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A Qualitative Study of Graduate Students' Perceptions and Use of Library Discovery System and Google Scholar

Shih-Chuan Chen*

Associate Professor
Graduate Institute of Library, Information and Archival Studies
National Chengchi University

【Abstract】

While conducting academic research, a significant amount of time is spent searching for relevant scholarly literature. Many studies have shown that both Google Scholar and the Library Discovery System are valuable resources for accessing academic information. However, the information needs of graduate students are more extensive and complex compared to undergraduate students. This study utilized semi-structured interviews to explore the process of how master's students use the Library Discovery System and Google Scholar and to analyze their perspectives on these platforms. Fifteen master's students participated in the study, and the results revealed that the interviewees mainly used keywords to search for relevant literature for their papers. Regarding data trustworthiness, they tend to have more trust in the Library Discovery System. While the Library Discovery System is suitable for known-item searches, it lacks bibliographic information; Google Scholar offers fast search speed but presents diverse data. Therefore, it is recommended that the Library Discovery System should enhance the clarity and user-friendliness of its system interface and design to assist researchers in completing their papers.

【Keywords】

Discovery System; Discovery Tools, Google Scholar; Search Behavior; User Behavior

* Corresponding Author: Shih-Chuan Chen, E-mail: jennyc@nccu.edu.tw
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1. Introduction

As library electronic resources continue to grow, libraries have introduced the Library Discovery Tool System to allow users to simultaneously search various library resources through one interface (Kumar, 2018). The Library Discovery System emulates Google's search engine, with a simple search interface and fast retrieval speed, integrating various library resources, including external resources. The library collection remains crucial, and as library services evolve, utilizing the Library Discovery System to provide more content can enhance user experience. However, users perceive the search for library collections and other library-related services as separate experiences, indicating that their expectations of the library differ from those of other websites (Dempsey, 2020). Research by Moorthy et al. (2019) found that graduate students are more satisfied with the electronic resource services provided by libraries compared to Google Scholar, possibly due to the perceived convenience of using library resources under factors of authority and expected effort. Cothran's (2011) research found that students tend to use resources that are easily accessible and easy to find. Therefore, emphasizing the utility of research tools and promoting relevant databases that graduate students will use in their research is the optimal way to increase their utilization of library services.

Although libraries have many electronic resources, the complexity of traditional library catalogs and the lack of a single retrieval interface have led users to prefer using search engines (Ollé & Borrego, 2010). In particular, with the advent of Google Scholar, a search engine that supports academic research, it can provide friendly information resources for students, allowing researchers to find relevant and high-quality articles (Cothran, 2011). To search for scholarly publications, one can use Google Scholar to search for specific keywords, then go to the university library and browse through the shelves, or follow researchers' latest publications on Twitter and browse through the catalogs of academic journals (Nishikawa-Pacher, 2023).

Regardless of how research resources are sought, searches are conducted through a discovery tool. Although library search systems and Google Scholar provide access to information worldwide, university libraries are restricted in their access due to limitations in information retrieval (Alotaibi & Johnson,

2020). Google Scholar allows libraries to search for electronic resources through its interface, meaning that library-subscribed resources can be searched, located, and linked through the Google Scholar interface. Research conducted by Luftig and Plungis (2020) found that in the current research processes of students and teachers, a significant proportion utilize both the library and Google Scholar for research purposes.

Catalano (2013) mentioned that graduate students have more complex information needs than undergraduate students. The Library Discovery System and Google Scholar are both important sources of information for graduate students, and it is an important task for the library to teach readers to become familiar with and use these tools. The results of this study can make it easier for researchers in the field of library resources to understand readers' behavior when using Library Discovery System and Google Scholar. Enhancing the interface of the Library Discovery System and augmenting user contentment not only stand to benefit from these outcomes but could also aid libraries in the strategic development and implementation of educational programs. The research questions explored in this study are as follows:

RQ1: How do the Library Discovery System and Google Scholar meet the research needs of graduate students?

RQ2: How do graduate students perceive the importance of the Library Discovery System and Google Scholar?

RQ3: What are graduate students' opinions and suggestions on Library Discovery System and Google Scholar?

2. Literature Review

Rempel's (2010) study mentioned that there are significant differences in information needs for graduate students based on whether they need to complete a thesis. Since a thesis requires original research, it usually cannot be quickly achieved. Graduate students will conduct more in-depth searches for relevant research literature and invest more in learning information retrieval. They also pay more attention to relevant information and are more cautious about information sources to complete their research. Students from different disciplines and at different levels use a variety of information resources. For graduate students, formal information sources such as databases

and interdisciplinary research databases are particularly important. Internet resources are becoming increasingly important for graduate students. However, humanities scholars have pointed out that it is difficult to find all the necessary files and data on the internet for research purposes. The interface design of libraries can affect search strategies, and factors such as researchers' prior knowledge, familiarity with search strategies, and search restrictions can all affect students' or researchers' use of databases (Catalano, 2013). Delaney and Bates (2018) studied the information needs and information behavior of doctoral students at Ulster University in Northern Ireland. Although graduate students' emphasis on libraries has not diminished, their use of physical libraries and their services has declined. Graduate students indicated that they were able to find information successfully using search engines, online public access catalogs (OPACs), and databases. However, they only used search engines for convenience, and if they needed to cite the information, they would further understand and search for more reliable information resources (Delaney & Bates, 2018). Compared to reports, which have a temporal aspect, graduate students must find a series of relevant literature to support their research. Throughout the entire process, as their research develops, graduate students, in addition to reading papers, will identify what content is relevant to their research and try to obtain relevant literature to enhance their retrieval capabilities (Rempel, 2010).

For users, the integrated search of the library is limited to library resources. Therefore, the Discovery Tool can help users and librarians search library resources, Institutional Repositories, Open Access content, and Subscribe to external resources in a single search field (Kumar, 2018). The Discovery Tool has two features: a single retrieval interface and integrated internet resources (Pal, 2017). In the academic research process, users have subjective opinions about the system. As people are now accustomed to Internet search interfaces and relevance-based ranking results, they naturally hope that searching in the library catalog will be as simple as searching on the Internet and that the presentation of results will meet their expectations (Behnert & Lewandowski, 2015). The main problem with Library Discovery Systems is that although they generate a large number of search results of different types, they often fail to make the scope of the searched resources clear to users (Mischo et al., 2018; Pal, 2017; Rigda, Hoogland, & Morales,

2018). Users may mistakenly think that they can query all library resources just by using the discovery system, or they may not know that they can change the search scope (Valentine & West, 2016). Therefore, there is still room for improvement in the interface and functionality of discovery systems.

Google Scholar was launched in 2004 as an online search engine that utilizes Google's unique algorithm to find academic resources, including books, journal articles, abstracts, and conference records. However, the scope of Google Scholar's search has never been explained (Cothran, 2011). Google Scholar does not publicly disclose the specific journals it indexes; however, Martín-Martín, Thelwall, Orduna-Malea, & Delgado López-Cózar (2021) conducted a study examining 3,073,351 citations from 2,515 highly cited English articles published since 2006, spanning 252 subject categories. Their research revealed that Google Scholar identified 88% of these citations, including many that were not detected by other sources, and nearly all of those identified by other databases (89–94%). The comprehensive nature of information displayed by Google Scholar was underscored. In a related study, Gusenbauer (2022) proposed a new scientometric method to assess the subject coverage of various prominent English-centric academic bibliographic repositories, comparing coverage across 56 databases. The findings indicated that Google Scholar boasts the most extensive subject coverage among the databases analyzed. Google Scholar is the first online academic search engine and seems to be the preferred choice for researchers when searching for academic literature. Shen (2012) investigated the frequency of graduate students using Google Scholar and the factors influencing their use of Google Scholar. The respondents found Google Scholar's search to be easy to use (M = 4.09, total score 5) and considered it a useful resource for research (M = 3.98), which can enhance their search efficiency (M = 3.89). However, the results showed that the information resources found using Google Scholar may not be sufficient for their research. Nevertheless, despite this, the majority of graduate students still believe that their decision to use Google Scholar is correct. Alotaibi and Johnson (2020) conducted a study to primarily understand the intention of graduate students to use Google Scholar in a research context. They examined the impact of visibility, accessibility, and relevance of Google Scholar, as well as self-efficacy, on these factors. The study found that graduate students have higher visibility, accessibility, and relevance

perceptions of Google Scholar, and they have higher self-efficacy when using Google Scholar, indicating that they consider themselves competent users of Google Scholar. This suggests a preference for this search tool, as graduate students believe they can effectively search for information relevant to their research field. However, Tella, Oyewole, and Tella's (2017) study found that although most graduate students frequently use Google Scholar, they are not satisfied with it, as they believe it does not accelerate their research or make it easier. Nicholas et al. (2020) examined academic communication and behavior among postdoctoral researchers and found that most postdoctoral researchers in various disciplines consider Google Scholar as their primary research search source. More than two-fifths of the participants reported frequent use of Google Scholar, while those in the humanities primarily use Google. Although Google Scholar is a primary source of information, its importance in information use may not be as significant, reflecting the possibility that Google and Google Scholar may not provide comprehensive information.

A comparative study conducted by Pulikowski and Matysek (2021) examined the performance of Google and Google Scholar in searching for academic publications in the field of library and information science. The study found that Google outperformed Google Scholar in terms of search efficiency and content coverage. Google achieved the highest full-text retrieval rate at 80%, while Google Scholar, Library and Information Science Abstracts (LISA), and EBSCO Discovery Service (EDS) lagged at 54%, 42%, and 33% respectively. One of the main advantages of Google Scholar is its direct access to articles, and users are not concerned about the location where the articles are stored. As long as the articles can be found, users are satisfied (Lewandowski, 2010). However, further research is needed to determine whether this is the case when it comes to formal research citations. Based on the aforementioned literature, it can be concluded that both undergraduate and graduate students consider Google Scholar to be easy to use and an important source of information. However, due to the differences between writing essays and reports, graduate students have higher requirements for academic search engines. Due to the abundance of information, researchers' information search behavior has also changed in the Internet environment. When searching for academic literature, they usually face the problem of where to start looking for information, and reference sources have become diversified. However,

library resources differ from Google Scholar. Enhancing the Library Discovery System interface to support researchers in their research endeavors is a crucial concern for libraries.

3. Methodology

3.1 Research methods

Understanding the information retrieval behavior of graduate students in conducting research is crucial for improving library interfaces and the development of librarians in instructional courses (Cothran, 2011). This research conducted interviews from September 2022 to January 2023, with a focus on graduate students who have completed their theses. A total of 15 participants were interviewed using a semi-structured interview method, which involves qualitative interactions between the interviewer and the interviewees. Questionnaires are not effective in gaining an in-depth understanding of the information-seeking behavior of graduate students. The interview method avoids imposing preconceived notions on the interviewees (quantitative research may be influenced by the selection of topics) and effectively allows individuals to discuss their personal feelings, experiences, and opinions (Mack, Woodsong, MacQueen, Guest, & Namey, 2005). This research utilized a semi-structured interview outline for in-depth interviews. Participants were asked about their experiences using the Library Discovery System and Google Scholar. If the university library did not own the information source, participants were questioned about its origin and reason for use. The interview questions were divided into three parts based on the research objectives. For instance, research questions included: How do graduate students collect data for writing literature analysis in their master's theses? Should graduate students' search strategies for writing master's theses be based on keywords, authors, or book titles? If allowed to rewrite their research papers, would graduate students change how they retrieve relevant research literature? A total of ten questions were included.

3.2 Data collection and analysis

This study recruited participants through interpersonal relationships,

with graduate students who had completed their theses as the main research subjects. A total of 15 participants were interviewed, including 7 females and 8 males. The participants came from fifteen different disciplinary fields, with a balanced distribution across different colleges to reduce sampling bias. By research ethics, the participants were informed of the interview questions before the interviews. The interviews were recorded and transcribed verbatim. All files and recordings were stored in password-protected computers, with access limited to the study team members. After completing anonymous transcriptions, copies of the recordings were deleted. No identifiable data were collected. The qualitative research software NVivo 12 Plus was used for coding analysis and classification. Two research assistants analyzed the transcripts using deductive coding. The researchers then conducted coding, organization, and analysis based on the research objectives and questions. Following the completion of interview transcripts, participants are requested to verify the accuracy of the content. Throughout the data analysis process, interview transcripts are consistently cross-referenced with interview notes and audio recordings. Data are available on request to the author.

Upon preliminary examination of the verbatim transcripts of the interviews in this study, relevant keywords or events that align with the research questions are extracted to condense the data into initial codes. Subsequently, a repetitive process of comparing, summarizing, and categorizing the initial concepts is conducted. The interview data is then organized based on the research questions and concepts mentioned in the literature, aggregating concepts with similar meanings. Through continuous comparison of relationships, similarities, and differences between concepts, codes with identical or similar attributes are integrated and summarized into the same category or form higher-level concepts, which are named accordingly to address the research questions.

4. Results

While comprehending how the Library Discovery System and Google Scholar satisfy the research requirements of graduate students, it is essential to grasp the specific needs of graduate students in the thesis writing process. Consequently, this research initially delves into the methods employed by

graduate students in data collection for crafting literature reviews and the sources of data used in literature analysis by graduate students.

4.1 How do graduate students collect data for writing literature reviews

Graduate students' process of collecting data and writing literature analysis was found to vary from less than a year to up to five years. The participants considered "finding a research topic" the most difficult part of writing a thesis, followed by "finding relevant literature." While writing a thesis, literature analysis is one of the challenges for graduate students. The process of collecting data can be discussed in terms of retrieval methods and information sources. Regarding retrieval methods, keyword search is the main approach (15 participants, 100%), with single-word search being the most commonly used method. The search starts with broader keywords and gradually narrows down the search scope. Additionally, due to the varying sizes of research topics in different departments, when approaching the completion of literature analysis, participants would start using two or more keywords for searching. For example, the participant mentioned:

> I found it by searching through relevant reference materials, such as "corporate governance" and "independent directors," which are keywords. Then, I narrowed down the search by using more specific keywords, like "corporate governance + independent directors." I repeated this process of searching from a broad scope to a narrow scope. (N)

Generally speaking, in addition to conducting searches using keywords, graduate students also utilize the reference lists of important scholarly journals for further inquiry. This is known as the snowballing method in the retrieval process, which expands the scope of their search. One participant stated: "My thesis has one or two key articles that inspire me, and I will start looking for things cited in these articles (G)."

Of course, specific titles or bibliographies would also be used for searching, such as important theories or books and articles closely related to the title of the paper. For many research topics, the majority of information sources are books, so book titles would be used for retrieval in such cases. In addition, it may also be attributable to varying academic disciplines. For

instance, participant J, majoring in Spanish, benefits from the extensive book collection in the library and relies on various library resources throughout the paper-writing process.

Graduate students also use authors for queries, which may include important scholars in the field of study or authors mentioned by the advisor during the discussion process. Graduate students will utilize the names of these scholars to search for information related to their research. Participants have mentioned:

> I usually use authors because there are only a few famous ones in the field of law, so I use their names to find books, and the same goes for finding other journal articles. I first use their names to see if they have written anything in this field. (N)

> Because my advisor is a foreign teacher, yes, so he mentioned a famous linguist to me at that time, but I forgot his name. He is an American linguist. He said, "To study linguistics, you must know who he is," so I went to find his articles to read. (J)

From the perspective of retrieval strategies, graduate students will go to great lengths to search for literature related to their papers, regardless of the scope. Throughout this process, they will constantly make adjustments and enhance their understanding of the depth of their papers.

4.2 Data sources for literature analysis by graduate students

The most commonly used information source by interviewees is Google Scholar, followed by Google, specific relevant data websites, and Wikipedia. The library resources provided (library integrated search system, browsing library shelves, library subject databases) are only utilized after these sources. As for the information sources in literature analysis for the thesis, graduate students indicate that besides searching for relevant literature from the library and Google Scholar, they also search for relevant literature from specific databases (4 individuals, 26.67%, E, H, N, K) due to the differences in their respective departments. For example:

> When we are not familiar with a topic, we usually use UpToDate. It provides more detailed explanations of the field of medicine. Since

> the perspectives in sociology are different, I usually use UpToDate first. If I want to see more empirical things, I use PubMed. (K)

Graduate students indicated that a significant portion of the information related to their thesis is acquired from classroom learning, specifically from the relevant topics mentioned by their professors during the courses in the graduate program. (4 individuals, 26.67%, G, H, J, M). One participant stated: "I would piece together my thesis gradually, semester by semester, based on the courses I took. It all started with a special topic course on Western urban history (M)." Additionally, graduate students also mentioned that their thesis advisors (7 individuals, 46.67%, D, E, O, G, L, M, N) provide important guidance in terms of direction and key literature to help strengthen any areas of weakness.

> The professor may give me a few articles, and then I will look at their references to see if there are any that I can use for my thesis. Then I will go through each of those articles and see if they have any relevant information that I need. I will continue digging deeper and deeper through their references. That's mostly how I do it. (D)

From the above interview analysis, the primary research need of graduate students is to prioritize searching and researching relevant literature. When looking for information sources, their first step is to search on Google Scholar before exploring Library Discovery System. Assisting graduate students in identifying research topics and writing literature reviews for research.

4.3 The importance of Library Discovery System and Google Scholar in academic paper writing

The study aimed to investigate the importance of the Library Discovery System and Google Scholar for interviewees in academic paper writing. Results indicated that both the Library Discovery System and Google Scholar were equally important for interviewees in the process of writing papers. Graduate students mentioned that while Google Scholar had a wider scope, filtering information required more time, but it aided in understanding research topics preliminarily and conducting literature analysis (B, F). Despite Google Scholar yielding numerous results, filtering by basic functions such as publication year and language made it easier to focus on the desired literature topics. However, while Google Scholar could find many relevant documents,

access to literature relied on the Library Discovery System. Interviewee B noted that many documents could not be directly obtained from Google Scholar, and some downloadable resources were purchased by the school library. Interviewees believed that the information retrieved by the Library Discovery System was not as extensive as Google Scholar, so even though the Library Discovery System offered similar filtering functions, it was used less often (4 individuals, 26.67%, A, D, N, K). The ways in which Library Discovery System and Google Scholar were used in academic paper writing differed slightly, but both were crucial for Graduate students in their paper writing process.

Finally, we examined the viewpoints and recommendations of graduate students regarding the Library Discovery System and Google Scholar. Graduate students express confidence in the reputable resources offered by the Library Discovery System, yet they anticipate enhancements in terms of content and features. The interface of Google Scholar does not promptly identify the data type, and the extensive volume of data necessitates additional time for navigation. Nevertheless, graduate students acknowledge the significant utility of both the Library Discovery System and Google Scholar in academic paper composition.

4.4 Opinions on the Library Discovery System

The interviewees (A, F) stated that the Library Discovery System prioritizes on-campus resources, making them easier to search. Furthermore, if the search is for a specific topic rather than a conceptual browse, the results will be clearer. For users, it is reassuring to know that since it is an on-campus resource, access is guaranteed (C). Additionally, the interface design of the Library Discovery System is intuitive (N), and the interviewees did not encounter significant issues in using it.

> Anyway, as long as it is a resource that the school has, whether it's physical books or databases, the school will retrieve them. It's quite convenient for students because as long as they are within the school's range, they can access these resources. This is its advantage, and the more specific the keywords used, the easier it is to find

> relevant information. There are existing data in the school that can be used. (M)

> This search engine has a major feature, which is that if it finds databases that are already purchased by the school, it can directly access and read the articles within them. (L)

The majority of respondents (5 individuals, 33.33%, B, F, H, N, L) mentioned that the problem with the Library Discovery System is that it has too little content compared to Google Scholar, which has a more diverse range of content. They suggested that the Library Discovery System should increase its content. Some respondents (I, M) specifically mentioned that there is not enough bibliographic information on the homepage of the Library Discovery System, which makes it difficult to determine the availability of the information. In addition, some respondents (E) compared it to databases and found that databases have links to references, which is very helpful in searching for research paper information. Therefore, they suggested that the Library Discovery System should include relevant links to reference bibliographies.

> I think the most regrettable thing is that I saw the title of the book, but the page displayed by the library makes me have to check a little more to see if there is a chance to see some abstract introductions about this book, so that I can decide whether this book is directly or indirectly related to what I want to find. (M)

Several interviewees (5 individuals, 33.33%, C, K, O, G, H) suggested that the Library Discovery System could enhance its citation function. This is because when writing academic papers, citations must adhere to specific formats such as APA, Chicago, etc. However, for graduate students, organizing citations can be time-consuming. Google Scholar provides a direct citation format, although it may require some corrections, it can save time for graduate students. One participant stated: "I think Google Scholar is great because they have a citation feature. I know that the APA format can be overwhelming for graduate students, but I also know that Google Scholar has some errors. If the school's information system can have this kind of format, it would be a huge bonus (O)."

4.5 Opinions on the Google Scholar

In comparison to the Library Discovery System, interviewees perceive Google Scholar to have faster search speed, a higher volume of information content, and clear and convenient document download options. Additionally, some interviewees (D, E, G) mentioned that citation counts and related data on Google Scholar can be used as references when writing academic papers.

> Citation count is also a good way to filter out excellent literature because more citations usually indicate that the content is more exciting or important. It can be a useful tool for screening. (G)

> For example, when it comes to service innovation, I would also search on Google Scholar for "service innovation" and look at the articles with the highest citation counts first. (E)

However, many respondents (7 individuals, 46.67%, A, B, G, I, O, K, M) found that the amount of data retrieved by Google Scholar was too large and too messy. They believed that it took too much time to filter the information, which was instead a nuisance. Additionally, due to the abundance of data, some respondents had doubts about the credibility of the information from Google Scholar. If they were to use the information obtained from Google Scholar, they would further confirm its sources. One participant stated: "I feel that its layout looks messy, and I don't know if the links it leads to are reliable sources of information, because I don't know where it gets my data from, and I have to look at them one by one (N)."

Furthermore, the presentation of the Google Scholar page is clear, but querying does not necessarily yield content, resulting in interviewees (3 individuals, 20%, H, N, L) being unable to access it, which is a significant difficulty for graduate students who need to obtain literature related to their research.

> For example, in a place like this, there may be misleading phenomena. For example, sometimes there will be a PDF file next to the article. Whether it can be downloaded or not, depends on the interface of each website. The download access point or click point may be different, which can lead to misunderstandings. (L)

Finally, the interviewee believes that Google Scholar is unable to determine data types on the page. The importance of data types also varies for graduate students due to different fields. If Google Scholar can add filtering options based on data types, similar to the Library Discovery System where types are indicated on the homepage, it would be very helpful for the interviewee.

> The drawback of Google Scholar is that it tends to have more working papers. It would be better if it had a better filtering system. (B)

> I think its search criteria could be more diverse, compared to being limited and basic. Conditions like publishers, languages, and geography are relatively scarce. You have to go and search for them yourself because Google Scholar has limited time, relevance, and language options. (G)

4.6 Graduate students' views on using Library Discovery System and Google Scholar to assist in writing thesis

After comparing the Library Discovery System and Google Scholar, the majority of the respondents indicated that their search methods for writing papers would not change. The reason is that the literature analysis section of the paper requires a large amount of reading, and it is through this series of search experiences that the paper structure is constructed and their understanding of the paper is clarified. Originally, both library resources and Google Scholar were used in the search process. If allowed to write another paper, they still consider it an important learning and accumulation process that cannot be omitted due to changes in search methods.

In addition, some respondents mentioned that due to the nature of their disciplines (such as law and art), there are differences in information collection. For example, they may use specific databases or require extensive book references. Library Discovery System and Google Scholar may not necessarily support their needs, so their search methods would not change.

The respondents stated that if they were to write another paper, they would use the Library Discovery System more often in the later stages of writing the literature analysis. This is because the Library Discovery System

is more user-friendly when the target conditions are already known, especially when the search scope is smaller or when precise information is needed, the Library Discovery System better meets the needs of graduate students.

5. Discussion

This study is the first to examine graduate students' behaviors and perceptions of Library Discovery Systems and Google Scholar through qualitative research. The study found that graduate students use university library resources and Google Scholar in different situations, changing keyword searches to retrieve articles related to their papers, as mentioned in Rempel's (2010) research. Graduate students enhance their retrieval skills throughout the research process as their research progresses. The study also found that graduate students gain a deeper understanding of their papers during the writing process, and with the increasing number of searchable resources, they improve their ways of searching for information related to their papers.

University library resources and Google Scholar are both important tools for graduate students to search for academic information. This study found that the Library Discovery System and Google Scholar have different levels of importance. Although the participants rated the importance of Google Scholar slightly higher than the Library Discovery System, graduate students believe that Google Scholar has a wider range of coverage and are willing to spend time filtering out the information they need. Moreover, graduate students will utilize the references from significant academic journals for conducting a snowball search. Google Scholar provides access to pertinent citation resources for effectively broadening the search parameters, a feature not available in the Library Discovery System. However, if they have a specific book or journal article to find, they will switch to using the Library Discovery System, which also ensures the accessibility of information. Previous research conducted by Liyana and Noorhidawati (2014) using a questionnaire survey also found that graduate students face the problem of information overload in information retrieval, and they have doubts about the credibility of information resources. From this, it can be concluded that the use of the Library Discovery System and Google Scholar in the process of writing a thesis is equally important for graduate students, but they will be more cautious about the credibility and accessibility of information.

In this study, graduate students mentioned several issues with the Library Discovery System, including insufficient library collections, low diversity of collections, and gaps in both physical and online resources. The most commonly mentioned problem was the lack of bibliographic information and the absence of reference tools such as APA or Chicago citation styles, which required graduate students to spend more time organizing their research. The main problem with the Library Discovery System was that although it generated a large number of search results across different types of resources, it often failed to provide users with a clear understanding of the scope of their search (Mischo et al., 2018; Pal, 2017; Rigda et al., 2018). On the other hand, Google Scholar often presents too much and varied data, leading to time-consuming filtering and difficulties in determining the type and reliability of the information. Additionally, the titles retrieved through Google Scholar did not always have corresponding content. Previous studies have also indicated that graduate students do not consider Google Scholar to be a tool that accelerates their research progress (Nicholas et al., 2020; Tella et al., 2017). Overall, the discussions from this study and earlier research reveal that graduate students perceive both the Library Discovery System and Google Scholar to have unclear search scopes, thus requiring them to invest time in reading and filtering through the results.

Compared to past research, graduate students expressed that they will still use library resources and Google Scholar when they have academic needs in the future, but the timing of usage may be different. Google Scholar helps search a wide range of information and understanding the topic of a paper, while the Library Discovery System is suitable for precise information retrieval. However, because university library resources are extensive, many documents cannot be accessed through Google Scholar. Therefore, the Library Discovery System is more suitable for the later stages of research writing.

6. Conclusion

In the process of conducting academic research, a significant amount of time is spent searching for relevant research literature. The library has made great progress in its services by providing a Library Discovery System that allows users to retrieve various resources in one interface. This study found

that graduate students can meet their research needs by utilizing university library resources and Google Scholar. Both university library resources and Google Scholar are important tools for graduate students to search for academic information. For graduate students, the Library Discovery System and Google Scholar have different levels of importance. In addition to the different timing of use, there are also different views on the scope of coverage of the two. Graduate students spend a lot of time searching for research-related information and also value the accessibility of information. Therefore, it can be concluded that both the Library Discovery System and Google Scholar are important for graduate students in the process of writing their papers.

During the process of searching for research-related resources, graduate students also deepen their familiarity with papers, and then use different keywords for retrieval. Due to different departmental requirements for data types in papers, they will use Library Discovery Systems and Google Scholar at different stages. All these efforts are aimed at completing their master's thesis. This study also has some limitations. The research involves asking participants to recall their retrieval behaviors before writing the thesis. We strive to maintain neutrality and analyze in-depth interviews to understand the perspectives and usage of graduate students regarding Library Discovery Systems and Google Scholar.

This study suggests that Library Discovery Systems should take cues from Google Scholar by enhancing the system's design and interface to enhance clarity and user-friendliness. It is recommended that the Library Discovery Systems incorporate relevant reference links and the option to include citations. Additionally, the inclusion of bibliographic information and the utilization of pre-existing citation links can be beneficial in aiding researchers in their paper writing process akin to Google Scholar. The findings of this study can help university libraries understand the information retrieval behavior of graduate students and assist in planning the use of educational course materials.

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研究生對於圖書館資源探索系統和Google Scholar的使用與看法

A Qualitative Study of Graduate Students' Perceptions and Use of Library Discovery System and Google Scholar

陳世娟*

Shih-Chuan Chen

國立政治大學圖書資訊與檔案學研究所副教授
Associate Professor
Graduate Institute of Library, Information and Archival Studies
National Chengchi University

【摘要】

在進行學術研究的過程中，有很大部分的時間是在搜尋相關研究文獻。許多研究皆顯示，Google學術搜尋（Google Scholar）和大學圖書館資源探索系統（discovery system）都是查找學術資訊的資源。但研究生的資訊需求比大學生更多又複雜。本研究藉由半結構式訪談，瞭解碩士生使用圖書館資源探索系統和Google Scholar的過程，並分析其對於圖書館資源探索系統和Google Scholar的看法。本研究有15位碩士生參與研究，研究結果發現，受訪者多用關鍵字進行論文相關文獻的查詢，對於資料的信任度來說，還是較為相信圖書館資源探索系統。圖書館資源探索系統適合已知書目的查詢，但書目資訊不足；Google Scholar查詢速度快，但資料多又雜。因此，大學圖書館資源探索系統應該要將系統介面及畫面設計得更清晰、更具親和力，協助研究者完成其論文。

【關鍵詞】

圖書館資源探索系統；整合查詢；Google 學術搜尋；探索工具；使用者行為

*通訊作者：陳世娟jennyc@nccu.edu.tw
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