More emphasis on the digital and online resources can be included into the library's outreach message and materials. This will ensure that students who are willing to seek help will have the right information and the guidance that these students receive could mean the critical difference in their performance in college. Stories such as that of the participant who had no idea that the librarians could have helped her with her research problems are a reminder that one cannot assume every student knows about library services despite the library instruction and outreach efforts of the librarians.

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Appendix A: Questions from Assessment of Information Literacy Post-test Fall 2014

How would you rate your research and information literacy skills at the *beginning of the semester*?

- 1 – poor
- 2 – fair
- 3 – good
- 4 – very good
- 5 – excellent

How would you rate your research and information literacy skills at the *end of the semester*?

- 1 – poor
- 2 – fair
- 3 – good
- 4 – very good
- 5 – excellent

What do you think contributed most to this change (if any?)

Year of Study:

- a. Freshman
- b. Sophomore
- c. Junior
- d. Senior
- e. Graduate

Have any of your previous or current classes included a library instruction session that you attended?

- a. No
- b. Yes, in only one course
- c. Yes, in about 2-4 courses
- d. Yes, in 5 or more courses
- e. Unsure

During your time at UB, have you taken and passed IDIS 110 or INFO 110, Introduction to Information Literacy?

- a. Yes
- b. No
- c. Currently enrolled
- d. Unsure

Appendix B: Library Perception and Usage Survey consent form and questionnaire

**University Library Perception and Usage survey
Spring 2016**

Participant Consent form

Background information

You are invited to participate in this study which aims to learn more about students' perception and usage of the library. Your participation in this study is voluntary. Your responses will help us improve the quality of research library services at the University of Baltimore.

Your participation does not involve any significant risk and your responses will have absolutely no effect on your course grade.

All of your responses will be kept strictly confidential and if information from this study is published, you will not be identified by name.

Risks and benefits

Your participation does not involve any significant risk and your responses will have absolutely no effect on your course grade. Your responses will help us improve the quality of research library services at the University of Baltimore.

Confidentiality

The records of this study will be kept private. In any sort of report we might publish, we will not include any information that will make it possible to identify a participant. Research records will be kept in a locked file; only the researchers will have access to the records. Records will be retained for a minimum of 3 years.

This survey will take about 10 to 15 minutes to complete.

You need to be 18 years of age or older to participate in this survey. You will need to check the box below, which states: "*I agree to participate in this study and am over 18 years of age*", and sign your initials.

If you have questions about this project, you may contact the principal investigator, Ling Ling Ng at ling.ng@ubalt.edu.

Thank you in advance for your participation in this study.

Yes, I agree to participate in this study and I am over 18 years of age

Initials: _____

Date: _____

Survey Questions

Please provide some information about yourself:

Sex: Male Female

What is your age range?

- 18 – 23
- 24 – 29
- 30 – 35
- 36 – 41
- 42 – 55
- Above 55

Which College are you currently enrolled in?

- Yale Gordon College of Arts and Sciences
- Merrick School of Business
- College of Public Affairs

What is your major?

Which year are you in?

- First year
- Second year
- Third year
- Fourth year
- Graduate
- Post-graduate

Question 1

List 3 things you expect to find in a university library

1. _____
2. _____
3. _____

Question 2

List the things you would go to the university library and its website for

(Check all that apply):

- To begin a search for information on a certain topic
- To verify facts or information
- Retrieve a resource that your class instructor asked you to find
- To find a specific resource (e.g. book, article)
- Entertainment – books and videos
- Other (Please specify): _____

Question 3

What do you think a university librarian does? (Check all that apply)

- Organize and manage the library's collection of resources
- Make sure that the facilities in the library are in order
- Help students with locating resources
- Help students with research
- Keeps the library's collection up-to-date
- Other (Please specify): _____

Question 4**Select the things you would ask a university librarian for (Check all that apply)**

- For help in how to do research
- For help in completing a WRIT 300 assignment
- For help in completing a specific assignment in a course other than WRIT 300
- For help in understanding the requirements for a research paper
- For assignment-related technical assistance e.g. how to format a Word document or other Microsoft Office software
- How to use a certain citation format e.g. APA or MLA style
- Help in locating a resource that is available in the UB library
- Help in retrieving a resource that is available in another university library
- For help in using the library's online catalog
- For help in finding a resource on the internet
- Other (Please specify): _____

Question 5**When given an class assignment, what is the first place you would look for research information? (Choose one)**

- University library website
- University librarian, in-person
- Google search
- Class instructor
- Friends
- Other resources (Please specify): _____

Question 6a**Have you used any university library services before?**

- No (Please skip the next questions and go to Question 8)
- Yes (Please go to the next question)

Question 6b**Select the library services you have used (check all that apply)**

- Resource (books and/or multimedia items) loan for schoolwork
- Resource (books and/or multimedia items) loan for leisure purposes

- Specialized software (e.g. game design software, graphic design software)
- Computers, printers and scanners
- Meeting and presentation rooms
- As a study space
- Sought research help from a librarian

Question 6c

Choose ONE of the following metaphors that best describes the library online catalog:

- Filing cabinet** – everything is there in the cabinet but you have to know where it (i.e. information) is filed
- Book shelves** – You have to locate the right shelf to find the book (i.e. information) you want
- Warehouse** - You put in your request and someone finds the item (i.e. information) for you
- Shopping catalog (printed):** The “item” (i.e. information) you want is stored in different locations and they order it for you from the store where the “item” is located

Question 7a

Have you ever asked a librarian for reference or research help?

- No** (Please skip the next question and go to Question 8)
- Yes** (Please go to the next question)

Question 7b

Where and how did you ask the librarian for help? (Select all that apply):

- In person, at the reference desk or library office
 - Online through LiveChat
 - Through email
 - Through the telephone
 - In class, during a library instruction session
 - Others (Please specify):
-

Question 7c

Did the librarian help you answer your question?

(Please select ONE statement that best applies to your experience)

- No**, the help was not useful at all.
- Yes**, my question was answered.
- Somewhat**, I still had to figure out the rest for myself

Question 7d

What led you to ask for help from the librarian?

(Select ONE statement which is the most applicable to you)

- Looked on the library online catalog/database, but I couldn't find the answer myself
- Had trouble using the library online catalog
- Looked online but could not find the answer
- My instructor told us to approach the reference librarians
- Asking a librarian would save me time and effort
- Asking a librarian would provide me with better answers compared to what I can do on my own
- Library instruction session
- Others (Please specify):

Question 8

Which ONE of the following metaphors best describes internet search engines such as Google?

- Filing cabinet** : Everything is there in the cabinet but you have to know where it (i.e. information) is filed
- Book shelves**: You have to locate the right shelf to find the book (i.e. information) you want
- Warehouse**: You put in your request and someone finds the item (i.e. information) for you
- Shopping catalog (printed)**: The "item" (i.e. information) you want is stored in different locations and they order it for you from the store where the "item" is located.

Thank you for completing the survey!

Please leave your email address and/or mobile number if you would like to be contacted for a follow-up interview. A token of appreciation will be given to participants who complete the interview.

Yes, please contact me for the follow-up interview! My email address is:

Mobile (optional) : _____

Contact Ling Ling Ng at ling.ng@ubalt.edu if you need more information.

Appendix C: Interview consent form

Whom to Contact about this study:Principal Investigator: [Ling Ling NG](#)Department: [Division of Science, Information Arts, and Technologies](#)Telephone number: [443 537 0277](#)**CONSENT FORM FOR PARTICIPATION IN RESEARCH ACTIVITIES****Library perception and usage survey****I. INTRODUCTION/PURPOSE:**

I am being asked to participate in a research study. The purpose of this study is to learn more about students' perceptions and usage of the library. I am being asked to volunteer because I had expressed interest to participate in the follow-up interview to the survey and included my email address/contact details in the survey form. My involvement in this study will begin when I agree to participate and will continue until April 30 2016. About ten persons will be invited to participate.

II. PROCEDURES:

As a participant in this study, I will be asked to answer questions verbally. I will be asked to come to a group study room at the Langsdale Library. My participation in this study will last for approximately 45 minutes or less, during which an audio recording may occur (with my permission). No personal identifying information will be recorded.

III. RISKS AND BENEFITS:

My participation in this study does not involve any significant risks and I have been informed that my participation in this research will not benefit me personally, but will help improve the quality of research library services in the University of Baltimore.

IV. CONFIDENTIALITY:

Any information learned and collected from this study in which I might be identified will remain confidential and will be disclosed ONLY if I give permission. All information collected in this study will be stored in a locked file cabinet in a locked room. Only the investigator and members of the research team will have access to these records. If information learned from this study is published, I will not be identified by name. By signing this form, however, I allow the research study investigator to make my records available to the University of Baltimore Institutional Review Board (IRB) and regulatory agencies as required to do so by law.

Consenting to participate in this research also indicates my agreement that all information collected from me individually may be used by current and future researchers in such a fashion that my personal identity will be protected. Such use will include sharing anonymous information with other researchers for checking the accuracy of study findings and for future approved research that has the potential for improving human knowledge.

Check if voice recordings are used during the research study:

Yes, I give permission to use my voice in scientific publications or presentations.

No, I do not give permission to use my voice in scientific publications or presentations

V. SPONSOR OF THE RESEARCH:

This research study is for a master's thesis.

VI. COMPENSATION/COSTS:

My participation in this study will involve no cost to me. I will receive a \$10 Amazon gift card at the end of the full interview.

VII. CONTACTS AND QUESTIONS:

The principal investigator(s), Ling Ling Ng (student researcher) and Lucy Holman (faculty advisor) has offered to and has answered any and all questions

regarding my participation in this research study. If I have any further questions, I can

contact Ling Ling Ng at ling.ng@ubalt.edu or Lucy Holman at lholman@ubalt.edu

For questions about rights as a participant in this research study, contact the UB IRB Coordinator: 410-837-6199, irb@ubalt.edu.

VIII. VOLUNTARY PARTICIPATION

I have been informed that my participation in this research study is voluntary and that I am free to withdraw or discontinue participation at any time.

I will be given a copy of this consent form to keep.

IX. SIGNATURE FOR CONSENT

The above-named investigator has answered my questions and I agree to be a research participant in this study. By signing this consent form, I am acknowledging that I am at least 18 years of age.

Participant's Name: _____

Date: _____

Participant's Signature: _____

Date: _____

Investigator's Signature: _____

Date: _____

Appendix D: Interview script, questions and analysis guide

Interview Guide for face-to-face interviews with student participants

Background

The face-to-face interviews are conducted as a follow-up to the survey and the information collected will serve as the primary data for our research study on students' perceptions and usage of the library.

Goals and objectives of the interview

The in-person interview is an opportunity to ask open-ended questions that were difficult to include in the survey. The goals of this interview are:

- Gain more insight into the participant's survey responses
- Learn about participants' prior experiences with libraries, both public and academic
- Discover the participants' attitudes and approach towards doing research
- Learn the specifics about participants' usage of the library
- Learn about participants' interaction with librarians

Interview script

Script	Notes
<p>“Thank you for volunteering to participate in this interview. The interview should take about 45 minutes and the questions are related to your experience of your library and how you conduct research for your school assignments. “</p>	<p>Explain the purpose of the interview</p> <p>Provide participant a sense of the interview topics</p>
<p>“Before we begin, let me go through the informed consent form to make sure you understand the main points of the form. Please feel free to stop and ask any questions you might have.”</p> <ul style="list-style-type: none"> • Go through the informed consent form with participant • Remind them that they can end the interview at any point • Remind participant that their identity will be kept confidential. • Ask for permission to record the audio for the interview (There will not be any video recording for the interview) • Inform them that the audio taping will only be used for transcribing and only the primary researcher will have access to it. 	<p>Give the participant enough time to read the form and have them sign the form before proceeding with the interview.</p>

<p>“I have with me a copy of your survey response* and would also like you to elaborate on some of your answers.”</p>	<p>*Although the survey did not require any identifying information from participants, participants could include their email address if they were interested in being interviewed.</p>
<p>“Thank you for taking the time to participate in my study. This study will be completed in May; don’t hesitate to contact me at ling.n@ubalt.edu if you have any further questions.”</p>	<p>Wrap-up the interview Provide contact to the participant.</p>

No.	Interview Question	Issues to uncover/analysis of response
Prior experience with librarians and libraries		
1	<p>What was the first experience you had of the library? Was it in...</p> <ol style="list-style-type: none"> 1. Public library 2. Pre-school 3. Middle-school 4. High school <p>If prior experience, go to Question 2 If no prior experience before college, skip Question 2 and go to Question 3</p>	<p>Did their prior experience with libraries (public and school) play a significant part in the formation of this schema?</p>
2	<p>How does your first experience compare to the university library?</p>	
3	<p>What was the first thing that came to mind when you first visited the library at UB?</p>	
	<p>Attitude towards research</p>	
4	<p>What do you like most about research (for an assignment)? What is the most rewarding aspect of doing research?</p>	<p>Establish participants' attitude toward information seeking and the task of research. Find out what motivates them.</p>
5	<p>What do you dislike most about research (for an</p>	

	<p>assignment)? Which aspect of research do you dislike the most? Can you explain why you dislike this aspect so much?</p>	
6	<p>How much time do you spend on research for an assignment? How do you decide on how much time to spend?</p>	<p>How do students calculate the amount of time/effort to spend on research for an assignment? What are the factors involved in this calculation.</p>
7	<p>How do you know or decide, when you have <u>done enough</u> research/collected enough information?</p>	<p>What do students use as indicators of completion of the research phase.</p>
8	<p>When doing research, what do you find yourself spending the most time on? E.g. searching for information, reading and checking the sources</p>	
9	<p>Can you think of any problems you've encountered during the research process? Can you tell me more about this or these problem/s?</p>	<p>Find out what aspects of research they have the most problem with.</p>
10	<p>When you encountered the problem – how did you get help?</p>	
<p>Interaction with librarians</p>		
11	<p>Have you ever asked a librarian at the UB library or other library for help with an assignment?</p> <p>If No, skip Question 12 and go to Question 13 If Yes, go to Question 12</p>	
12	<p>How did you approach the librarian? Did you...</p> <ul style="list-style-type: none"> • Go to the reference desk (2nd floor) • Use the "Ask a Librarian link" • Use the email link 	
12a	<p>Did you find the help useful? Please explain why or why not.</p>	<p>A similar question was used in the survey but it is posed as open-ended question here.</p>

12b	What made you ask the librarian for help?	Refer to survey response and ask for elaboration on the selected answer
13	Why haven't you asked a librarian for help before?	Refer to survey response and ask for elaboration on the selected answer