

Investigating information literacy skills perception and practices among medical and non-medical first-year students at a Nigerian university

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ABSTRACT

Background: The study appraised the perceived information literacy proficiency of first-year students enrolled in the faculties of Basic Medical Sciences, Clinical Sciences, and pure Sciences at the University of Medical Sciences (UNIMED) in Ondo City, Nigeria.

Method: Employing a correlational descriptive survey methodology, 120 students were proportionately selected from the first-year students' population in the three faculties surveyed. The response rate was 84%. Data for the study was collected using a questionnaire sectioned into four or five-point Likert scales. For the data analysis, the responses were rated 4, 3, 2, and 1 points or 5, 4, 3, 2 and 1, respectively, depending on the questionnaire section.

Results: Based on our rubric, the students reported average-level information literacy skills and high-level internet navigation skills. The ability to utilise information effectively had the highest rating ($\bar{x} = 2.9/4.0$), while the ability to access information was the lowest ($\bar{x} = 2.7/4.0$). The students also reported Google ($\bar{x} = 4.1/5.0$), subject textbooks, and peers as the most frequently utilised information sources, while academic sources such as journal databases ($\bar{x} = 2.3/5.0$), library catalogues, and librarians were the least used. No statistically significant distinctions were observed in the information literacy capabilities of first-year students from the three faculties or secondary school backgrounds.

Conclusion: To promote acquiring information literacy skills for academic success and lifelong learning, this study emphasises the necessity for increased awareness and training on the effective usage of scholarly sources among first-year students in Nigerian universities.

Introduction

Information has become more abundant and readily available in the present digital age. Nevertheless, individuals need the right skills to access, evaluate, and use information that can effectively answer questions and strengthen decision-making. This skill, known as information literacy, has been defined by the Association of College and Research Libraries (ACRL) as a "set of integrated abilities encompassing the reflective discovery of information, the understanding of how information is produced and valued, and the use of information in creating new knowledge and participating ethically in communities of learning" (ACRL, 2016, p. 8).

The ability to successfully navigate information overload in most subject areas is now a critical component of university education globally. However, university students must possess suitable information literacy skills to acquire this ability. Following the prodding of Library and Information Science (LIS) experts by Paul Zurkoswki in 1974, LIS professionals have assumed the responsibility of promoting information literacy as one of the core skills of the 21st Century globally. In universities, libraries have established information literacy programmes that groom undergraduates and postgraduates to impart to the students the needed information literacy skills for academic and career success (Baro & Zuokemefa, 2011; Zhao et al., 2023).

However, with the entrenchment of ICT in admission processes (Dave, 2019; Pohekar, 2018; Oreku, 2021), most first-year university undergraduates must have been exposed to navigating the internet for information. In Nigeria,

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it is mandatory for prospective university undergraduates to satisfy admission requirements set by the Joint Admission and Matriculation Board (JAMB), which presently conducts nearly all its activities through the Internet. Thus, first-year university students in Nigeria are, by admission requirements, exposed to the use of the internet for sourcing information and must have possessed some technology-use skills to partake in JAMB's computer-based university matriculation examination. Nevertheless, possession of computer and internet use skills by students might not translate into basic and advanced information literacy skills needed for higher education or career purposes (Ukpebor & Emojorho, 2012).

Literature Review

Information literacy is a crucial skill for undergraduate students. It enables them to conduct research and make informed decisions based on accurate and reliable information. However, despite the importance of information literacy skills, there is a gap between the extensive information available via the internet and an individual's skill set to harness them. Such a gap thus necessitates acquiring information literacy skills to effectively access and utilise information (Ozor & Toner, 2022). Ferguson (2009) earlier suggested that the present information overload – a situation of overabundant information – is an important reason for libraries to focus on enhancing the information literacy skills of their users and institute services to equip the users with such skills that will assist them in navigating the complex information environment.

In Nigeria, there is a need to continually assess the level of information literacy skills among undergraduate students, as previous studies have reported disparate findings. Assessment can help inform the development of policies and strategies towards improving the students' skills. Oyedapo et al. (2014), evaluated undergraduate students' information literacy skills at Obafemi Awolowo University, Nigeria. The study reports that the students had a basic level of information literacy skills, however, it also found that students had difficulty evaluating the credibility and reliability of

online sources. Similarly, Inazu and Soyemi (2022) assessed the information literacy skills of students in three of the six federal universities in Southwest Nigeria and found that most students had a high level of information literacy skills, with most students affirming the ability to search, access and evaluate information. Information literacy skills are becoming increasingly important in today's digital age, and employers are seeking individuals who possess these skills in addition to other requirements (Crawford & Irving, 2014). Enhancing the information literacy competencies of undergraduate students in Nigeria holds paramount significance since it can enable them to make informed decisions, augment their academic achievements, and bolster their professional opportunities.

While some previous studies focused on Nigerian undergraduates have reported basic to high information literacy skills possessed by the students (e.g., Igun & Odafe, 2014; Toyo, 2017; Bashorun et al., 2022), others have revealed a low to poor information literacy skill level from different Nigerian institutions (Ukachi, 2015; Issa et al., 2015; Krubu et al., 2017). It is therefore important to objectively assess the information skill level in various institutions to ascertain the skill level among the students. Similar studies from other countries have also reported divergent findings. For instance, Rukamata (2022) examined information literacy skills among undergraduates at Mzumbe University, Tanzania, and found that most undergraduates were skilled in information identification and evaluation. However, only a handful of the students utilised the electronic resources subscribed by the library.

Most information literacy skill assessments among undergraduates in Nigeria have not been focused on medical students. Determining medical students' information literacy skills will provide the opportunity to compare students across different disciplines to inform policy development. For example, Maidin, Chui, Che, Lai and Hisham (2022) evaluated the information literacy skills among medical students at a university in Kuala Lumpur, Malaysia. Findings from the study show that about 75% of the students rated their information literacy

skills as high, while the internet search engine was the most frequently used information source. However, a similar study among medical students at a university in Nigeria revealed that the students had not attained adequate information literacy competency when assessed with the Information Literacy Competency Standards for Higher Education developed by the ACRL (Baro et al., 2011).

Objectives of the study

This study aimed to determine the perceived information literacy skills possessed by first-year students admitted into the Faculty of Basic Medical Sciences (FBMS), Faculty of Clinical Sciences (FCS) and Faculty of Science (FoS) at the University of Medical Sciences, Ondo City, Nigeria, during the 2020/2021 academic session. The following research questions and hypotheses guided the study.

Research questions

- i. What levels of information literacy skills are possessed by first-year medical and science undergraduates at the University of Medical Sciences Ondo City, Nigeria?
- ii. What sources of information are frequently used by first-year students in the University?
- iii. What is the perceived level of internet navigation skills among first-year undergraduates in the University?

Hypotheses

The following hypotheses were tested at 0.05 level of significance:

- i. There is no significant difference in the information literacy skills of first-year undergraduates in the three faculties.
- ii. There is no significant difference in the information literacy skills of first-year undergraduates who attended public or private secondary schools.

Methods

The research approach adopted for this study was a correlational cross-sectional quantitative descriptive design. The study was conducted at a public university in Nigeria, the University of

Medical Sciences, Ondo City. The study population were first-year students admitted into the faculties of Basic Medical Science (FBMS), Clinical Sciences (FCS), and Science (FoS) of the University during the 2020/2021 academic session.

The study was conducted during the second semester of the academic session after the student had taken the compulsory information literacy course in the first semester. During the session, 210 students were admitted across the three faculties for their undergraduate studies. The proportional allocation sampling technique was deployed to select 120 students across the three faculties to participate in the study, while the convenience sampling approach was used to collect data from the students. The students' information literacy skills were assessed under four domains: defining information, evaluating information, accessing information and using information, through an adopted information literacy scale previously used by Ukachi (2015).

A questionnaire was deployed to collect data for the study. The questionnaire was divided into three: Section A focused on the respondents' demographic information. Section B consisted of 13 statements distributed across four information literacy domains (defining information, accessing information, evaluating information and using information) and measured with a four-point Likert scale of strongly agree, agree, disagree and strongly disagree (which were scored 4,3,2 and 1 point respectively). Section C of the questionnaire elicited information about the frequency of use of various information sources.

Data for the study was collected through the administration of the questionnaire by the researcher. A total of 25 students from the faculty of Medical Rehabilitation in the same institution piloted the questionnaire, and the instrument was found reliable, with Cronbach's α between 0.75 and 0.81. From the study sample, 101 students responded to the questionnaire, resulting in an 84.2% response rate. Data analysis at descriptive and inferential levels was carried out using the Statistical Product and Service Solutions (SPSS) version 22. Means, standard deviation, frequency counts and percentages were the descriptive

statistics utilised, while Analysis of Variance (ANOVA) and the independent t-test were used as inferential statistics to test the hypotheses.

Results

Demographic information of respondents

Table 1 shows the demographic characteristics of the respondents. Out of the 101 responses received, about two-thirds (67.3%, n=68) were females, indicating a higher admission rate for female students than males in the University during the session. Most (64%, n=57) of the freshmen were also within the age group 17-19 years.

Table 1: Demographic characteristics of respondents

| Demographic Characteristics | | Frequency | Percentage |
|-----------------------------|------------|-----------|------------|
| Faculty | BMS | 25 | 24.8 |
| | FCS | 23 | 22.8 |
| | FoS | 53 | 52.4 |
| Age (years) | 14-16 | 24 | 27.0 |
| | 17-19 | 57 | 64.0 |
| | 20-22 | 3 | 3.4 |
| | 23 & above | 5 | 5.6 |
| Gender | Male | 33 | 32.7 |
| | Female | 68 | 67.3 |
| Secondary school attended | Public | 33 | 32.7 |
| | Private | 68 | 67.3 |

More respondents were from the FoS than the other two faculties, and more than half of the respondents (n=68) had their high school education in private secondary schools.

Level of information literacy skills

The results from the data collected across the four domains of information literacy skills among the respondents are presented in Tables 2-5. To determine the students' level of information literacy skills, the following rubric was used, based on the grand mean calculated from the mean response of each area of the four domains measured:

- 0.0 – 0.9 = very low
- 1.0 – 1.9 = low
- 2.0 – 2.9 = average
- 3.0 – 3.5 = high
- 3.6 – 4.0 = very high

(i) Defining information need

The first domain of information literacy assessed was the students' ability to define their information needs. Across the three faculties, findings, as shown in Table 2, revealed that the first-year students perceived their skill in defining information need to be average (2.8 ± 0.6). While there are similarities in inter-faculty mean responses on the student's ability to define their specific information needs, students, according to the results, could be said to only possess average skills in defining specific information needs.

(ii) Accessing Information

As revealed in Table 3, the information access skill of the students across the three faculties was reported to be average (2.7 ± 0.5), based on the rubric. While the students perceived themselves to possess a high-level familiarity with search engines for locating information, it was found that the students did not have adequate skills in the use of Boolean operators, field searching, and truncation search techniques. The lowest ability reported by the students across the six measured areas of accessing information was the ability to use Boolean operators while searching for information (2.1 ± 0.6).

(iii) Evaluating Information

Most freshmen rated their information evaluation skills average (2.8 ± 0.6) (see Table 4). However, the result shows a lower perceived ability to evaluate internet resources using the universal resource locator (website address). Across the three areas of evaluating information that was measured, the students reported the highest ability in effectively selecting online materials for use.

(iv) Using information

Among the four domains of information literacy skills measured in this study, the freshmen reported the highest ability in the use of information (2.9 ± 0.6), as shown in Table 5. The mean inter-faculty responses on information use were similar. Although the results did not reveal a low level of ability in this domain, the students may need more training on integrating new information into existing ones to meet their information needs.

Table 2: First-year undergraduates' ability to define the information need (n = 101)

| | FBMS | FCS | FoS | \bar{x} |
|--|-----------|-----------|-----------|-----------|
| 1. I know when I need to search for information to address my question | 3.2 ± 0.2 | 3.1 ± 0.1 | 3.1 ± 0.1 | 3.2 ± 0.7 |
| 2. I am able to define my specific information needs | 2.7 ± 0.6 | 2.7 ± 0.2 | 3.2 ± 0.5 | 2.6 ± 0.1 |
| Grand mean: 2.8 ± 0.6 | | | | |

Table 3: First-year undergraduates' ability to access information (n = 101)

| | FBMS | FCS | FoS | \bar{x} |
|---|-----------|-----------|-----------|-----------|
| 1. I am familiar with many search engines to use when searching for information | 3.1 ± 0.2 | 3.2 ± 0.4 | 3.0 ± 0.1 | 3.1 ± 0.7 |
| 2. I can use truncation search techniques | 2.2 ± 0.1 | 2.5 ± 0.2 | 2.3 ± 0.1 | 2.3 ± 0.8 |
| 3. I can effectively use Boolean operators to search for information | 2.1 ± 0.2 | 2.0 ± 0.2 | 2.1 ± 0.2 | 2.1 ± 0.6 |
| 4. I can limit online searches by fields | 2.4 ± 0.1 | 2.4 ± 0.2 | 2.7 ± 0.1 | 2.5 ± 0.8 |
| 5. I can conveniently access needed information and use them for problem-solving without assistance | 2.8 ± 0.2 | 3.0 ± 0.2 | 2.7 ± 0.1 | 2.9 ± 0.8 |
| 6. I know the appropriate search tools to use when searching for information | 3.0 ± 0.2 | 3.1 ± 0.2 | 3.1 ± 0.1 | 3.1 ± 0.7 |
| Grand mean: 2.7 ± 0.5 | | | | |

Table 4: First-year undergraduates' ability to evaluate information (n = 101)

| | FBMS | FCS | FoS | \bar{x} |
|--|-----------|-----------|-----------|-----------|
| 1. I have the ability to select online materials for my use effectively | 2.9 ± 0.2 | 3.0 ± 0.2 | 3.2 ± 0.1 | 3.1 ± 0.7 |
| 2. I have the ability to select materials on my topic taking accuracy of the materials into account | 2.7 ± 0.2 | 2.6 ± 0.2 | 2.7 ± 0.1 | 2.6 ± 0.8 |
| 3. I have the ability to recognize the credence of the source and relevance of an electronic document by checking the URL (internet address) | 2.7 ± 0.2 | 2.4 ± 0.2 | 2.6 ± 0.1 | 2.5 ± 0.9 |
| Grand mean: 2.8 ± 0.6 | | | | |

Table 5: First-year undergraduates' ability to use information (n = 101)

| | FBMS | FCS | FoS | \bar{x} |
|--|-----------|-----------|-----------|-----------|
| 1. I have the ability to store/preserve information from electronic sources by printing or saving to a disk or flash drive | 3.0 ± 0.2 | 3.1 ± 0.2 | 3.1 ± 0.1 | 3.0 ± 0.8 |
| 2. I can integrate new information into an existing body of knowledge | 2.7 ± 0.2 | 2.7 ± 0.2 | 2.6 ± 0.1 | 2.6 ± 0.8 |
| Grand mean: 2.9 ± 0.6 | | | | |

Perceived Internet Navigation skill

The respondents were asked to rate their internet navigation skills based on two statements on the questionnaire. Responses were collected using a

four-point Likert scale of strongly rated 4, 3, 2 and 1 point, respectively. As shown in Table 6, the findings reveal that the students have a high perceived internet navigation skill.

Table 6: Perceived Internet navigation skills of respondents (n = 101)

| | FBMS | FCS | FoS | \bar{x} |
|---|-----------|-----------|-----------|-----------|
| 1. I am good at downloading and uploading information on the internet | 3.0 ± 0.2 | 2.8 ± 0.2 | 3.0 ± 0.1 | 3.0 ± 0.8 |
| 2. I have good internet navigation skills to find information | 3.2 ± 0.2 | 3.2 ± 0.2 | 3.2 ± 0.1 | 3.2 ± 0.8 |
| Grand mean: 3.1 ± 0.7 | | | | |

Use of information sources and resources

Table 7 shows the percentage of responses on the frequency of use of information sources and resources among the students. Ordered by the mean response obtained through a five-point Likert scale, the table shows that Google, subject textbook and colleagues were the most frequently used sources by the freshmen. The result also revealed low utilisation of important academic information sources (e.g., Google Scholar, academic databases, librarians and library catalogues) among the students. Most students sometimes or rarely use library catalogues or librarians as information

sources, while about one-third (30.9%) of the students have never used academic databases to source information.

Hypothesis 1 Result

The first hypothesis in the study was tested through a one-way ANOVA statistic. The results are an F value of 0.12 and a p-value of 0.988. However, the hypothesis was accepted because the difference in means of the information literacy skills levels among the students from the faculties was not significant at 0.05 level of significance (Table 8).

Table 7: Frequency of use of information sources and resources (n = 101)

| Information source | Frequency of use | | | | | \bar{x} |
|---------------------------------|------------------|-----------|-----------|--------|-------|-----------|
| | Always | Regularly | Sometimes | Rarely | Never | |
| Google | 37.0% | 42.0% | 19.0% | 2.0% | 0% | 4.1 |
| Subject Textbook | 21.0% | 55.1% | 17.0% | 5.0% | 2.0% | 3.9 |
| Friends or colleagues | 25.5% | 38.8% | 28.6% | 6.1% | 1.0% | 3.8 |
| Wikipedia | 14.0% | 33.0% | 29.0% | 17.0% | 7.0% | 3.3 |
| Lecturer/Professor | 8.2% | 28.6% | 37.8% | 21.4% | 4.1% | 3.2 |
| Google Scholar | 9.3% | 19.6% | 20.6% | 30.9% | 19.6% | 2.7 |
| Library catalogue | 1.0% | 12.2% | 43.9% | 28.6% | 14.3% | 2.6 |
| Librarian | 4.1% | 13.4% | 26.8% | 34.0% | 21.6% | 2.4 |
| Databases of scholarly journals | 4.1% | 6.2% | 30.9% | 27.8% | 30.9% | 2.3 |

Table 8: ANOVA test for significant differences in information literacy skills of first-year undergraduates across three faculties (n = 101)

| | N | Mean | S.D | F | P |
|-----------------------------------|----|------|------|-------|-------|
| Faculty of Basic Medical Sciences | 25 | 2.79 | 0.44 | 0.12* | 0.988 |
| Faculty of Clinical Science | 23 | 2.81 | 0.59 | | |
| Faculty of Science | 53 | 2.81 | 0.45 | | |

*Not significant at p<0.05

Hypothesis 2 Result

Through an independent sample t-test analysed at a 95% confidence interval, the findings show that the difference in means in information literacy skills

of first-year students who attended private and public secondary schools was not statistically significant (t = 0.324, p= 0.746), as shown in Table 9.

Table 9: T-test for significant differences in information literacy skills of first-year students from public and private secondary schools (n = 101)

| | N | Mean | S.D | t (equal variances assumed) | p (2-tailed) |
|--------------------------|----|------|------|-----------------------------------|-----------------|
| Public secondary school | 33 | 2.83 | 0.44 | 0.324* | 0.746 |
| Private secondary school | 68 | 2.80 | 0.50 | | |

*Not significant at $p < 0.05$

Discussion

This study aimed to determine the perceived (self-rated) information literacy (IL) skill level among first-year undergraduates admitted during the 2020/2021 academic session at the University of Medical Sciences, Ondo City, Nigeria. Results revealed a self-rated average level of information literacy skills among the students. This is similar to what has been reported among undergraduates from other institutions within and outside Nigeria (Igun & Odafe, 2014; Bashorun et al., 2022; Rukamata, 2022) but did not correspond with the high information literacy skills reported among some Nigerian undergraduates at the Delta State University (Toyo, 2017) and the University of Ilorin (Tella et al., 2021). Beyond their actual abilities, undergraduates tend to rate the level of their information literacy skills high. This was earlier suggested by Maughan (2001), who posited that “students think they know more about accessing information and conducting library research than they are able to demonstrate when put to the test.” The result of a quasi-experimental study by Zhao et al. (2023), which reported that there was no statistically significant difference in the information literacy abilities rated by trained and untrained students, further confirms the proposition.

Further findings from the study reveal that the use of information resources by freshmen in the University tilts towards unacademic sources. This could have resulted from low awareness about academic information sources or the lack of skills to utilise resources such as Google Scholar and academic databases. This finding resonates with an earlier report that Google was the most patronised information source by first-year students of a Nigerian university (Ukpebor & Emojorho, 2012). It

may thus be inferred that secondary education in Nigeria could be lacking in exposing students to some forms of information literacy skills. Since Google has become ubiquitous and has almost become the term for information searching on the internet, librarians in universities may have to focus on training first-year students on the use of specific academic sources and resources for their studies.

An initial assumption in this study was that newly admitted undergraduates from private secondary schools would possess significantly higher IL skills than their colleagues from public secondary schools. This is because private secondary schools in Nigeria are often more equipped and organised than their public counterparts. The study's findings confirmed that, while freshmen may have differences in other skills and competencies, their information literacy skills are not significantly different. Similarly, students enrolled in medical faculties or programmes should not be assumed to possess a higher level of information literacy abilities than their counterparts in pure sciences or other programmes.

This study was focused on first-year medical and non-medical students at the University of Medical Sciences, Ondo City, Nigeria. When the study was conducted, the student population in the three faculties surveyed was about one-third of the total first-year student population in the University. Thus, findings from the study could only serve as a guide and may not be generalisable to all first-year medical and non-medical students in Nigeria. More extensive studies are important to establish generalisable findings and to address the shortfalls of the convenience sampling used in this study.

Conclusion

The first-year undergraduates surveyed in this study perceived that they possess the necessary information literacy skills to access, evaluate and use information. However, they are mostly unfamiliar with academic sources of information such as the library catalogue, librarians and academic databases. The students possessed high internet navigation skills before being admitted into the University, thus, their information literacy training should be focused on specific information sources and skills that they lack. Based on the findings of this study and previous reports, it could also be concluded that researchers need to exercise caution while conducting students' self-rated assessment of information literacy skills for planning library services, and should not assume that some groups of freshmen will possess higher information literacy skills than others.

Recommendation

Based on the study's findings, basic and advanced information literacy skill programmes should be incorporated into the curriculum for first-year students in Nigerian universities. This should focus on activities that have a demonstrable connection to increasing self-reported student awareness and learning and may be extended beyond their first year of study. This will enable them to develop, at an early stage, such information skills that will be needed throughout their university education and for lifelong learning.

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