

# Research Conduct Effectiveness: Knowledge and Material Sourcing with Google Scholar Search among Graduating Students

Akeem Ademola ADEDOKUN<sup>1</sup>, Ismail Olaniyi MURAINA<sup>2</sup>,  
Rasheed Olatunde AJETUNMOBI<sup>3</sup>, Moses Adeolu AGOI<sup>4</sup> &  
Benjamin Oghomena OMOROJOR<sup>5</sup>

<sup>1,2,3,4&5</sup>Department of Computer Science, College of Information and Technology Education  
Lagos State University of Education, Lagos Nigeria

Submitted: 25-10-2022

Accepted: 04-11-2022

## ABSTRACT

Learning is becoming ubiquitous, durable and increasingly at odds with formal education. Increasingly, different types of learning happen outside of the classroom through social cooperation and collaboration between students to improve construction and knowledge sharing. This study examines the effect and implication of Google Scholar search on knowledge sharing, academic material sharing and research material sharing among higher institution students. The sample for the study consisted of One Hundred randomly selected students from two institutions Lagos State University (LASU) and Lagos State University of Education (LASUED), Lagos State. The data collected were tested using chi-square statistical tool at 0.05 level of significant. The result of the findings showed that there is a significant difference between the view of male and female student researchers in the use of Google Scholar search for sourcing for relevant materials, it also revealed that students newness to the institution does not determine effective use of Google scholar search. Based on the findings of the study, it is therefore recommended that educators should provide service-learning as a key strategy for student engagement and a valuable learning tool for them across disciplines and academic major while at the same time provide these students with experience that dissolve the classrooms walls and help launch them more solidly into their career of choice. Also students should be enlightened on how to use Google Scholar search to source

information with the aim of improving their writing skills in research.

**Keywords:** Research, Knowledge, Material Sourcing, Google scholar search, Students

## I. INTRODUCTION

The development that Google scholar search has brought to researchers both amateur and professionals are not small. It has made sourcing for materials very easy at the click of a button and what anyone could not believe would be achieved by travelling a wide distance is now being achieved and actualized within split seconds. Google Scholar search is the scholarly search tool of the world's largest and most powerful search engine. It enables the users to search for scholarly literature including peer-reviewed papers, theses, books, preprints, abstracts, and technical reports from all broad areas of research (Maharana & Mahapatra, 2006). Google Scholar search gets its information directly from publishers and by crawling the Web for scholarly content. It was developed by Anurag Acharya, an Indian-born computer scientist in the year 2005 (Banks; 2005). It is an incredible tool allowing researchers to locate a wide array of scholarly literature on the Web, including scholarly journals, abstracts, peer reviewed articles, theses, dissertations, books, preprints, PowerPoint presentations and technical reports from universities, academic institutions, professional societies, research groups, and preprint repositories around the world (Noruzi; 2005). Basically,

Google Scholar search includes Web pages that either look like an article or other scholarly document. As such, it has become a gateway for accessing scholarly information on the Web. Every day, more and more scholarly information is available online and the users continue to discover new reasons to need access to this information.

The scope of Google Scholar search includes journal articles from more than 30 publishers except Elsevier and American Chemical Society (Giustini; 2005), abstracts from bibliographic databases, and data from e-print servers. Some prominent collections include ACM, Annual Reviews, arXiv, Blackwell, IEEE, Ingenta, Institute of Physics, NASA Astrophysics Data System, PubMed, Nature Publishing Group, RePEc (Research Papers in Economics), Springer, and Wiley Interscience, although not all in their entirety. Many Web sites from universities and nonprofit organizations are included but only documents that seem like scholarly journal articles (Notess; 2005). From all these sources, Google Scholar displays several types of records including Web documents, article citations (only records), and book citations (only records). The launch of Google Scholar search generated a great deal of media attention shortly after its debut in November 2004. Its close relation to the highly discussed topics of open access and invisible web (Lewandowski and Mayr, 2006) ensured that many lines were devoted to this service in both the general media (Markoff, 2004; Terdiman, 2004) and among scientific publishers and scientific societies (Banks, 2004 & Giles, 2005). While the initial euphoria over this new service from Google has since quieted down, the service is currently being utilized by academic search engines to integrate results that are available free of charge.

López-Cózar, (2019) once said that the launch of Google Scholar search (GSS) marked the beginning of a revolution in the scientific information market. This search engine, unlike traditional databases, automatically indexes information from the academic web. Its ease of use, together with its wide coverage and fast indexing speed, have made it the first tool most scientists currently turn to when they need to carry out a literature search. Additionally, the fact that its search results were accompanied from the beginning by citation counts, as well as the later development of secondary products which leverage this citation data (such as Google Scholar Metrics and Google Scholar Citations), made many scientists wonder about its potential as a source of data for bibliometric analyses. As Thulesius, (2011) puts Google Scholar search has the

advantage of being free to use as compared with Web of Science owned by Thomson (who publish the Thomson Reuters Impact Factor), and Scopus, owned by Elsevier. Subscription fees for Web of Science are secret. Google Scholar search has increased its capacities and features in recent years and is now updated twice a week. Google Scholar search used to yield fewer articles published before 1996, while today it readily retrieves earlier research. Bibliometric research comparing Google Scholar with Web of Science and Scopus shows differences but the correlation is high. In addition to Thomson journal articles, Google Scholar searches show science reports, dissertations, books, and articles from journals not indexed by Thomson. Observation and research have shown in the past that young graduating students and some scholars find it tedious to search for relevant materials when they want to embark on research studies. Sourcing for materials require identifying the type of search engine that will provide them what they want and also make searching easier and interesting. Close study to this kind of challenges faced by young researchers prompted to discuss and quest for more convenience that Google scholar search can offer to reduce stress that researchers of all categories might be facing. Therefore, this study investigates research conduct effectiveness with the use of Google scholar search on knowledge and material sourcing among graduating students in Nigerian Universities. Hence, the following research questions guide the study:

1. Do male graduating researchers make use of Google Scholar search for knowledge and material sharing more than female graduating researchers?
2. Do the students' newness to the institution environments/programmes determine the effectiveness use of Google scholar search to source for materials?

## II. RELATED LITERATURE

Since technology seems to advance in dog years, and the closer someone is in age to a technology the better they tend to understand it, keeping up with technology is not easy for many professionals. The odds are good that many of the readers of Public Relations Quarterly are not familiar with the latest Internet search tools (Kent, 2006). Thoma & Chan, (2019) claimed that it is often necessary to demonstrate the impact of a research program over time both within and beyond institutions. However, it is difficult to accurately track the publications of research groups over time without significant effort. A simple, scalable, and economical way to track publications from research

groups and their metrics would address this challenge. Google Scholar automatically tracks the scholarly output and citation counts of individual researchers. Kent, (2006) writes that on the most basic level, Google Scholar is just another search engine, like Google itself. However, unlike a standard search engine that searches the Internet and pages accessible in cyberspace, Google Scholar is designed to search for "scholarly" research. Google Scholar searches hundreds of the databases that house thousands of scholarly articles and returns hits for journal articles, conference papers, books and book chapters, governmental reports, scientific reports, dissertation and theses, and other scholarly information.

Google Scholar search is also noteworthy for the fact that it is conceived of as an interdisciplinary search engine. In contrast to specialty search engines like the CiteSeer system which indexes freely available computer science literature or RePEc for economic papers, the Google Scholar approach can be conceived of as a comprehensive science search engine. Since its introduction in mid 2004 the Google Scholar search engine has been the subject of considerable interest within the library community and has been the subject of both excitement and criticism.

White, (2021) identified two distinct areas in which Google scholar performs with considerable credit – keyword searching within the full-text of articles and the linking of articles to later works that cite them. Like its parent product, and other general search engines, Google Scholar is based on an algorithmic spider that creates indexes to massive amounts of internet-based text, in this case consisting of works that might, through their provenance, be considered academically sound. These include traditional web pages from research and academic institutions and material from university digital repositories including theses, working papers and other 'unpublished' material as well as authorised copies of published articles. More importantly the Google Scholar spider has been given access to the full text of a considerable number of academic journals through their publishers' websites. It was also noted that Google Scholar uses an algorithm based on the appearance of search words in titles and on citation counts to pull highly relevant items to the top of results lists. This is not only highly convenient but creates an impression of efficacy that appeals strongly to users and that may account in some degree for the perception gap that exists between librarians and users (White, 2021). Google Scholar has been used successfully by individual researchers to track their scholarly output and citations and is thought to be

as good as many other search engines as a source of bibliometric data (Harzing & Alakangas, 2016). Google Scholar also draws upon scholarly material gleaned from other sources especially the Web. Currently, Google and CrossRef are working together. The publishers in the CrossRef consortium, which includes some of the largest academic publishers including John Wiley & Sons, Lawrence Erlbaum Associates, Taylor & Francis, and others, have given Google permission to index their databases (Kent, 2006). Harzing & Wal, (2008) asserted that because of its broader range of data sources, the use of GS generally results in more comprehensive citation coverage in the area of management and international business. The use of GS particularly benefits academics publishing in sources that are not (well) covered in ISI. Among these are books, conference papers, non-US journals, and in general journals in the field of strategy and international business. The Google scholar search features include: advanced search, full text access, and relevance ranking.

The advantages of Google Scholars search stem primarily from its ease of use. A person's GS profile page provides a quick and convenient overview of their publications, rank-ordered by the number of citations of each publication. Likewise, its pitfalls, GS has biases because citation is a social and political process that puts certain groups such as women, younger scholars, scholars in smaller research communities, and scholars opting for risky and innovative work at a disadvantage. Google Scholar search can serve as an excellent "first source" for student and academic researchers. It was observed that both the graduate and undergraduate students at all levels have poor library and research skills. Many students (even at top research institutions) do not even know what sort of information can be found in a good library. The problem is that students have learned to turn to search engines first to find information for research papers and class assignments. As a result of this, teachers have been encouraging students to use the Web as a research tool for many years, student reliance on the World Wide Web is not surprising. In order to combat the tendency of students to rely on the biased information that is found on many Web sites, many professors now require students to consult a requisite number of "scholarly sources" (books, articles, etc.) first, and the Web after that. By encouraging young graduating students (and other professional researchers) to obtain scholarly support for all of their research projects, students develop a greater appreciation for how research can inform practice. Reading scholarship also allows

students to become more comfortable and less intimidated by scholarly articles and books.

Google Scholar search facilitates an initial search in a number of ways. Because Google Scholar is not a discipline specific search engine, Google Scholar returns search results for articles from any field that has written about the subject searched for. Because many fields never look at research outside of their own discipline, using Google Scholar can lead to better, more thorough, research. Additionally, when students are encouraged to read scholarship from outside their own disciplines, students learn to interpret research better and to conduct research that is more effective.

The bulk of valuable information and knowledge useful for strategic decision-making, problem solving, and crisis management, is not located on organizations' Web sites but in the tens of millions of books and journal articles that already exist. Are some of those books/articles pedantic and difficult to read? Of course. But many books/articles are well written and have the potential to inform all aspects of business, management, organizational communication, and sciences.

Ultimately, the most important reason for encouraging (or requiring) young graduating students to use scholarly sources is because they will become the practitioners of the future. Learning to differentiate "good" from "bad" research is an important skill. Students who learn to read academic articles properly and understand how to apply the research and knowledge contained in them to practical professional situations become professionals who are more comfortable with research and ultimately more effective practitioners and communicators.

### III. MATERIALS AND METHODS

This study employed the use of descriptive survey research design. This design is a process of carrying out a study by collecting and analyzing data gathered from a sample considered to be representative of the populations, and generalizing the findings to the population. The population for this study comprises all graduating students (Degree) at Lagos State University of Education, Ijanikin as well as Lagos State University, Ojo. The study was conducted within Ojo Local Government Area of Lagos State in Nigeria. The sample for this study was drawn from the two institutions within The Local Government Area of Lagos State. A sample of 100 graduating students was drawn from the two institutions selected for the study. Fifty students were selected from each institution through simple random sampling technique. This is to ensure equal representation of the respondents. The main instrument used for collection of data is a self designed questionnaire;

The instrument was validated by experts I the field of research and technology. In order to determine the reliability of the instrument used in the study, the questionnaire copies were administered to the sampled students within the population but different from targeted sample size already drawn at both institutions. This approach was repeated with the same group and results were obtained from the first and second periods calculated using Chronbach Alpha with 0.72 reliability index. Data collected from the respondents were subjected to statistical analysis tools in SPSS 25 version.

### IV. RESULTS

RQ1: Do male graduating researchers make use of Google Scholar search for knowledge and material sharing more than female graduating researchers?

Table 1: Gender \* View of Students by Gender Cross-tabulation

			View of Students by Gender				
			SA	A	D	SD	Total
Gender	Male	Count	27	21	1	1	50
		Expected Count	23.5	23.0	2.0	1.5	50.0
	Female	Count	20	25	3	2	50
		Expected Count	23.5	23.0	2.0	1.5	50.0
Total		Count	47	46	4	3	100
		Expected Count	47.0	46.0	4.0	3.0	100.0

Table 1 shows Gender and View of Students towards their responses to SA, A, D, SD (Cross-tabulation). It reveals the actual count and

expected count of the variable gender as well as response variables (SA, A, D, SD). This

differentiates between what was counted and what was expected to be counted

Table 2: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.724	3	.436

A chi-square test was conducted to find out whether male graduating researchers do make use of Google Scholar search for knowledge and material sharing more than female graduating researchers. The result shows that there is no significant difference whether male graduating researchers make use of Google Scholar search for knowledge and material sharing more than female

graduating researchers (Chi-square = 2.724, df = 3,  $p > 0.05$ )

RQ2: Do the students' newness to the institution environments/programmes determine the effectiveness use of Google scholar search to source for materials?

Table 3: Age \* View of Students by Age Cross-tabulation

		View of Students by Age					
			SA	A	D	SD	Total
Age	New to the Institution	Count	36	21	3	2	62
		Expected Count	24.8	31.0	3.1	3.1	62.0
	Not new to the Institution	Count	4	29	2	3	38
		Expected Count	15.2	19.0	1.9	1.9	38.0
Total		Count	40	50	5	5	100
		Expected Count	40.0	50.0	5.0	5.0	100.0

Table 3 shows students newness or not new to the institution environment/programme and students' responses to SA, A, D, SD (Cross-tabulation); It reveals the actual count and expected

count of the variables gender as well as response variables (SA, A, D, SD). This differentiates between what was counted and what was expected to be counted

Table 4: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.835 <sup>a</sup>	3	.000

A chi-square test was conducted to find out whether the students' newness to the institution environments/programmes determines the effectiveness use of Google scholar search to source for materials. The result shows that there is significant determinant difference between students that were new to the institution environment/programme and those that were not new to the system towards the effective use of Google scholar search to source for materials (Chi-square = 22.835, df = 3,  $p < 0.05$ )

this study. It was observed that no significant evident to prove that male graduating researchers that make use of Google Scholar search for knowledge and material sharing are better in searching for materials more than female graduating researcher. This implies that being a male or female has nothing to do with the use of Google scholar search to source for material and to share such materials with his/her colleagues. In contrary to this, second research question showed that the significant determinant difference between students that were new to the institution environment/programme and those that were not new to the system towards the effective use of Google scholar search to source for materials was

## V. DISCUSSION

The results gotten from the analyses answered the two research questions formulated for

clear. This means that conversant with institutional environment is a plus for students to learn how to make use of Google scholar search through assignment and seminar presentation material sourcing exercises.

## VI. CONCLUSION

This article has concentrated almost exclusively on the effects and implications of Google scholar search on knowledge and material sourcing among higher institution students. This has been done in order to test its claims of being scholarly at its most critical point. Searching as it does not only the formally published literature of scholarship but numerous digital repositories, departmental, governmental and organizational websites and other 'grey' sources, it finds a wide array of documents that have been subjected to varying degrees of quality control – theses, working papers, student papers, opinion pieces, even course outlines. This is very commendable and would in itself be good cause for interest but without the presence of peer-reviewed material it would not justify use of the “Scholar” tag. By providing access to such an extensive body of published and quality-controlled literature Google Scholar merits our attention and deserves to be brought within the academic librarian’s repertoire of effective search tools, not as a one-stop-shop but as an essential alternative to existing methods. Hopefully databases like Google Scholar search will become more common, and students and professionals will become more comfortable reading scholarly sources rather than the many predigested, and often biased.

## Recommendations

In the view of this research work based on the following recommendations are hereby made:

- Government should organize trainings to support the academicians in learning new technologies for effective teaching and learning
- Government should as well support teachers’ subscription to have access to all gadgets necessary to update their knowledge and to do research
- It is highly important to have stable power supply in school to ease sourcing of information at due time

## REFERENCES

- [1]. Banks, Marcus A (2005). The Excitement of Google Scholar and the worry of Google Print. *Biomedical digital Libraries*. 2 (2). Available at <http://www.bio->

- [diglib.com/content/2/1/2](http://www.diglib.com/content/2/1/2). Retrieved on 01/07/2006
- [2]. Giles, J. (2005), "Science in the web age: Start your engines", *Nature*, Vol. 438 No. 7068, pp. 554-555.
- [3]. Google Scholar. 2005. About Google Scholar. Available at <http://www.scholar.google.com/scholar/about.html>. Retrieved on 20/07/2005
- [4]. Guistini, Dean (2005). Google Scholar ... and the rise of findability in (re)search (PowerPoint Presentations). Available at <http://www.ubc.ca> retrieved on 28/07/06
- [5]. Harzing AW, Alakangas S (2016). Google Scholar, Scopus and the Web of Science: a longitudinal and cross-disciplinary comparison. *Scientometrics*. 2016;106:787–804
- [6]. Harzing, Anne-Wil K & Wal, Ron van der (2008). Google Scholar as a new source for citation analysis, *Ethics In Science And Environmental Politics*, Vol. 8: 61–73, 2008, doi: 10.3354/esepp00076
- [7]. Kent, Michael L (2006). Conducting Better Research: Google Scholar and the Future of Search Technology. <https://www.researchgate.net/publication/229016356>
- [8]. Lewandowski, D. and Mayr, P. (2006), "Exploring the academic invisible web", *Library Hi Tech*, Vol. 24 No. 4, pp. 529-539, available at: [http://conference.ub.unibielefeld.de/2006/proceedings/lewandowski\\_mayr\\_final\\_web.pdf](http://conference.ub.unibielefeld.de/2006/proceedings/lewandowski_mayr_final_web.pdf)
- [9]. López-Cózar, Emilio Delgado; Orduna-Malea, Enrique & Martín-Martín, Alberto (2019). Google Scholar as a data source for research assessment
- [10]. Maharana, Bulu & Mahapatra, Sasmita (2006). Google Scholar: A Tool To Search Scholarly Information On The Web
- [11]. Markoff, J. (2004), "Google Plans New Service For Scientists And Scholars", *New York Times*, New York.
- [12]. Noruzi, Alireza (2005). Google Scholar: The new generation of citation indexes. *LIBRI*. 55(4), p. 170-180.
- [13]. Notess, G.R. (2005), "Scholarly Web searching: Google Scholar and Scirus", *Online*, Vol. 29 No. 4, pp. 39-41.
- [14]. Terdiman, D. (2004), "A Tool for Scholars Who Like to Dig Deep", *New York Times*, New York.
- [15]. Thoma, Brent & Chan, Teresa M (2019). Using Google Scholar to track the scholarly output of research groups, *Perspect Med Educ* (2019) 8:201–205. <https://doi.org/10.1007/s40037-019-0515-4>



- [16]. Thulesius, Hans Olav (2011). Assessing research impact with Google Scholar: The most cited articles in the journal 2008–2010. *Scandinavian Journal of Primary Health Care*, 2011; 29: 193–195
- [17]. White, Bruce (2021). Examining the Claims of Google Scholar as a Serious Information Source. *Science Librarian/Kaitakawaenga Kareti Putaiao Massey University Library/Te Putanga ki te Ao M tauranga*