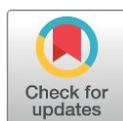


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Critical evaluation and use of digital information sources by distance library students from the Universidade Federal da Bahia: an analysis based on the Framework for Information Literacy for Higher Education – ACRL

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ABSTRACT

Introduction: The increase in the search for training at a higher level in the distance modality reflects the social demand for learning mediated by technologies, corroborating for the creation of digital documents, open educational resources, teaching methodologies appropriate to the virtual environment, increasing the possibility of access to graduation in different knowledge domains. **Objective:** In this context, this work has the objective of analyzing the levels of information literacy, according to the concepts of the Framework for Information Literacy for Higher Education, of the Association of College & Research Libraries, two students of the Library Science course in the distance modality, and His research skills in the digital context. **Methodology:** It is a case study, with a qualitative-quantitative approach. The universe corresponds to the 173 students enrolled in the four poles of the course in Bahia (Santo Amaro, Juazeiro, Vitória da Conquista and Ilhéus), and they count as an academic institution or Institute of Information Science, of the Universidade Federal da Bahia. **Results:** The results suggest that academic and professional studies are the main motivation for the research carried out in a virtual environment. The competence for critical evaluation of the information is evident, above all, in the area of the quality of the information. **Conclusion:** For the development of information skills, in relation to the evaluation of information sources, a pedagogical project of the course oriented to critical training in information, and to the continuous training of higher-level students, should be considered.

KEYWORDS

Information sources. Information literacy - higher education. ACRL/ALA Standards. Critical evaluation of the information.

Avaliação crítica e uso de fontes de informação digitais por estudantes do curso Biblioteconomia a distância da Universidade Federal da Bahia: uma análise baseada no *Framework for Information Literacy for Higher Education* - ACRL

Resumo

Introdução: O aumento da busca por formação em nível superior na modalidade a distância reflete a demanda social por aprendizagem mediada por tecnologias, corroborando para criação de documentos digitais, recursos educacionais abertos, metodologias de ensino apropriadas ao ambiente virtual, aumentando a possibilidade de acesso à graduação em diferentes domínios do conhecimento. **Objetivo:** Nesse contexto, este trabalho tem por objetivo analisar os níveis de competência em informação, conforme os conceitos do *Framework for Information Literacy for Higher Education*, da *Association of College & Research Libraries*, dos estudantes do curso de Biblioteconomia na modalidade a distância, e suas habilidades em pesquisa no contexto digital. **Metodologia:** Trata-se de um estudo de caso com abordagem quali-quantitativa. O universo corresponde aos 173 estudantes matriculados nos quatro polos do curso na Bahia (Santo Amaro, Juazeiro, Vitória da Conquista e Ilhéus), e tem como instituição acadêmica o Instituto de Ciência da Informação da Universidade Federal da Bahia. **Resultados:** Os resultados apontam que os estudos acadêmicos e profissionais são a principal motivação para as pesquisas realizadas em ambiente virtual. A competência para avaliação crítica da informação se evidencia, sobretudo, no âmbito da qualidade da informação. **Conclusão:** Para o desenvolvimento de competências em informação, em relação à avaliação de fontes de informação, deve-se considerar um projeto pedagógico do curso orientado à formação crítica em informação, e à formação continuada dos estudantes em nível superior.

PALAVRAS-CHAVE

Fontes de informação. Competência em informação - ensino superior. Padrões ACRL/ALA. Avaliação crítica da informação.

CRediT

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1 INTRODUCTION

Regardless of the context in which it is used, information is represented as a power device in society, whether for institutions to improve their activities, make decisions in different social spheres, or even achieve new professional horizons. In this respect, skills for accessing, processing, and using information have become even more necessary, especially as part of the digital transformation.

The increase in the search for distance higher education reflects the social demand for technology-mediated learning, corroborating the creation of digital documents, open educational resources, teaching methodologies appropriate to the virtual environment, increasing the possibility of access to degrees in different fields of knowledge. This online teaching and learning scenario favors creativity, interactivity, flexibility and continuous learning.

In the context of higher education courses in Librarianship at federal universities in various Brazilian states, distance learning has been applied, especially after the agreement signed between the Federal Council of Librarianship (CFB), the Universidade Aberta do Brasil (UAB) and the Coordination for the Improvement of Higher Education Personnel (CAPES) (BRASIL, 2009). The training of professional librarians, which involves the theoretical and practical aspects of the treatment, organization, dissemination, access and use of information, requires constant methodological updating, since its object of study and practice is information, an object that borders other areas of knowledge.

The evolution of information processes, especially forms of access, in line with social phenomena and demands, has a direct influence on the tools used to organize knowledge, requiring new skills for professional practice.

The work of librarians in organizations that manage documentation and information, such as libraries, archives, museums, publishing houses and newspapers, is widely discussed in the specialist literature and the need for this professional in these fields is expanding to other areas of activity, such as health, information technology, culture and education. In this context, distance learning favors the universalization and equalization of teaching opportunities in librarianship and can meet specific learning requirements, contributing to the solution of problems involving qualifications and employment.

From this perspective, the main issue of this study is the information competency challenges faced by distance learning higher education students, given that autonomy and the use of technology are essential in this mode of teaching. For this reason, it aimed to analyze, according to the parameters of the American Library Association (ALA), the information competences of distance learning library students, with reference to their abilities to access, critically evaluate and use digital information sources, especially during the new coronavirus pandemic. This is an exploratory study, with a qualitative-quantitative approach, using the case study method in the distance learning Librarianship Course at the Federal Universidade da Bahia, which began in 2019, with 173 students enrolled in the course's four centers in Bahia (Santo Amaro, Juazeiro, Vitória da Conquista and Ilhéus).

Based on the data collected and analyzed, this study made it possible to outline the profile of UFBA's distance learning library science students in relation to information competences for higher education (ACRL/ALA). The main result was the identification of the main motivation for research carried out in a virtual environment, and indicators of the level of competence for critical evaluation of information in the aspect of information quality by students.

The discussions held here provide a basis for reflections on future research into the information behavior of students in their online communication networks.

2 DISTANCE EDUCATION: FROM THE FORMATION OF A CONCEPT TO THE TEACHING OF LIBRARIANSHIP IN BRAZIL

Distance learning (DE) is a type of education whose main tool for mediating learning is technological resources. The effective application of this modality has come about, in particular, due to the lack of access to education at various levels, especially at higher education level, whether in terms of expanding vacancies on undergraduate courses, the possibility of making working and studying hours more flexible and, consequently, increasing demand for higher education courses, or even meeting market demands, providing opportunities for employability in multiple sectors.

It is important to point out that distance learning has its historical milestone in the 18th century, when it was common for professors to offer tutoring in some subject by correspondence and, from the 19th century onwards, it has its institutional milestone with the Liber Hermondes Institute in 1829, in Sweden, which enabled more than 150,000 people to carry out their studies at a distance (Gouvêa; Oliveira, 2006; Vasconcelos, 2010).

In Brazil, although distance education was recognized in 1996, through Law no. 9.394, of 20 December 1996 - the National Education Guidelines and Bases Law (LDB) (BRASIL, 1996), it was only through Decree no. 5.622, of 19 December 2005, that the concept of distance education was officially established:

Art. 1 For the purposes of this Decree, Distance Education is characterized as an educational modality in which the didactic-pedagogical mediation in the teaching and learning processes occurs with the use of information and communication means and technologies, with students and professors developing educational activities in different places or times (BRASIL, 2005).

However, this concept was reformulated by Decree no. 9.057, of May 25, 2017, characterizing Distance Education as

[...] educational modality in which the didactic-pedagogical mediation in the teaching and learning processes occurs with the use of information and communication means and technologies, **with qualified personnel, with access policies, with compatible monitoring and evaluation, among others, and develops educational activities by students and education professionals who are in different places and times** (BRASIL, 2017, emphasis added).

As early as the beginning of the 20th century, there are records in Brazil of experiences related to distance learning, for example, in 1904, the Jornal do Brasil offered correspondence training for typists; in 1959, the Basic Education Movement (MEB) was born, a milestone in (non-formal) distance learning in Brazil, which used a radio-educational system to teach young people and adults; in the 1990s, the Universidade Aberta de Brasília was created; in the 2000s, the Universidade Aberta de Brasília was created, a partnership between the MEC, states and municipalities (Hermida; Bonfim, 2006; Maia; Mattar, 2007; Marconcin, 2010).

In the 21st century, in 2017, guidelines were established in Decree No. 9,057, of May 25, 2017, and in Normative Ordinance No. 11, of June 20, 2017, on accessibility, infrastructure of the centers, accreditation and evaluation for courses and institutions that propose to offer distance learning and, recently, in 2020, the MEC authorized, for the duration of the Covid-19 pandemic, distance learning in basic education and distance learning classes in higher education (BRASIL, 2017).

The first distance learning course in Librarianship in Brazil was launched at the Universidade de Caxias do Sul (UCS) in 2012 (Russo, 2016). There are also bachelor's degrees in Librarianship on offer at various educational institutions across the country, most of which are private. However, in terms of distance learning offered by federal public institutions, the

first course to start teaching activities was at the Universidade Federal do Sergipe (UFS), in August 2020, followed by the Universidade Federal da Bahia (UFBA), a Fundação Universidade Federal de Rio Grande (FURG) e a Universidade Federal do Rio Grande do Sul (UFRGS) (Barbalho; Rozados; Gomes; Valentim, 2021).

The process of making the national distance learning bachelor's degree in Library Science feasible began with the first contact from the Universidade Aberta de Brasília (UAB)/Coordination for the Improvement of Higher Education Personnel (CAPES), in partnership with the Federal Council of Library Science (CFB) in 2008, which sought to train library assistants to meet the demands of the libraries installed in the UAB System centers, in addition to the urgency of universalizing libraries in the country's educational institutions, regulated by Law No. 12. 244, of May 24, 2010 (BRASIL, 2010).

After the project for a distance learning undergraduate course in Librarianship was drawn up, submitted and approved by the CFB plenary in 2010, the official launch of the national distance learning bachelor's degree course in Librarianship (BibEAD) took place in 2018 and, on that occasion, a tribute was paid to professor Mariza Russo, from the Universidade Federal do Rio de Janeiro (UFRJ), who was part of the team that drew up the course project (Russo; Fonseca; Barbalho, 2012; CAPES, 2018).

The Technical Cooperation Agreement between the CFB and CAPES aimed to establish strategies to ensure the planning and implementation of the bachelor's degree in Librarianship, such as the creation of working groups that observed the curricular guidelines for this area, established by the Brazilian Association for Education in Information Science (ABECIN) and the Ministry of Education (MEC). BibEaD, as it is called by the Universidade Aberta de Brasília, is the Bachelor's Degree in Librarianship in distance learning mode, and its objectives include:

[...] train professionals in the field of librarianship, especially in the interior of the country, where there is a greater shortage of this professional; promote articulation with other national policies, among them the policy of encouraging the installation of public libraries in all Brazilian municipalities and the strengthening of basic education (BRASIL, 2020).

| 5

It also provides an opportunity for the social inclusion of people who, for various reasons, 'have limited access to public higher education, especially in the North and Northeast regions of Brazil. In Bahia, for example, the course is offered by the Federal Universidade da Bahia, with classes starting in 2020. And in this context, in any area of knowledge, the expected training involves considering the technical-scientific dimensions for the world of work, and the political dimensions for citizen training, including interdisciplinarity and contextualization of reality.

These dimensions are directly related to information competence, which involves skills in various information processes, especially in the educational context, which involves understanding and interpreting informative textual content and requires critical thinking for its use in different spheres of society, discussed in the next section.

2.1 Information competence in higher education and the ACRL/ALA standards

The study of information competence began in the 1970s by librarian Paul Zurkowsk, president of the Information Industry Association (IIA), in his report The information service environment relationships and priorities, when the terminology was used for the first time. For Zurkowsk,

An information competent person is someone who is trained to use information sources in their work. They must learn techniques and develop skills to deal with the possibilities of information tools, as well as the use of primary sources, in order to find information for problem solving (Zurkowisk, 1974, p. 6).

In the 1970s, the concept of information literacy emerged simultaneously with the phenomenon of the growing volume of information made available, a period in which the concept of information hovered over the physical paradigm, above all due to the technical aspect of exchanging information via the computer network, which was strictly used in the scientific and military context, considering from then on the enunciations of informational capitalism - information with strategic value oriented towards information and communication technologies. This reality highlighted the need for changes in the profile of the professional with a degree in Library Science, since certain practices were no longer sufficient to meet the technological demands allied to the exponential growth of information, which characterize the developing Information Society.

From the 1980s onwards, the concept of information competence (CoInfo) began to be broadened, initially supported by Patricia S. Breivik, then director of the University of Colorado Denver Library, to recognize the relationship between this type of competence and other aspects of human research activity - knowledge, skills and attitudes (Belluzzo, 2020). This concept was later conceived as the structuring basis for CoInfo in 1996 by Scott Parry, validating the acronym CHA within the field of study in the article "The quest for competencies", extended to CHAI (Knowledge, Skills, Attitudes and Interests) at the end of the 1990s by Gramigna (1999). A determining factor in the expansion of this concept is the use of ICT (a milestone for this decade), especially in libraries, changing the way information is produced, stored, disseminated and accessed.

In the 1990s, the concept of CoInfo was widely disseminated by the American Library Association (ALA) and, as a result, various educational programs aimed at information competence were implemented around the world. We can therefore see a closer relationship between the work of librarians and educational environments. In 1997, this initiative led to the creation of the ALA's Institute of Information Literacy (ACRL), whose main objective is to train these professionals and support the implementation of information competency programs in higher education. Since then, it has constantly offered multiplier training for this purpose.

Through the ACRL, a division of the ALA, the standards for information competence were approved in 2000 in the document: Information Literacy Competency Standards for Higher Education, at the ALA Midwinter Meeting in San Antonio, Texas, which establishes five standards (Table 1) and twenty-two performance indicators, the aim of which is to help assess the information competence of higher education students.

Chart 1. ACRL/ALA Competency Standards (2000)

ALA standards	Description
Standard 1	Determine the nature and extent of the information required
Standard 2	Access information effectively and efficiently
Standard 3	Evaluate information and its sources critically and incorporate selected information into their knowledge base and value system
Standard 4	Individually or as a member of a group, uses information effectively to fulfill a specific purpose
Standard 5	Understanding the various economic, legal and social issues surrounding the use of information, accessing and using information ethically and legally

Source: ACRL/ALA (2000).

According to Farias and Belluzzo (2017, p. 117, our emphasis), the ACRL/ALA standards and indicators are aimed at "[...] **higher education environments**, [...] to provide support for the training of people capable of dealing with information diversity in various environments, whether at work, in education or in personal life." Information competence is a fundamental element in university practice, since it will enable students to develop critical, creative and reflective skills for learning curricular components and producing knowledge.

From a similar perspective, the study carried out by Almeida and Damian (2021) points to issues related to the impact on university teaching when critical and communicative skills are not considered in the development of information competences, especially from a socio-cultural perspective in the formation of active, conscious and autonomous subjects in the process of building knowledge.

In the context of technology-mediated learning, such as distance education, in the educational environment formed by students, professors and tutors, the information flow is made up of actors with different roles, implying different actions in accessing and using information at each level of participation in the teaching-learning process. The tutor, for example, acts to identify the students' main information needs and based on their ability to locate, select, access, evaluate and use information sources, develops strategies to solve information issues in the students' training content (Souza; Cavalcante, 2021).

For Borges et al. (2012), competences in digital environments propose a relationship between competences in information and communication, culminating in the term info communicational competences. For the author, being info communicationally competent means being able to understand the social rights that are essential to life, appropriating them and creating new means of information so that others also have access to knowledge, establishing a collaborative network where everyone shares content with each other.

The basis of this process is therefore interaction and the possibility of learning through collaborative production, leading to new information competences - New Media Literacy (Jenkins et al., 2009), Transliteracy (Thomas et al., 2007), or even Metaliteracy (Mackey; Jacobson, 2011). This last term, first advocated by Thomas P. Mackey and Trudi E. Jacobson in 2011, includes, in addition to the criteria that characterize the concept of information competence, a critical awareness of what it means to be competent and how this competence occurs in everyday life.

Although the idea of the evolution of the term and concept was proposed especially to contemplate the competent use of information in social media, such as online social networks, taking as a narrative the intentionality in sharing information on social networking sites (Facebook, Instagram, Tik Tok, etc.), when the publication of information can quickly become disinformation, the concept of metaliteracy is associated with other competences: media

competence, digital competence, visual competence, critical competence, cyber competence, and information fluency (Mackey; Jacobson, 2011).

Mackey and Jacobson's (2011) conceptualization of the set of information competencies, especially in the context of learning in contemporary contexts, served as the basis for the use of the term metaliteracy in the Framework for Information Literacy in Higher Education, published by ACRL/ALA in 2016, a revision of the information competency standards.

In this sense, the ACRL discusses this movement:

[...] the rapidly changing higher education environment, along with the dynamic and often uncertain information ecosystem in which we all work and live, demand that new attention be focused on fundamental ideas about this ecosystem. Students have a greater role and responsibility in creating new knowledge, understanding the contours and changing dynamics of the information world and using information, data and studies ethically. Faculty have a greater responsibility in designing curricula and assignments that promote greater engagement with the core ideas about information and knowledge in their disciplines. Librarians have a greater responsibility to identify core ideas within their own domain of knowledge that can extend learning for students, to create a new cohesive curriculum for information literacy, and to collaborate more broadly with faculty (ACRL, 2015, p. 1).

But what is a Framework? The terminology has its origins in technology, but can be used in other contexts. It is a series of actions and strategies aimed at solving a specific problem (Noletto, 2020). In the context of CoInfo, the Framework "[...] is intentionally called a framework because it is based on a set of interconnected core concepts, with flexible options for implementation, rather than a set of standards or learning outcomes, or any prescriptive enumeration of skills." (ACRL, 2015, p. 1).

The Framework is organized into six concepts, each consisting of an aspect central to information competence, a set of knowledge practices and a set of dispositions. The six concepts are: (1) authority is constructed and contextual; (2) information creation as a process; (3) information has value; (4) research as investigation; (5) research as debate; (6) search as strategic exploration. ACRL understands that:

This conceptual framework paves the way for librarians, teachers, students and other educational actors to reshape the teaching-learning pathway, reshape courses and curricula; connect information competence to student initiatives (ACRL/ALA, 2015, p. 1).

Chart 2 shows the conceptual structure of the Framework in its six aspects:

Chart 2. Conceptual structure of the Framework for Information Literacy for Higher Education

Conceptual structure	Definition
Authority is built and contextualized	Information resources reflect the experience and credibility of their creators and are evaluated based on the need for information and the context in which the information will be used. Authority is constructed in that various communities can recognize different types of authority. It is contextual in that the need for information can help determine the level of authority required.
Information creation process	Information in any format is produced to convey a message and is shared via a selected delivery method. The interactive processes of researching, creating, reviewing and disseminating information vary, and the resulting product reflects these differences.
Information has value	Information has various dimensions of value, including as a commodity, as a means of education, as a means of influence and as a means of negotiating and understanding the world. Legal and socio-economic interests influence the production and dissemination of information.

Research as investigation	Research is interactive and depends on increasingly complex or new questions, the answers to which in turn develop further questions or lines of inquiry in any field.
Research as debate	Communities of academics, researchers or professionals engage in a sustained discourse with new insights and discoveries that occur over time as a result of varied perspectives and interpretations.
Research as strategic exploitation	The search for information is often non-linear and interactive, requiring the evaluation of a variety of information sources and the mental flexibility to seek alternative paths as a new understanding develops.

Source: ACRL/ALA (2015, our translation)

For each conceptual structure of the Framework, ACRL/ALA (2015) presents practical relationships for higher education students to better exemplify. In the framework of **authority is constructed and contextual (1)** students define different types of authority (such as expertise in the research topic, their position in society, special experiences); they use research tools and authority indicators to determine the credibility of sources; they understand that many disciplines have recognized authorities and prestigious publications and that other academics may question the authority of these sources; they recognize that they are developing their own authoritative voices in a specific area and acknowledge the responsibilities this brings; (ACRL/ALA, 2015).

The information creation process (2), on the other hand, goes beyond the format and form of information delivery. The creation of information is valued in different ways and in different contexts (in the workplace, in the academic environment...). The dynamic nature of information creation and dissemination requires continuous attention in order to understand updates in the creation processes. In the process of creating information, experts analyze the underlying processes, as well as the final product, to critically evaluate the usefulness of the information created. The purpose is for students to begin to recognize the importance of the creation process, leading them to more sophisticated choices when matching information products with their information needs (ACRL/ALA, 2015).

In the field of information has value (3), students can learn in practice to give credit to original ideas (example of proper citation); understand the importance of intellectual property; understand the purpose and distinct characteristics of copyright, fair use, open access and public domain; identify problems of access or lack of access to information sources; learn to decide where and how their information is published; among other possibilities (ACRL/ALA, 2015).

Research as investigation (4), the student will be able to formulate research questions based on information gaps; determine an appropriate scope of investigation; also be able to deal with complex research; know how to use various research methods, based on the need, circumstance and type of investigation; organize information in meaningful ways; synthesize ideas gathered from different sources; draw reasonable conclusions based on the analysis and interpretation of information (ACRL/ALA, 2015).

In relation to research as debate (5), the student will be able to cite the work of others in their own production of information; be able to contribute to academic communication at an appropriate level (in guided discussions, undergraduate research journal, conference presentation/poster session); identify the main barriers to entering into academic dialogues; critically evaluate the contributions made by others in participatory information environments; identify the contribution that certain articles, books and other academic works make to disciplinary knowledge; recognize that an academic work may not represent the only or even the majority of perspectives on a given subject (ACRL/ALA, 2015).

With regard to research as strategic exploration (6), the student will be able to determine the initial scope of the task required to meet their information needs; identify the actors of interest, such as academics, organizations, governments and industries, who can produce information and determine how to access this information; use the strategy of divergent

and convergent thinking when researching; be able to combine information needs and search strategies with appropriate search tools; be able to design, refine search needs and strategies as necessary, based on search results; be able to understand how information systems (i.e. collections of recorded information) are organized to access relevant information; be able to use different types of search language (e.g. controlled vocabulary, keywords, natural language) appropriately; and finally, be able to manage search processes and results effectively (ACRL/ALA, 2015).

In addition to a thorough reading and analysis of the historical-conceptual structure of the ACRL/ALA Framework (2015), we sought to identify work related to this research, in order to broaden the sources of evidence in the case study presented, as shown in Chart 3.

Chart 3. Survey of scientific articles on the use of the ACRL/ALA Framework as an analytical tool to verify information competence in higher education.

Year	Author	Title
2021	Jéssica Gabriela Tamião de Souza Luciane de Fátima Beckman Cavalcante	Information competence in the distance learning context: reflections on the professional practices of distance learning tutors
2020	Ketia Kellen Araújo da Silva Patricia Alejandra Behar Teresa Romeu-Fontanillas Montse Guitert-Catasús	Construction and validation of a digital skills model for distance education students in Brazil: MCompDigEAD
2017	Camila Araújo dos Santos Regina Célia Baptista Belluzzo	Information competence from the perspective of professional and technological education: contributions to the development of frameworks
2021	Ana Cristina da Silva Lopes Fernando Luiz Vechiatto	Information search behavior as a parameter for the development of information competence in the use of the CAPES Portal
2022	Priscila Saraiva Jacobsen Evandro Manara Miletto Carine Bueira Loureiro	Scientific research in postgraduate studies: elements of information competence in learning object format

Source: survey data (2023)

The search was carried out in the Information Science Database (BRAPCI) (36 articles) and also in the CAPES Journal Portal (31 articles), using the following search strategy - (Framework AND information competence AND education) - with the time frame from 2015 to 2023, considering the period in which the ACRL/ALA Framework was developed. Although 67 scientific articles were retrieved, reading and analyzing the texts revealed that only five (5), listed in Table 3, deal with the ACRL/ALA Framework as an analytical tool for verifying information competence in higher education, and only one of these deals with distance education, albeit with tutors.

Having analyzed the conceptual aspect of the Framework and its practical application, the next section presents the methodological path of this study, its characterization, analysis and discussion of the data on the levels of information competence of students on the distance learning Librarianship course at the Federal University of Bahia, highlighting the importance of developing a reflexive competence in information, especially in the context of the training of professional librarians, which will have a direct impact on their modus operandi as information professionals in the job market.

3 METHODOLOGICAL PROCEDURES ADOPTED IN THE RESEARCH

This is exploratory research, in terms of objectives, with a qualitative and quantitative approach, endorsed by Costa and Costa (2013), when they say that the realistic/objective view will meet the quantitative approach, and the idealistic/subjective view will meet the qualitative approach. As for the level of investigation, the research is descriptive in nature to verify the levels of information competence on the part of students on the UFBA distance learning Librarianship course, with regard to the critical evaluation of information sources in the digital context.

With regard to the method, it is characterized as a case study, because "[...] it allows an investigation to preserve the holistic and significant characteristics of real-life events." (Yin, 2001, p. 21). From this perspective, the case under analysis is the course offered by the Federal University of Bahia, justifying this choice because it was the course with the highest number of enrolments in the year of the national launch of the distance modality, in 2020, as indicated in Barbalho, Rozados, Gomes and Valentim (2021). To develop the case study, following the model presented by Yin (2001), a protocol of evidence to be considered in data collection was drawn up, namely: a) bibliographic and documentary sources on the assessment of information competencies in higher education; b) analysis interests related to the research objective, which were translated into the data collection instrument - questionnaire; c) pre-test with students from the on-site Library Science and Documentation course at the Federal University of Bahia, from the first and third semester; d) participant observation, since the researchers are part of the teaching staff of this course.

Thus, the universe of this research is the students of the distance learning Bachelor's Degree in Library Science offered at UFBA, with an academic unit at the Information Science Institute (ICI). The electronic questionnaire applied (Google Docs) was sent out in May 2021 to the 173 students enrolled, distributed over the four existing hubs (Ilhéus, Juazeiro, Santo Amaro and Vitória da Conquista). The data collection instrument used was structured into the following categories of analysis:

- 1) Characterization of the sample (student profile) (7 questions);
- 2) Online learning environment and internet access (3 questions);
- 3) Information needs (2 questions);
- 4) Accessing information effectively and efficiently (2 questions);
- 5) Critical evaluation of information sources (2 questions);
- 6) Using information to fulfill a specific purpose (2 questions);
- 7) Ethical communication of information (2 questions).

Most of the questions (from categories 3 to 7) were based on the Likert Scale model, in which the participants indicated the levels between "Very important", "Important", "No opinion", "Not very important" and "Not important". The rest were multiple choice questions.

There were 65 responses, the sample considered in this study, which represents a 95% confidence level when considering a sampling error of less than 10% of the total population (173), according to the Gauss distribution. The questionnaire, based on the Framework's reference framework, aimed to analyze students' levels of information competence and their abilities to evaluate and use digital information sources, which will be presented and discussed in the following subsections.

3.1 Characterization of the Sample

In order to better understand the context of this study, it was necessary to characterize the students in terms of gender, age group and other school/academic backgrounds. The results collected show that the majority of the students are women (75% of the sample is female), legitimizing that the predominance of the female gender is still one of the characteristics in the search for a course in Library Science. In general, it can be inferred that they are people with a certain amount of life experience, as the majority (43.8%) are over 40 years old, with other higher education qualifications (71.9%) and 65.6% have already had contact with a virtual learning environment (Moodle, for example).

As for the devices used to access the internet, the most commonly used is the notebook with 71.9% of use, followed by the smartphone with 70.3%. Participants said they had good internet access (89%), which can fluctuate, but rarely drops. This data shows that there is a regular level of information technology skills among the participants, which may have been developed as a result of the demands of their first degree, a significant factor in the development of information skills.

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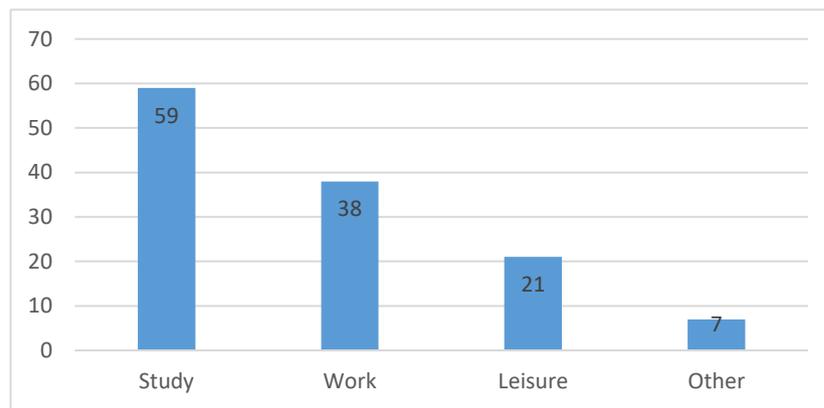
4 INFORMATION COMPETENCE OF DISTANCE LEARNING LIBRARY SCIENCE STUDENTS AT UFBA

Having outlined the profile of UFBA's distance learning library science students, this section presents the analysis, discussion and results of the data relating to levels of information competence, based on categories, according to the Framework's reference framework.

4.1 Need for information

This category aimed to identify the main information needs of the sample analyzed, in line with the Framework's reference framework, especially concepts 2, 4 and 6, investigating the dominant motivations for students to carry out research in the virtual environment (Graph 1).

Graph 1. Motivation for research in the virtual environment



Source: Research data (2022).

Being part of the distance learning environment means that 92.2% of students use the virtual environment for research, followed by 59.4% for work. When asked how often they carry out research in the virtual environment, more than half (56.3%) said they carry out online research daily and 29.7% at least two to three times a week. It is inferred from the answers that this frequency is related to the demand requested by the curricular components that the students are currently studying, or even to the use of time for personal and/or work demands. This data may also indicate a behavioral change in the students' work activities, since they are already working in the labor market, corroborating the transformations brought about by the Covid-19 pandemic, such as teleworking (home office).

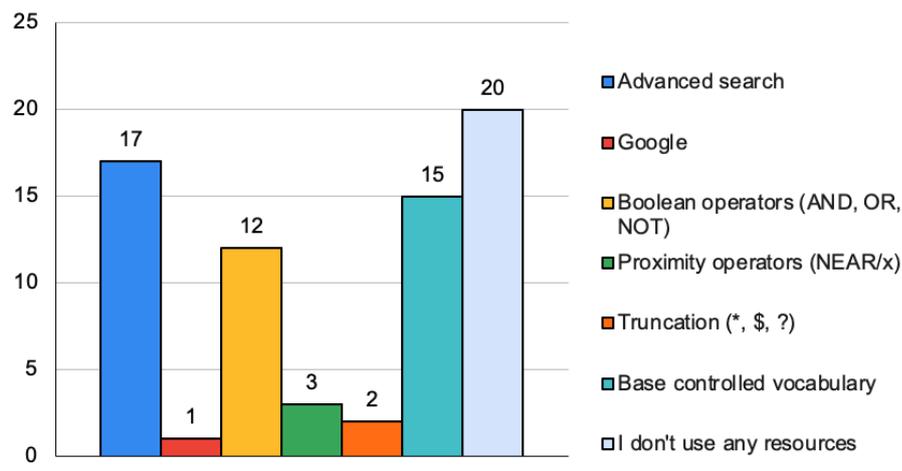
Students' motivation to conduct research in the virtual environment is related to their ability to determine strategies that meet their information needs. In addition, the frequency of use of this environment is also linked to students' mental flexibility in finding appropriate ways to search for information as a new research demand arises, in accordance with concept 6 (six) "research as strategic exploration" of the ACRL/ALA Framework (ACRL/ALA, 2015).

4.2 Accessing information effectively and efficiently

The aim of this category was to investigate how participants outline their search strategies in line with concept 6 of the Framework, with regard to efficient and effective information searching. As for the resources used to narrow down a search in the virtual environment (Graph 2), 50% of the participants said that they use the advanced search mode, which already predetermines the search fields and all they have to do is fill them in with the necessary information.

It should be noted, however, that 31.1% of respondents said they didn't use any resources, contradicting the data collected on this concept, which indicates a narrow competence when it comes to using search strategies.

Graph 2. Search strategies



Source: Research data (2022).

Still with regard to the search for information in the virtual environment, as well as the relevant aspects for the selection of the materials collected and frequency of use, the table below reveals that among the most used sources (sum of the results for Very frequent and Frequent) are Thesis and dissertation banks (56.26%), Institutional websites (79.68%), Public Domain E-books (70.32%).

The use of digital information sources in the current context is more than just an alternative for accessing information content, it is the result of transformations in society's information-seeking behavior. Furthermore, with interoperability between digital documents, it is possible to interact with multiple documentary resources, giving users the ability to simultaneously relate content on different platforms.

The ACRL/ALA document (2000) defines standards for information competence, which include Standard 3. This standard highlights the importance of evaluating information sources critically and incorporating selected knowledge. This standard also highlights the ability to relate content from different platforms, an idea corroborated by the studies by Borges et al. (2012) on info communicational competences. These studies suggest that changes in information-seeking behavior can lead to the creation of new means of information, so that more people can have access to knowledge.

With regard to the main categories of information sources, at the research level, students frequently use secondary sources (e-books and institutional websites), which generally present information already organized for the user and direct them to primary documents, such as theses and dissertations, which according to the students are relevant, pointing to the type of content that most applies to the information needs of the sample analyzed.

4.3 Critical evaluation of information sources

The aim of this category was to understand how UFBA's distance learning library science students evaluate information sources located in the digital environment, a competence mentioned in concepts 1 and 3 of the Framework's theoretical framework.

This is an important aspect and is considered by Tomaél, Acará and Silva (2008) to be an essential and constant task.

These authors have created quality criteria to assess the sources of information available on networks. According to them, in order to serve their users, sources must undergo constant evaluation:

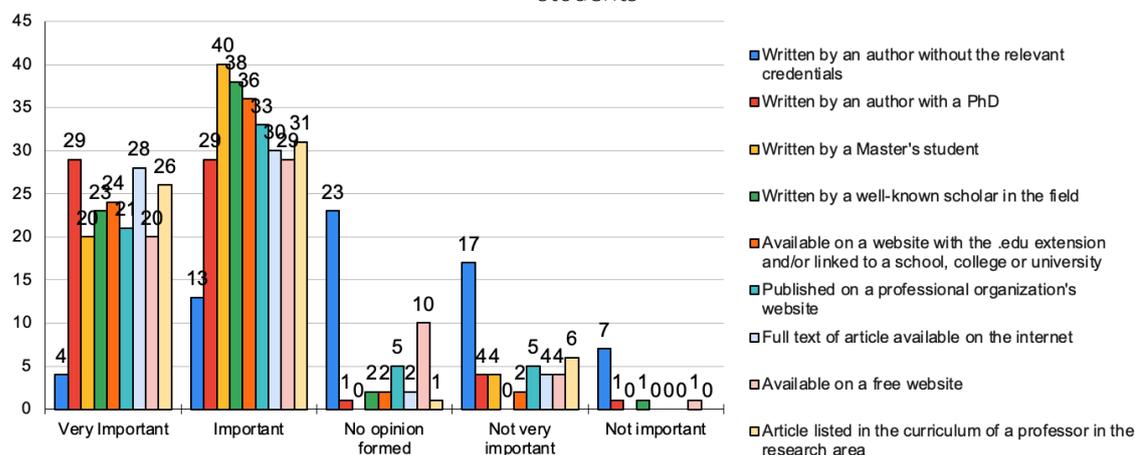
The quality of information or an information source is directly related to its use, i.e. the user who needs it. For a source to be of quality, it must meet the specific purposes

of a community of users and this requires evaluation" (Tomaél; Alcará; Silva, 2008, p. 6).

When evaluating the degree of importance of the aspects of information quality questioned by the students, it can be highlighted that they consider the *Credentials of Authorship* to be "Very Important" and "Important", with 95.31%, and *Authority* with 85.94%. According to Tomaél, Alcará and Silva (2008), these two quality criteria are related to credibility (recognized authorship) and responsibility (rationality in discourse, objectivity, criticality), which indicates critical competence on the part of the respondents.

Still on the subject of evaluating sources and their degree of importance, in order to equalize the information obtained and validate it, the students were asked, in a fictitious way, about a scientific paper located on the internet, asking them to indicate the degree of importance according to the topic researched. They ratified the answer given in the previous question, indicating the *author's credentials* (written by doctors 90.32%; written by a master's student 95.74%; written by a well-known scholar in the field 95.31%) as a reference for evaluating the source, as shown in Graph 3:

Graph 3. Aspects of information quality for the evaluation of information sources in scientific research by students



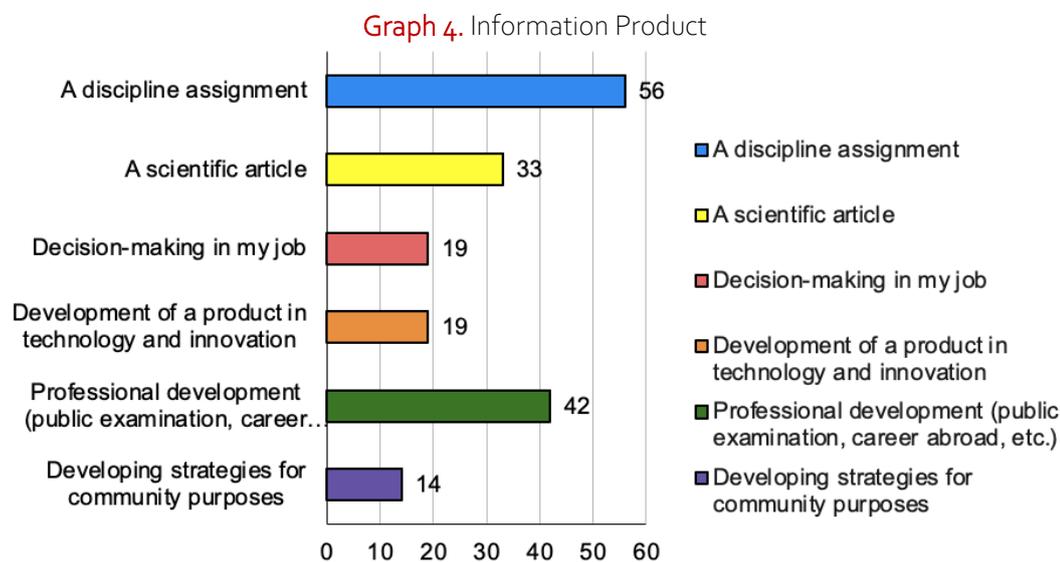
Source: Research data (2022).

In general, there is a balance in the differences between the answers in terms of the degree of importance of the criteria presented in the questionnaire, with none of these aspects being considered more important than the other by the respondents. Therefore, this consistency shows that the students have criteria when evaluating sources, which corresponds to a critical and responsible attitude when using information sources, the subject of the next subsection.

4.4 Use of information to fulfill a specific purpose

This category analyzed how students make effective use of the information collected, according to concepts 4 and 5 of the Framework. At first, the aim was to identify the spheres of information use by means of the degree of importance assessed by the respondents. All spheres (scientific, health, social, political, economic and technological) showed a high degree of importance (Very Important and Important). The scientific sphere stands out, with 100%, and the technological sphere, with 95.31%, which shows that the use of sources in these spheres is directly related to their use for educational purposes, or even an organic need due to the context in which they are inserted - learning and fundamental knowledge in the use of technologies.

Another factor investigated in this category was the information product resulting from the use of information collected in the virtual environment. And, in line with the spheres of use, it can be seen that one of the main products is "A course assignment" with 87.5%, followed by the production of "A scientific article" with 51.65%. Also noteworthy is the use for "Professional development", with 65.6%, as shown in Graph 4.



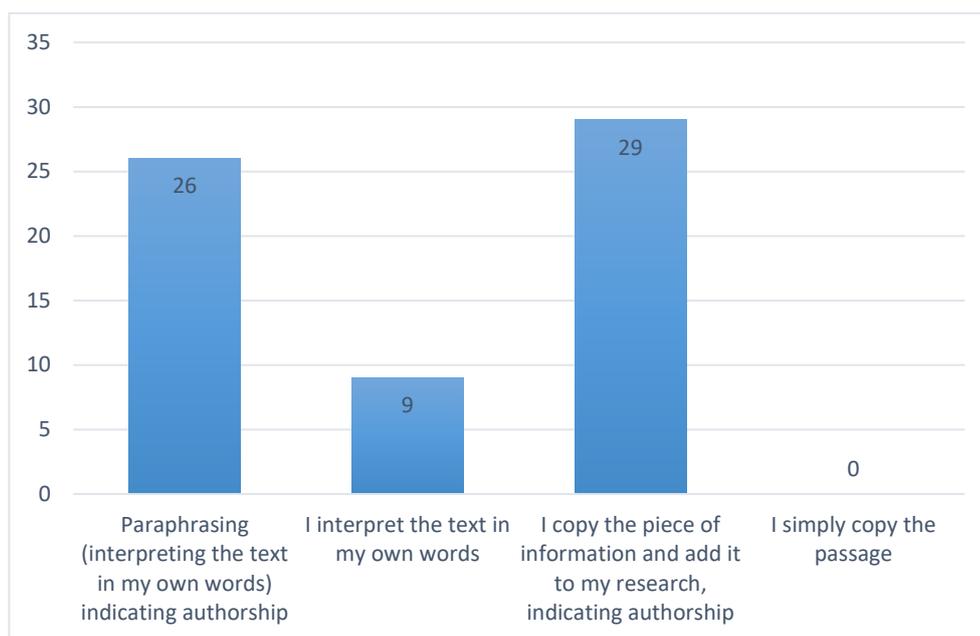
Source: Research data (2022).

This data points to competence in the use of information by students to achieve a specific objective. In general, these objectives are concentrated in the academic and professional contexts. However, it is important to note that even with 21.9% of the responses for "Development of strategies for community purposes", there is ethical and aesthetic value in information competences for the benefit of the community, as pointed out by Vitorino and Piantola (2011).

4.5 Ethical communication of information

The aim of this category was to analyze the ethical use of information obtained on the internet by the participants in the survey, initially investigating whether they credited the use of the chosen source, in line with concepts 1 and 6 of the Framework. It can be inferred that, as a result of the knowledge obtained in previous degrees, the majority of students understand the ethical importance of citing authors used to prepare a text, which corresponds to an understanding, even if only partial, of the appropriate use of information in bibliographic materials covered by copyright law, according to Graph 5:

Graph 5. Indication of authorship

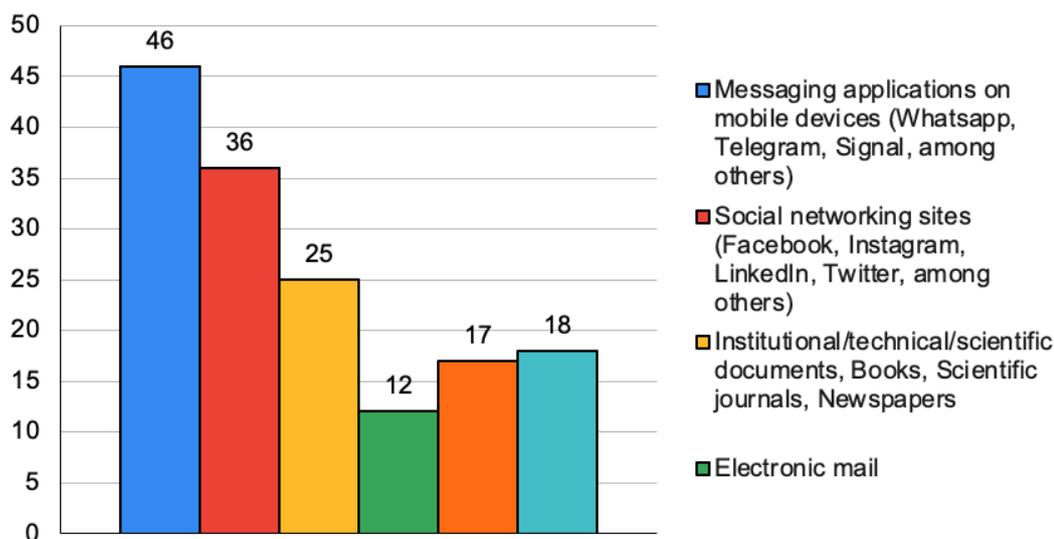


Source: Research data (2022).

With regard to the (formal and informal) information channels through which these students share information, the use of messaging apps on mobile devices such as WhatsApp, Telegram, among others, stands out, with 71.9%, and in second place are online social networks such as Facebook, Instagram and Twitter, with 56.3%. It should be noted that these social media have been widely used to disseminate false information, fake news, causing disinformation, or the excessive circulation of poor quality information, infodemics (Graph 6).

| 17

Graph 6. Sharing channels



Source: Research data (2022).

This confirms data from other studies on the subject of disinformation on social media (Corrêa; Caregnato, 2021; Costa; Nóbrega; Maia, 2021; Soares et al., 2021), especially since the US elections in 2016 and the Brazilian elections in 2018, which has been getting worse, especially during the Covid-19 pandemic, especially in Brazil.

Obviously, the use of messaging apps on mobile devices to share information was a priority in the responses, this does not confirm such use by students to boost messages of a dubious nature, but it does accentuate the discussion on the informational behavior of subjects at this time of digital transformation, and the possibility of educational measures for the critical and conscious use of information and communication technologies, such as curricular components that have information competencies as their syllabus, or even, more broadly, continuing education courses for digital literacy.

5 CONCLUSION

Studies on information competence, especially in Library and Information Science, have sought to understand the information needs of multiple social subjects in order to characterize their profiles as information users and thus contribute to the development of models and/or guidelines on the competent use of information. In this study, the focus is on analyzing information competencies during the training of future library professionals, especially in distance learning. For this reason, the aim was to identify these competences in distance learning library science students at the Federal University of Bahia, with reference to their skills in accessing, evaluating and using information in research in the digital context, especially in the Covid-19 pandemic, based on the Framework's reference framework.

The data collection tool used, an online questionnaire, made it possible to extract results on the students' levels of information competence, indicating that the main need for information is related to their academic and professional studies, and is the effective motivation for research carried out in a virtual environment. Half of the student respondents use search strategies for research, with secondary sources of information being the most accessed and used. In general, they are competent at critically evaluating information in terms of the quality of the information, pointing to criteria that recognize the authorship of the source and the rationality, objectivity and criticality of the discourse.

The products generated by the use of information are mainly for educational purposes and are related to the scientific and technological sphere, indicating the constant need for learning and knowledge about the use of technologies. It is noteworthy that part of the sample indicates the use of information with the aim of developing strategies for community purposes, adding the ethical and aesthetic dimensions to the information competences identified. It was also found that the students have, albeit partially, an understanding of the ethical importance of citing the authors used to prepare a text, meeting the standard of ethical communication of information.

The profile of UFBA's distance librarianship students has been outlined here, but it should be noted that although they meet the basic levels of information competence outlined here, they show little knowledge of search strategies and their assessment of information quality focuses on criteria that need to be discussed in the context of disinformation, including visual information competence, which requires greater criticality in the use of social media, for example. It is confirmed that students, even those who have already graduated from another higher education course, are still in training and that a high level of information competence is not required, since for this audience, the development of these skills is considered in partnership

with the educational institution, teachers and the pedagogical project oriented towards critical information training.

This research is limited to data that was not outlined because it was not the main objective of this study, such as the informational behavior of students in their online communication networks, and is therefore an agenda for future research. As a contribution, it is believed to be one of the first scientific studies to profile and deal with informational aspects involving students on distance learning Library Science courses offered by UAB/CAPES, enabling the development of the educational management of these courses and their pedagogical project.

From this perspective, learning has been configured as a process increasingly oriented towards the constitution of community networks. This means reflecting on a new social approach, when the connection and interaction between people enhances the construction of knowledge, thus leading to new studies focused on the evolution of information and communication skills based on emerging forms of learning.

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