Assessing Information Literacy Skills of Higher Education Teachers: Influences of Demographics and Qualifications

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Abstract— **Information is the cornerstone of the Third Industrial Revolution, making information literacy essential for every global citizen. It not only empowers individuals to make informed decisions but also fosters critical thinking. This study offers an empirical evaluation of the information literacy skills of teachers from Higher Education Institutes across Mumbai, India. Information literacy is a fundamental prerequisite for building a strong knowledge base among educators. The study considers various demographic factors, including age, professional experience, subject background, gender, and academic qualifications. Data from 250 teachers were analyzed using a range of descriptive and inferential statistical methods, including mean, standard deviation, t-tests, and ANOVA. The findings reveal significant variations in information literacy skills based on gender and doctoral qualifications. However, no significant differences were observed based on age, professional experience, or subject background. The study concludes with recommendations for enhancing current information literacy practices to further elevate higher education standards.**

*Index Terms—*Disinformation, Higher Education Teachers, Information Age, Information Literacy, Misinformation.

I. INTRODUCTION

The Indian higher education system is increasingly regarded as a promising sector, fueled by the country's growing population. Both the central and state governments share the responsibility for fostering inclusive and sustainable development within this system (Srimathi & Krishnamoorthy, 2019; Narayan & VT, 2021). India's higher education landscape is vast and multifaceted, encompassing government, semi-government, and private universities and colleges. On the global stage, higher education is undergoing substantial and continuous reforms, and India's ability to grow and emerge as a competitive nation will hinge on its mastery of human capital development. While sustainability has become a central focus in modern higher education, the path to achieving sustainable development remains unclear. Burns (2016) defines sustainability as the process of transforming one's ways of being and collaborating to build regenerative, interconnected, equitable, and thriving systems and communities. The goal of teaching sustainability is to cultivate change agents capable of addressing the complex challenges of today's world (De Haan et al., 2010). There is broad agreement that teachers are among the most critical school-based resources influencing students' academic success and long-term outcomes (Chetty et al., 2014; Rivkin et al., 2005; Rockoff, 2004). However, like any individual, teachers may also fall victim to misinformation and disinformation. Consequently, it becomes crucial to examine how teachers process and evaluate information. This study aims to investigate the demographic factors that influence the information literacy of higher education teachers.

II. REVIEW OF LITERATURE

A.Role of Teacher in teaching information literacy skills

The role of teachers has become increasingly critical in the current Information Age. While philosophers and scholars regard information as a fundamental principle in the knowledge society (Floridi, 2008), the sheer volume and complexity of information today are causing significant challenges (Lai & Omoye, 2014; Altay & Acerbi, 2023). Adams et al. (2023) argue that, at an individual level, misinformation profoundly impacts cognition and behavior. As such, it is essential to develop strategies

for discerning truth from falsehood while fostering critical thinking to engage with both information that supports and information that challenges one's worldview (Hisle & Webb, 2017). Torrell (2020) contends that critical information literacy should be a cornerstone of higher education. Chipeta (2010) emphasizes that the ability to search, identify, locate, retrieve, and effectively use information is crucial within tertiary institutions. The education sector plays a pivotal role in equipping individuals to handle information challenges intelligently. Mertes (2021) reports a significant gap in empirical research on how teachers conceive and implement information literacy practices. Similarly, the need for further investigation into teachers as potential partners in information literacy instruction has been highlighted by several scholars (Gapski et al., 2009; Herring, 2010). Numerous quantitative and qualitative studies on information literacy have demonstrated its positive impact on student learning when integrated into teaching (Todd, 2006; Achterman, 2008). Eisenberg and Berkowitz's Big 6 skills, which are teacher-centered, suggest that educators naturally employ information literacy skills in their everyday teaching. However, there is ongoing debate regarding the role of teachers in explicitly teaching information literacy. Teachers are often seen as facilitators of the subject, tasked with integrating information literacy into their curricula (Kuhlthau et al., 2008). While the primary responsibility for information literacy often falls to librarians, a collaboration between librarians and teachers as a pedagogical team is essential to effectively delivering information interventions to students (Ton & Iton, 2011; Mercado-Sierra & Northam, 2023).

B. Lack of Information Literacy Skills

Information has its counterfeit in the form of misinformation and disinformation, both of which contribute significantly to the perpetuation of misconceptions. While these distorted forms of information play a key role in sustaining misunderstandings, media literacy and information literacy are recognized as effective countermeasures (Broda & Stromback, 2024). Gandhe (2011) argues that, despite teachers' familiarity with information literacy (IL) concepts, they fail to impart effective IL skills to students. Connaway et al. (2011) assert that

teachers often neglect information that is perceived as inconvenient or difficult to access. Similarly, Shannon et al. (2019) highlight that many teachers' information literacy skills remain underdeveloped. It has also been reported that Indian universities continue to face challenges in integrating information literacy into their curricula (Umesh & Sujata, 2018). Prasad and Kumbar (2015) found that faculty members in India often lack adequate information literacy skills. This deficiency has been linked to poor student outcomes in significant examinations (Adeyemo, 2005; Onifade, 2015). Moreover, teachers' use of library resources is often low, due to factors such as uncertainty about how to effectively utilize libraries, the unavailability of up-to-date electronic materials, and insufficient guidance (Gunasekera & Balasubramani, 2020). Research also indicates that factors like age, income, economic status, inadequate facilities, and limited access to information resources contribute to teachers' difficulties in effectively using these resources (Serenko et al., 2012; Okoye, 2019). In this context, it can be argued that enhancing individuals' information literacy—equipping them with fundamental skills for managing and evaluating information—can significantly mitigate the negative impact of misinformation (Tijani-Adenle, 2022). Aligned with the goals of sustainability, the Indian education system must prioritize the development of teachers who are proficient in the 21st-century competencies of information literacy.

The synthesis of the existing literature provides a solid foundation for asserting the importance of information literacy skills for both teachers and the broader education sector. However, there is a notable gap in research regarding the factors that contribute to teachers' lack of information literacy skills. While several quantitative studies have examined the influence of demographic factors, the findings have often been inconsistent. To address this gap, the present study aims to identify which specific demographic variables may impact teachers' information literacy. Demographic variables play a crucial role in shaping and targeting policies for specific groups more effectively (Lee & Schuele, 2010). For this study, the demographic factors under consideration include age, gender, academic qualifications, subject specialization, and years of experience

III PURPOSE OF THE STUDY

This study aims to emphasize the critical importance of information literacy skills for educators, highlighting their broader significance for the education system and society at large (Fidalgo & Thormann, 2017). As higher education represents a crucial gateway to a student's future, the role of the teacher becomes even more vital (Williams & Wavells, 2006). Focusing on the information skills of higher education faculty not only enhances the teaching-learning process but also provides students with the tools to critically analyze and extract information from various sources (Probert, 2009). In an era of information overload, many individuals lack essential knowledge on key issues in their environment (Broda & Stromback, 2024). It is therefore crucial for every information user, whether online or offline, to avoid falling victim to fake news and misinformation (Adams et al., 2023). Consequently, the role of teachers in higher education becomes increasingly demanding. Educators must not only ensure the accuracy of information for themselves but also teach their students effective strategies for identifying and combating misinformation.

IV THEORETICAL FRAMEWORK

The concept of information is widely used, yet it remains subject to definitional debates (Anunobi & Udem, 2014). Buckland (2004) defined information as a process, knowledge, and a thing, while Sin (2007) categorized it as something perceived to signify meaning, the process of informing, and the knowledge derived from evidence or communication. Ojedokum (2007) viewed information as a statement of facts, figures, and ideas, whereas Norman defined it as factual data, ideas, and knowledge emerging from any society, which are recognized as valuable, sometimes gathered regularly, organized systematically, transmitted to others, and used meaningfully (Owusu-Ansah, 2003). The concept of information literacy has evolved from earlier notions such as library instruction (Fidzani, 2007). Initially, information literacy was conceived as the ability to find, access, and use information effectively. Over time, however, it has expanded to encompass critical information literacy skills (Bruce, 2002). Information literacy is fundamentally about learning and continuous learning in the modern information society (Bruce, 1997). It involves knowing when and why you need information, how to find it, and how to evaluate, use, and communicate it ethically (CILIP, 2005). Information literacy includes understanding one's information needs and concerns, as well as the ability to identify, locate, evaluate, organize, create, and communicate information to address specific issues or problems. It is a crucial skill for active participation in the information society and is recognized as part of the fundamental human right to lifelong learning (Information Literacy Meeting of Experts, 2003). Therefore, information literacy is not merely about seeking isolated pieces of information; it is a competency essential for building a solid knowledge base. The literature on information literacy underscores that the term has not been arbitrarily assigned; rather, it has evolved over time and is now considered one of the core 21st-century skills.

V OBJECTIVES AND AIM

The primary aim of this study is to examine how various demographic and professional factors influence teachers' Information Literacy. Specifically, the study seeks to explore whether significant differences exist in teachers' Information Literacy based on their age, gender, professional experience, subject background, and educational qualifications. By systematically analysing these variables, the research intends to identify patterns and disparities in Information Literacy competencies among teachers, contributing to a better understanding of how personal and professional characteristics may shape their ability to access, evaluate, and use information effectively.

VI METHODOLOGY

6.1 Sample

A stratified random sampling technique was used. The city of Mumbai was stratified into three categories (Western region/ Central region/ Harbour region). Higher Education Institutes from these regions were identified. The colleges that approved the data collection were selected. 250 higher education teachers from these colleges agreed to fill in a self-reported information literacy skill survey questionnaire.

6.2Instruement

The researcher developed the Information Literacy Tool by reviewing a wide range of literature on Information Literacy skills (ALA, 1989; IFLA; ACRL; Tewell, 2015). For the present study, Information literacy has been defined as the ability of higher education teachers to Identify information, recognize information needs, Access the needed information, Evaluate the information and its source, Use information effectively, and Use information ethically and legally. The tool was structured around six core information literacy skills: Recognize, Identify, Access, Evaluate, Effective Use, and Legal/Ethical (ALA). Initially, the tool contained 60 items. To ensure its validity, expert opinions from professionals in the field of education were sought. As a result, 20 items were removed. The revised tool was then administered to 30 higher education teachers to assess the discriminative index of each item, leading to the rejection of an additional 10 items. The tool with 30 items was administered to 30 higher education teachers to calculate reliability. The Chronbach alpha score for the said tool was 0.82. The survey questionnaire with 30 items was administered for final data collection.

6.3 Design

To ascertain and study the information literacy skills of higher education teachers from the city of Mumbai, categorical variables such as Age, Professional Experience, Subject Background, gender, and Qualifications, were taken. The study adopted the descriptive method of the Causal-comparative type. The aim was to identify cause and effect relationship between independent and dependent variables. The researcher appropriated the retrospective causal-comparative method (Brewer & Kubn, 2010). This method determines whether certain demographic variables may have significantly influenced the dependent variable.

VII DESCRIPTIVE AND INFERENTIAL ANALYSIS

This study employed descriptive statistical techniques, including measures of central tendency (mean and median) and measures of dispersion (standard deviation and range), to summarize and interpret the distribution and variability of the collected data. These methods provided a clear understanding of the overall patterns and consistency within the dataset.

Additionally, the study utilized Analysis of Variance (ANOVA) as an inferential statistical technique to examine whether there were statistically significant differences between the means of multiple groups, thereby enabling the researcher to draw conclusions about the effects of specific variables across different categories

7.1 Results of Descriptive and Inferential Statistics of Study Variables

Variables	Information Literacy skills						'P' Value
		N	Mean	Variance	't' value	'F' value	
Gender	Female	177	122.09	135.70	2.82*		0.005
	Male	73	117.45	149.55			
Age Group (in years)	21-30	40	121.52	113.28		0.37	0.76
	31-40	89	121.19	150.13			
	41-50	82	120.69	130.46			
	51 +	39	118.97	194.81			
Experience (in years)	0-10	126	120.60	130.41		0.03	0.96
	11-20	82	120.71	149.71			
	21-30	42	121.16	178.67			
Subject Background	Arts	76	120.47	130.97		1.11	0.33
	Commerce	100	119.7	117.38			
	Science	74	122.40	191.80			
Qualification	PhD.	74	123.35	134.55	2.25*		0.02
	Non PhD.	176	119.63	144.12			

The study used statistical tests to examine the Information Literacy of higher education teachers based on various demographic factors. Age showed no significant difference in Information Literacy across groups (21-30, 31-40, 41-50, 50+), with an F-ratio of 0.378 (p = 0.76), leading to the acceptance of the null hypothesis. Similarly, professional experience (0-10, 11-20, 21-30 years) did not significantly impact Information Literacy, with an F-ratio of 0.034 (p =

0.96). There was no significant difference in Information Literacy based on the subject background (Arts, Commerce, Science), with an F-ratio of 1.11 (p = 0.33). However, gender significantly differed, with female teachers scoring higher (t = 2.82, p < 0.01). Additionally, qualification (Ph.D. vs. non-Ph.D.) revealed a significant difference, with Ph.D. holders demonstrating higher Information Literacy (t = 2.25, p = 0.05). In conclusion, age, professional experience, and subject background did not significantly affect Information Literacy, while gender and qualification (Ph.D.) were significant factors.

VIII DISCUSSION

Information literacy plays a crucial role in an era of information overload. While information is readily accessible through various digital technologies (Zakhrov et al., 2021), information literacy empowers individuals to identify the most appropriate sources and extract accurate, relevant data. Its primary purpose is to enable users to engage in continuous learning and acquire essential skills necessary for effectively navigating information (Klebansky & Fraser, 2013; Kimmel et al., 2014).

The findings of this study suggest that higher education teachers, regardless of their age, years of experience, or subject background, do not exhibit significant differences in information literacy. The lack of variation across age groups could be attributed to the widespread digital exposure, especially during the COVID-19 pandemic, which led to increased engagement with technology (Onyancha, 2023). Frequent interaction with digital devices and information likely improved individuals' self-efficacy (Deci & Ryan, 2000), allowing teachers from diverse age groups to demonstrate similar information literacy skills. This aligns with findings from London (2016) and Zadrazilova (2018), who also concluded that information literacy is a universal need, and thus, age does not appear to be a significant factor in determining IL skills.

Similarly, teaching experience did not significantly affect information literacy levels. Contrary to the common belief that more experienced teachers would possess higher IL skills, the study found no substantial difference among teachers with varying years of teaching experience. Graham et al. (2020) suggested that all teachers, regardless of experience, should receive ongoing support and professional development. This is further supported by the notion that similar training and development opportunities, a common core curriculum, and a shared emphasis on technology and information likely standardize information literacy levels across teachers, irrespective of their experience (Erazo et al., 2017). While younger teachers may be more attuned to technological resources, experienced teachers are often more skilled at locating and evaluating information. Nonetheless, research indicates that the relationship between years of teaching experience and information literacy is complex and nonlinear (Irvine, 2014).

The subject background of teachers also did not appear to influence their information literacy. Since higher education teachers are actively involved in research activities and guide students in academic writing, they are generally expected to adhere to fundamental information literacy standards (Olga & Tatiana, 2023). Teachers' information needs are largely universal across disciplines, with competencies in accessing and utilizing information remaining consistent, regardless of the subject taught. Therefore, no significant differences in information literacy skills were observed between teachers from different academic backgrounds. Aspects of information literacy such as critical thinking, research methods, and digital literacy are largely independent of subject specialization (Hollis, 2019). Moreover, teachers' frequent professional interactions, including workshops, seminars, and the routine demands of lecture preparation, contribute to the development of their information literacy skills (Verma, n.d.).

However, contrasting findings have been reported in the literature. For example, Zakharov (2012) found that age does influence information literacy, while Shannon (2019) reported that years of teaching experience do impact information literacy, with teachers having more than 20 years of experience being more familiar with IL concepts than those with less experience. Additionally, Singh & Kumar (2021) reported significant differences in the information literacy skills of research scholars from various subject

backgrounds, while Schmitz et al. (2024) found that teachers in fields such as language, arts, and humanities engage more frequently with media education than their peers in other disciplines.

The study also identifies a significant gender difference in information literacy (IL) skills, with females generally outperforming males. Research suggests that females tend to excel in areas such as verbal fluency, perceptual speed, accuracy, and motor skills (Sherwin, 2003; Zaidi, 2010). In contrast, males typically outperform females in skills related to spatial ability, working memory, and mathematics, with these differences often attributed to biological factors. However, these gender-based distinctions tend to emerge more clearly later in adulthood and manifest in various forms.

While Hofer and Pintrich (1997) highlighted the role of opportunities and social context in gender differences, it can be argued that the exhibition of certain skills or competencies is the result of both heredity and environment. While certain biological differences are commonly observed, there are also areas where it is difficult to determine whether the difference arises from gender or social context. Giannoukou (2024) asserts that both genetic factors and environmental influences play a critical role in shaping individuals, with their complex interplay ultimately defining the outcomes.

Supporting this finding, Taylor and Dalal (2017) reported that females tend to have higher mean scores in information literacy compared to males among higher education students. Similarly, other studies (Singh & Kumar, 2021; Vera, 2022) have indicated that female research scholars are better equipped with information literacy skills than their male counterparts. This disparity may reflect societal perceptions of females being more careful (Taylor & Dalal, 2017) and the tendency for them to be more in control, exhibiting greater self-efficacy in finding and evaluating information from various sources (Neely, 2002). However, Connaway et al. (2011) found that males had better IL scores than females, presenting a contrasting view.

Furthermore, the study revealed a significant difference between Ph.D. holders and non-Ph.D. teachers in their information literacy skills. It is well established that teachers who undergo formal research training—learning methods of information seeking, evaluation, organization, and reporting—are better equipped to handle information effectively (Limberg & Sundin, 2006). Thus, it can be argued that training in research methods, digital literacy, and information literacy directly impacts teachers' ability to manage information. Similar findings have been reported in other studies (Vera, 2022), which show significant differences between postgraduate students and Ph.D. scholars in information literacy skills at universities in Nigeria. Additional research has also suggested that postgraduate students often exhibit moderate levels of information literacy (Dorvlo & Dadzie, 2016; Islam & Tsuji, 2010). Despite this, a qualitative study by Nylander & Hjort (2020) found that while Ph.D. supervisors assumed their students were well-versed in information literacy, many students still faced challenges when searching for information, often struggling and getting stuck along the way.

IX IMPLICATIONS

It is evident from the findings that demographic factors such as age, years of teaching experience, and subject background, which does not influence the information literacy of the teachers. These findings indicate that teachers are well equipped especially post-COVID-2019, with basic information literacy skills in terms of their age, professional background, and subject background (Paetsch et al, 2023). However, it should be noted that female teachers exhibit better information literacy skills than their male counterparts. As reported by Taylor and Dalal (2017), Male teachers tend to be more confident in their searching and evaluating skills not being very concerned with many sources or being satisfied with convenient search results (Connaway, 2011). In addition, a doctorate qualification surely impacts their information literacy. Based on the findings it can be argued that teachers without a doctorate are not well oriented with these 21st century skills. Universities and colleges and their librarians must collaborate to equip teachers with information literacy skills. This will not only help the teachers but also enable them to

give appropriate scaffolding to their students (Mulla, 2014).

The findings also indicate a strong need for information literacy orientation for the teachers as well as the students. Neeraja, (nd) insists on planning and developing ILP suitable to Indian Higher Education Environment. Several institutions and universities are organizing information literacy programs for their student and faculties. Jamillah et al.(2023), have suggested AI tools to equip teachers and students with information literacy. Fact-checking AI tools such as Snopes, Factmata and Full Fact helps in debunk misinformation and biased content (Unver, 2023). AI-Powered writing and Research Assistants like Grammarly, QuillBot, and Zotero offer paraphrasing tools and collect organize and cite and share research sources (Nguyen, 2023). Turnitin and Copyscape offer online plagiarism detection services to help in tracking duplicate content (Gupta, 2017).

X SUGGESTION FOR FUTURE RESEARCH

This study provides insights into the factors influencing information literacy (IL) skills among higher education teachers in Mumbai, India. Future research could expand to other educational levels, such as primary and secondary schools. Suggestions for further studies include addressing biases in self-reported data through qualitative methods, exploring additional demographic factors like regional and socioeconomic differences, and conducting longitudinal studies to assess the long-term impact of IL programs. Future research could also explore related areas, such as information literacy competence and its connection with digital literacy. Additionally, investigating the impact of teachers' IL skills on students' IL would offer valuable insights into the broader effects of IL education.

XI CONCLUSION

Information Literacy is a prerequisite for participating effectively in the information society and is part of the basic human right of lifelong learning. (Information Literacy Meeting of Experts, 2003). Hence information literacy is more than just seeking a piece of information; it is a competency to construct a good knowledge base. To be a well-equipped and effective user of information, teachers need to be a role

model for the next generation. In congruence with UNESCO, UGC in India has made efforts to raise the standards of the higher education system in India. It has introduced UGC-INFOMET E-Journals. Information and Library Network (INFLIBNET), the coordinating agency for the UGC –INFONET project has already conducted various training programs, user awareness programs, workshops, and seminars for research scholars, faculty members, and Library staff of 40 universities across the country.

Information is growing in number and complexity with every passing second, beyond imagination. Therefore it is recommended that Government Authorities, universities, colleges, and other agencies of Higher Education must come together and ensure that faculties are well-resourced with information literacy. Information literacy will go a long way to help teachers organize and access huge information available through the internet for maximum utilization in teaching and learning (Singh & Majumdar, 2009). It would be logical to introduce some structured content to assess information literacy skills from time to time. Many Universities such as American University, Illinois University, and others across the globe are offering information literacy courses intending to develop the writing and information literacy of the students. Singh & Majumdar (2009) proposed a structured curriculum of information literacy to initiate it in universities to orient postgraduate students along with faculty members, with information literacy skills. It can be concluded that all citizens whether from an educational background or otherwise must ensure to equip themselves with basic information literacy skills to adjust well in a society full of information comprised of all sorts of misinformation and disinformation. A well-informed citizen could be a sign of a well-functioning society in this 'Information Age'.

Information literacy is an essential competency for effective participation in today's information-driven society and forms a fundamental aspect of the right to lifelong learning (Information Literacy Meeting of Experts, 2003). Beyond simply acquiring isolated pieces of information, information literacy is about developing the ability to build a strong, reliable knowledge base. Teachers, as role models for future generations, must be proficient in

information literacy to be effective users and educators of information. In line with UNESCO's directives, India's University Grants Commission (UGC) has made significant strides in improving the quality of higher education. One such initiative is the introduction of UGC-INFOMET E-Journals, while the Information and Library Network (INFLIBNET), the agency coordinating the UGC-INFONET project, has organized a variety of training programs, user awareness sessions, workshops, and seminars for research scholars, faculty, and library staff across 40 universities in the country.

As the volume and complexity of information continue to grow exponentially, government authorities, universities, and educational agencies must collaborate and ensure that faculty members are equipped with the necessary information literacy skills. This competence will empower teachers to effectively manage the vast array of information available online, maximizing its potential for teaching and learning (Singh & Majumdar, 2009). It would be prudent to implement periodic assessments of information literacy skills through structured content. Many universities worldwide, such as American University and Illinois University, already offer dedicated courses on information literacy to enhance both writing and information management skills among students. Singh & Majumdar (2009) recommended incorporating a structured curriculum on information literacy within universities to orient both postgraduate students and faculty members. Ultimately, it is crucial for all citizens, regardless of their educational background, to equip themselves with basic information literacy skills to navigate a society overwhelmed by both reliable information and misleading content. A society of well-informed individuals will be the foundation of a well-functioning society in the Information Age.

Declaration

We hereby confirm that there are no known conflicts of interest associated with this publication and there has been no significant financial support for this work that could have influenced its outcome. We confirm that the manuscript has been read and approved by all named authors listed. Further we confirm that the order of authors listed in the manuscript has been approved by all of us. We confirm that data was collected with the due approval of the respondents and that ethical standards were strictly adhered to while working on the data. The corresponding author is the sole contact for the Editorial process. She is responsible for communicating with other authors about progress, submission of revisions, and final approval of proofs. We confirm that we have provided a current, correct email address which is accessible by the corresponding Author.

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