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Information Literacy in the Age of Information Overload: A Case Study of Bayero University Library, Kano

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Abstract:

In this study, students studying science at Bayero University Kano examine the connections between the application of information resources and information literacy skills and competencies. Even with the quick increase of knowledge available, many pupils still struggle to find, assess, and use it efficiently. By investigating the factors that affect these competencies and their relationship to academic achievement, the study seeks to close a research gap. The empirical investigation uses a design based on correlation with a method of quantitative investigation to look into the state of information literacy among science students. An accurate representation of undergraduate and graduate students from a variety of science departments was chosen using stratified sampling. Questionnaires were used to gather data, and 95.7% of respondents answered completely. Results indicate that despite students having a basic knowledge of information literacy, they still require more practice in more complex areas such as database searching and information appraisal. The research aids in the creation of focused information literacy initiatives catered to the requirements of scientific students

Keywords: Academic Libraries, Bayero University Library, Digital Literacy, Information Literacy, Information Management, Information Overload

1. Introduction

The proliferation of information, particularly through digital platforms, has indeed resulted in an overwhelming amount of data that is often difficult to assess for authenticity, reliability, and relevance. Lwoga (2014) emphasizes the critical role of information literacy in addressing the challenges posed by information overload, equipping individuals with the skills necessary to navigate this complex landscape. Information literacy involves evaluating, synthesizing, and applying information to various contexts, fostering independent inquiry and critical thinking. This is particularly important in today's knowledge economy, where information is not only abundant but also commodified, and making discernment

essential for academic and professional success. Moreover, recent definitions of information literacy, such as those from the Chartered Institute of Library and Information Professionals (CILIP), highlight the importance of critical thinking and judgment in dealing with contemporary digital information environments. These skills are foundational for full participation in society, especially in addressing the "fake news" phenomenon and other issues of misinformation (CILIP, 2018). Empowerment through information literacy is closely tied to understanding the social and political contexts of information production, which makes it not only a technical skill but also a tool for democratization and social justice (Šobota, 2023). Academic libraries play a pivotal role in

fostering these competencies through orientations, workshops, and other programs, empowering students to become competent information consumers who can critically assess the reliability and utility of the resources they encounter. By focusing on the development of targeted information literacy programs, especially for students in specialized fields like science, universities like Bayero University Kano can help students succeed academically and professionally in the information age.

Statement of Problem

Bayero University Kano science students face difficulties in effectively locating, evaluating, and utilizing information despite the vast availability of resources. Studies by Muhammad et al. (2021) and Suleiman (2021) show that while students frequently access electronic information resources, many lack the necessary information literacy skills for assessing credibility and relevance. Additionally, students tend to rely on basic searches, such as Google, without deeper evaluation, which affects their academic outcomes (Research in Science Education, 2017). This study aims to investigate the relationship between information literacy skills and the effective use of information resources among these students.

Research Objectives

The main objective of this research is to determine the information literacy skills and competencies possessed by science students at Bayero University Kano. The specific objectives are:

- 1) To identify the types of information literacy programmes through which science students acquire information literacy skills at Bayero University, Kano.
- 2) To find out the information literacy skills and competencies possessed by science students of Bayero University, Kano
- 3) To identify the types of print information resources used by science students.
- 4) To find out the factors affecting the use of print information resources among science students.

Literature

Concept and Significance of Information Literacy

Information literacy has emerged as a global priority. Recognizing its importance for both social advancement and economic growth, countries worldwide are giving it top priority. Information literacy is essential for personal and professional success because it enables people to become critical thinkers and autonomous learners. In an age of abundant information, the ability to find, evaluate, and use knowledge effectively is crucial. Various experts and organizations have defined information literacy in different ways. UNESCO (2003) highlights its importance for effective participation in society, emphasizing the skills of finding, evaluating, and using information. Bruce (2003) offers a more comprehensive definition, encompassing problem-solving and decision-making abilities across various life contexts. Lupton (2004) builds on these definitions, emphasizing the significance of critical thinking and analysis beyond basic search skills. Recent studies continue to affirm the critical nature of information literacy for addressing global challenges and promoting sustainable development (UNESCO, 2019; Grizzle, 2018).

Types of Information Literacy Programmes through which Students Acquire Information Literacy Skills

Academic librarians are now important information literacy advocates and educators. While traditional library orientation programs provided the groundwork, information literacy initiatives have broadened to include more areas. Developing information literacy skills enables students to become successful graduates and independent learners (Dubicki, 2013). Effective programs must collaborate between faculty and librarians to incorporate instruction into the curriculum; the focus should shift from teaching library resources to promoting critical thinking and decision-making (Fister, 2013). Support from the institution is essential to making information literacy a core competency within the university (Overn, 2014). Academic libraries offer information literacy (IL) programs designed to give users the tools they need to find, locate, retrieve, assess, and use information for problem-solving (Murugan, 2013). IL initiatives help academic libraries accomplish their larger goals by promoting independent learning (Murugan, 2013).

IL programs are becoming more and more important because of the growing complexity of information environments (Kimani, 2014). According to Kimani (2014), these programs enable users to become proficient navigators of library resources and lay the groundwork for information literacy abilities.

Information Literacy Skills and Competences of Students

Cultivating lifelong learners is a core mission of higher education institutions. By fostering critical thinking and meta-cognitive abilities, universities equip graduates for continued growth and informed citizenship (ACRL, 2000). Information literacy is a cornerstone of this lifelong learning process, extending beyond formal education into professional and personal spheres (ALA, 2000 as cited in Lwoga, 2014). Developing information literacy requires sustained engagement throughout a student's academic journey. This involves repeated opportunities to seek, evaluate, and utilize information from diverse sources across various disciplines (Bundy, 2014). Information literacy is not an isolated subject but an integral component of the curriculum, requiring collaboration among faculty, librarians, and administrators (ALA, 2000). Inspiring students, setting the stage for information discovery, and offering advice on effective information-seeking techniques are all important tasks for faculty members. In addition to curating materials, librarians also teach and assist faculty members. Administrators provide resources, promote cooperation, and guarantee the long-term viability of information literacy programs (ALA, 2000).

Information Literacy Standards

Research has shown that information literacy is vital for navigating the complex information landscape, particularly in higher education, where access to diverse information sources can be overwhelming for students. Bundy (2014) emphasizes that IL must be developed continually across disciplines and educational levels. More recent studies, such as those by Foster (2020) and Ford-Baxter et al. (2022), show that professors are increasingly integrating IL directly into their teaching, reinforcing its role in various academic fields. Meanwhile, the updated ACRL Framework

(2016) and ongoing studies highlight that IL now encompasses more than just research skills it includes critical thinking and the ethical use of information, ensuring students become competent and ethical information users in a rapidly changing digital landscape.

Types of Print Information Resources Used by Students

Electronic resources, in particular, have been increasingly adopted to improve access and flexibility. For example, according to a study on e-resources usage, students appreciate the ease of access to a wide variety of information in digital formats, though actual adoption rates can still vary due to gaps in awareness and training (Mawere & Sai, 2020). Libraries are prioritizing the incorporation of e-resources into their infrastructure to meet modern academic demands, but print resources remain essential due to user preferences, particularly in humanities and social sciences (Vyas, 2023). The blend of formats supports academic success by catering to different learning styles and research needs (Kont, 2020; Casselden & Pears, 2020).

Print Resources in Bayero University Library, Kano

Print resources remain critical in providing foundational knowledge, and serving various informational purposes across disciplines. Books, which are often comprehensive and multi-volume, continue to be indispensable for in-depth study and reference (Kont, 2020). Dictionaries support language learning and provide authoritative definitions, spelling, and usage guidelines, while directories list individuals, organizations, and their contact information (Yale, 2021). Almanacs and yearbooks deliver annual overviews, summarizing key events and statistics. Handbooks and manuals offer concise information on specific technical or specialized subjects (Larsen, 2023). Serials, including newspapers, magazines, and academic journals, are regularly published and provide up-to-date research and news (Casselden & Pears, 2020). Government publications, which include official documents, remain essential sources of legal, regulatory, and policy information at local, national, and international levels (Smith et al., 2022). Maps and atlases, traditionally seen as tools

for navigation, have expanded their use in fields such as urban planning and environmental science (Vesna, 2021). Pamphlets and clippings, which offer focused, topical information, are still vital for current awareness, particularly in community libraries. Manuscripts, the precursors to printed works, are also increasingly digitized, preserving their historical value for modern research (Brown, 2022).

The utilization of information resources is a cornerstone of library operations

Usage patterns significantly shape collection development, resource allocation, and the overall value of libraries (Cox & Janti, 2013). Libraries play a crucial role in gathering, processing, and disseminating resources to fulfil the diverse needs of their users (Bida, 2011). By analyzing circulation and consultation statistics, libraries can effectively evaluate the relevance and efficiency of their collections (Bida, 2011). Despite the advantages offered by digital platforms in terms of convenience and scalability, print resources remain essential, especially in certain disciplines like the humanities and area studies, where physical copies may be the only viable option (Jahnke et al., 2020). This necessity for both formats impacts collection development strategies, compelling libraries to navigate budget limitations while catering to user preferences and ensuring a diverse range of accessible resources (Buschman, 2021; UW Libraries, 2020).

Recent data indicate that understanding resource utilization patterns continues to be vital for assessing library collections' effectiveness and relevance. While digital access has expanded significantly, print resources are appreciated for their permanence, reliability, and contextual usability (Cox & Janti, 2022). Given ongoing budgetary challenges, libraries increasingly make strategic decisions regarding resource allocation by incorporating both print and digital formats to meet the evolving demands of their users (Jahnke, 2020).

A Case Study of Nigeria

In Nigeria, Yusuf and Iwu (2011) conducted a study on the use of academic libraries at Covenant University, Ota, revealing that 75 (35.7%) respondents use the library daily, while 112

(53.3%) visit the library 2-3 times a week. Eight (3.9%) student respondents visited the library 2-3 times a month, in contrast to 28 (31.1%) faculty respondents who visited 2-3 times a month. Obinyan, Obiyan, and Aidenoji (2012) studied the use of information resources in four branches of public libraries in Nigeria, finding that the majority of respondents used the library once every two days (94, 39.2%), followed by 1-3 times a week (56, 23.3%), daily (50, 20.8%), 1-3 times a month (30, 12.5%), and at least once in two months (10, 4.2%). This indicates that registered users frequented the libraries relatively often. The methods by which library users locate information resources are another significant concern. Syamalamba (2011) reported that 40% locate information by consulting the librarian, while nearly 24% find resources by browsing library racks, and 14% do so with the guidance of faculty members. Interestingly, no users utilized technology like OPAC for gathering information. Yusuf (2011) also noted that browsing through shelves ranked highest among methods of locating materials, with 72 (80%) respondents using this approach. Additionally, 130 (61.9%) student respondents utilized catalogues, possibly due to compulsory orientation programs organized for first-year students by the library. Seeking assistance from colleagues ranked lowest, with very few faculty or students seeking help from library assistants.

Further research supports these findings. For example, Oduwaiye et al. (2020) noted that library usage is influenced by user awareness and the availability of resources, while Oduwole and Oyelere (2021) emphasized the role of orientation programs in enhancing library usage among students. Additionally, Okwudishu (2022) found that reliance on librarians for assistance in locating resources has become increasingly important in navigating complex information landscapes.

Importance of Print Information Resources

Despite the increasing prevalence of digital formats, print resources continue to play a vital role in research and education. Wooliscroft (1997) challenges the idea of a completely paperless society by highlighting the enduring importance of print materials. These resources provide unique benefits, such as a well-structured organization that

facilitates efficient information retrieval, user-friendly navigation, and opportunities for thorough analysis (Kimani, 2014; Bitagi, 2012; Okwudishu, 2024). Print resources are essential for delving into new research areas and pinpointing critical concepts. Although research indicates that print materials are highly regarded, their actual usage often does not meet anticipated levels. This study aims to investigate the patterns of print resource utilization among science students at Bayero University, Kano, to gain deeper insights into their usage behaviour.

Challenges Associated with the Acquisition of Information Literacy Skills of Science Students

Several factors hinder the effective use of print information resources among students. Inadequate resources, outdated materials, and shelving issues create accessibility challenges (Nimsomboon & Nagata, 2013). Additionally, limited knowledge of library catalogues and navigation skills impede resource discovery (Kamanda, 2010; Oguniyi & Efosa, 2010). Insufficient library funding, limited space, and inadequate staffing further compound these issues (Bitagi & Garba, 2014). For postgraduate students, time constraints and limited library hours pose additional barriers (Onifade et al., 2013). Findings from (Murugan, 2013) reveal the challenges faced by respondents when using the library. 473(74.4%) of the respondents show that the greatest challenge faced when using the library is the lack of relevant books. The last problem was identified as related subjects not

being properly linked. While, for Shrestha (2010), responses obtained from the study she conducted indicated that 56% of the students are not satisfied with the present way of obtaining information from the sources they access and that major obstacles for them in reaching the information as cited by 28% are insufficient to help by library staff who are not knowledgeable themselves and uncooperative as one obstacle, while 13% thought that the inadequate tools to look for this information as other obstacles.

Methodology

This investigation employed a quantitative research approach, aiming to measure and quantify data to derive generalizable conclusions about a broader population (MacDonald & Headlam, 2012; Usman et al., 2022). A fundamental premise of this method is that reality is objective and can be empirically investigated (Haruna, 2013; Abdullahi, 2023). The research design specifies the data collection and analysis strategies needed to address the research questions effectively (Kumar, 2005; Nwogbo, 2024). Utilizing correlational research allows for an investigation of relationships between variables without implying causation (Haruna, 2013; Ellis & Levy, 2012; Amadi & Nwankwo, 2023). To ensure that the selected sample accurately represents the target population, a suitable sampling technique is essential (Mohammed, 2012). In heterogeneous populations, stratified sampling proves particularly beneficial.

Population of Science Students of Bayero University, Kano

S/N	Department	Lv1	Lv2	Lv3	Lv4	PGD	Masters	PhD	Total
1	Biochemistry	123	122	115	44	9	4	2	419
2	Biology & Plant Science	163	114	104	50	39	31	5	506
3	Chemistry	240	299	197	234	71	24	9	1,074
4	Mathematics	88	56	47	73	—	7	2	273
5	Microbiology	111	69	58	70	—	—	—	308
6	Physics	124	131	90	82	—	14	3	444
7	Zoology	60	50	38	59	—	—	—	207
	Total	909	841	649	612	119	80	21	3231

Source: University System Annual Review Meeting Document (2024).

Sampling Technique Table

S/N	Department	Undergraduate	Postgraduate
1	Biochemistry	404	15
2	Biology & Plant Science	431	75
3	Chemistry	970	104

4	Mathematics	264	9
5	Microbiology	308	-
6	Physics	427	17
7	Zoology	207	-
	Total	3,011	220

Findings

Response Rate

S/N	Respondents' Groups	Questionnaire Administered	Questionnaire Returned	Percentage Returned
1	Undergraduates	330	315	88.7%
2	Postgraduates	25	25	7.0%
	Total	355	340	95.7%

Field Survey, 2024

A total of 355 questionnaires were distributed, with 330 allocated to undergraduate students and 25 to postgraduate students. The undergraduate response rate was 88.7%, as 315 out of the 330 questionnaires were returned, while postgraduate students achieved a 100% response rate with all 25 questionnaires returned. This resulted in an overall

combined response rate of 95.7% for both groups, reflecting a robust level of questionnaire returns. In conclusion, the data indicate a strong response rate from both undergraduates and postgraduates, with undergraduates constituting the majority of the respondents (Ogunleye et al., 2022; Okeke, 2023; Ibrahim & Musa, 2024).

Background Information of the Respondents

S/N	Variables	Frequency	Percentage
1	Gender		
	Male	216	63.5%
	Female	124	36.5%
	Total	340	100%
2	Age		
	16-25 Years	287	84.4%
	26-35 Years	43	12.6%
	36-45 Years	9	2.6%
	46-55 Years	1	0.3%
	56 and above Years	0	0%
	Total	340	100%
3	Level of Study		
	Level 100	50	14.7%
	Level 200	90	26.5%
	Level 300	67	19.7%
	Level 400	108	31.8%
	Level 700	6	1.8%
	Level 800	19	5.6%
	Level 900	0	0%
	Total	340	100%

Field Survey, 2024

The sample consisted predominantly of male respondents, accounting for 63.5%, while females represented 36.5% of the participants. The largest age group among respondents was between 16 and 25 years, making up 84.4% of the sample, followed by those aged 26 to 35 years at 12.6%. A small fraction of the participants, 2.6%, were within the

36 to 45 age range, with minimal representation from older demographics. Among the respondents, Level 400 undergraduate students formed the largest cohort at 31.8%, with Level 200 students at 26.5%. Postgraduate participants were primarily Master's students, comprising 5.6%, while there was a very limited number of doctoral candidates.

Overall, the sample was largely composed of young, undergraduate male students, which is significant for contextualizing the study and

interpreting its results (Bashir et al., 2019; Eze et al., 2021; Njoku & Ogbemor, 2022; Obasi, 2023; Peters et al., 2024; Umar & Yakubu, 2023).

Types of Information Literacy Programmes through which Science Students Acquire Information Literacy Skills

Responses	Frequency/Percentages	
Information Literacy programs	Yes	No
Library Orientation	188 (55.2%)	152 (44.8%)
Face-to-Face Instruction	9 (2.7%)	331 (97.3%)
Lectures	201 (59.0%)	139 (41.0%)
Demonstration	0 (0%)	340 (100%)
Course-Related Instruction	0 (0%)	340 (100%)
Library and IT workshop	0 (0%)	340 (100%)
Library Tours	0 (0%)	340 (100%)
Training Sessions	0 (0%)	340 (100%)
User Guides	110 (32.4%)	230 (67.6%)
Reference Services	72 (21.2%)	268 (78.8%)
Type of Knowledge Gained		
How to do referencing	47 (13.9%)	293 (86.1%)
How to use library catalogues	167 (49.1%)	173 (50.6%)
How to search Library databases	73 (21.6%)	267 (78.4%)
How to access information resources in the library	179 (52.4%)	161 (47.6%)
The use of search strategies	40 (11.8%)	300 (88.2%)
Plagiarism course	5 (1.5%)	335 (98.5%)
All of the above	79 (23.3%)	261 (76.7%)
Relevance of the Knowledge Gained		
Is the knowledge gained through information literacy programs relevant to you in accessing and retrieving the information you require in the library	312 (91.7%)	28 (8.3%)
Satisfaction with the IL programs		
Are you satisfied with the information literacy programs through which you acquire your information literacy skills	283 (83.2%)	57 (16.8%)

Field Survey, 2024

Lectures (59%) and library orientations (55.2%) were the main methods used to impart information literacy skills. Although user guides and reference services were employed, their influence was less pronounced. Students primarily acquired skills in accessing library resources and utilising catalogues, while training in database searching,

referencing, and search strategies was less common. Nevertheless, a significant number of students considered the information literacy programs relevant to their needs and expressed overall satisfaction with them (Akinpelu et al., 2020; Omotayo et al., 2021; Iroham et al., 2022; Abubakar & Tade, 2023; Eze et al., 2023).

Information Literacy Skills of Science Students

Responses	VH/H	A	L/VL
Ability to define the information needed for a particular task	218 (63.9%)	91 (26.9%)	31 (9.2%)
Ability to use the card catalogue	160 (46.4%)	116 (34.4%)	64 (19.0%)
Ability to differentiate between textbooks and journals	215 (62.8%)	94 (28.0%)	31 (9.2%)
Ability to locate relevant information resources in the library	189 (55.2%)	114 (33.8%)	37 (11.0%)
Ability to critically evaluate print information resources	154 (44.8%)	122 (36.2%)	64 (19.0%)
Ability to understand the Library of Congress classification scheme	152 (44.2%)	115 (34.1%)	73 (21.7%)

Ability to cite and reference print information resources correctly	150 (43.7%)	114 (33.8%)	76 (22.6%)
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Field Survey, 2024

Key:

VH: Very High, A: Average, L: Low

VL: Very Low, H: High

The majority of respondents demonstrated a strong ability to define information needs (63.9%) and locate relevant resources (55.2%) within the library. However, skills in utilizing library catalogues (46.4%), differentiating between textbooks and journals (62.8%), and understanding the Library of Congress Classification Scheme (44.2%) showed more varied results. Furthermore, abilities in

critically evaluating print resources (44.8%) and citing and referencing correctly (43.7%) also presented a range of proficiency levels. Overall, while respondents generally expressed confidence in their core information literacy skills, specific skill areas require further development and instruction (Abubakar & Tade, 2023).

Competency of Differentiating Textbooks from Journals

Ways of differentiating	Frequency/Percentages	
	Yes	No
The author	56 (16.6%)	284 (83.4%)
The title	140 (41.3%)	200 (58.7%)
Publishers	16 (4.7%)	324 (95.3%)
Date of publication	13 (3.8%)	327 (96.2%)
ISBN/ISSN	130 (38.3%)	210 (61.7%)
Keywords	14 (4.1%)	326 (95.9%)
Subject	22 (6.5%)	318 (93.5%)
The spine	6 (1.8%)	334 (98.2%)
Length of the material	32 (9.4%)	308 (90.6%)
Quality of the cover page	27 (8.0%)	313 (92.0%)
Unit where the material is kept	101 (29.8%)	239 (70.2%)

Field Survey, 2024

The majority of respondents demonstrated a strong ability to define information needs (63.9%) and locate relevant resources (55.2%) within the library. However, skills in utilizing library catalogues (46.4%), differentiating between textbooks and journals (62.8%), and understanding the Library of Congress Classification Scheme (44.2%) showed more varied results. Furthermore, abilities in

critically evaluating print resources (44.8%) and citing and referencing correctly (43.7%) also presented a range of proficiency levels. Overall, while respondents generally expressed confidence in their core information literacy skills, specific skill areas require further development and instruction (Adeleke & Adio, 2021; Eze & Iroham, 2022; Abubakar & Tade, 2023).

Competency skills on how to evaluate print information resources

Ways of evaluating	Frequency/Percentages	
	Yes	No
The credentials of the author	75 (22.2%)	265 (77.8%)
The accuracy of the information	73 (21.6%)	267 (78.4%)
The currency of the information	198 (58.0%)	142 (42.0%)
The relevancy of the information	74 (21.9%)	266 (78.1%)
The length of the information material	19 (5.6%)	321 (94.4%)

Field Survey, 2024

Currency of information is the most important factor for students, with 58% considering it crucial for assessing quality. Accuracy and author credentials are also significant factors, each selected by around 22% of respondents. Relevance

is considered important by 21.9% of respondents. The length of the information material is the least considered factor, with only 5.6% of respondents using it as a quality indicator. Overall, the data suggests that students prioritize currency, accuracy,

and author credentials when evaluating the quality of print information resources (Ojedokun & Ogunsola, 2022).

Conclusion

The study reveals that despite the availability of print information resources and information literacy programs at Bayero University Kano, science students struggle with fully utilizing these resources effectively. While the majority of students possess basic information literacy skills, gaps exist in advanced competencies such as critical evaluation of sources, understanding the Library of Congress Classification Scheme, and correctly citing references. The reliance on traditional methods of learning information literacy, such as lectures and orientations, is prevalent, but other methods like hands-on workshops and training sessions are underutilized. This highlights the need for a more diverse and integrated approach to teaching information literacy.

Recommendations

Bayero University Library should expand its information literacy programs to include workshops on advanced database searching, critical evaluation of resources, and referencing. This would ensure that science students acquire comprehensive skills beyond basic catalogue usage, equipping them for both academic and professional success.

The university should offer discipline-specific information literacy training tailored to the needs of science students. This will help students acquire relevant competencies in scientific research, such as evaluating the credibility of research articles and understanding data sources in their fields.

To enhance the utilization of print resources, the library should regularly update its print collections, ensuring they are current and aligned with the academic curriculum. Additionally, promoting awareness through student orientations and outreach programs would help highlight the value of these resources in complementing digital materials.

Bayero University Library should investigate and address factors such as accessibility, outdated materials, and insufficient guidance in using print resources. This can be done by improving shelf

organization, increasing staff assistance, and enhancing catalogue systems for easier retrieval of print materials.

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