



# Perspectives of open educational resources for the library-information field: insights from Ranganathan

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## ABSTRACT

Sociotechnical transformations propelled by information and communication technologies, coupled with the integration of computers into telecommunication networks, have profoundly impacted the daily lives of contemporary individuals. In response to these shifts, libraries are increasingly adapting their services and products to virtual environments. This adaptation aims to foster practices that encourage democratic access to knowledge, particularly through Open Educational Resources (OER). The evolution of library and information professional roles, along with the emergence of OER, is made possible within a context of growing utilization of information and communication technologies integrated into the knowledge and practices of these institutions. This paper offers an overview of the scientific production concerning OER in the library and information science field during the 2013-2016 quadrennium, as published in relevant journals and on the Sucupira platform. The search was restricted to titles classified as A1, A2, B1, and B2, focusing on national (Brazilian) and Latin American literature.

**Keywords:** open educational resources; OERs; information and communication technologies; ICT; library; virtual environments.

## INTRODUCTION

The sociotechnical transformations of recent years, particularly those related to Information and Communication Technologies (ICT) and the integration of computers with telecommunications networks, have significantly impacted the daily lives of contemporary individuals. The expansion of cyberculture, driven by the advent of the internet, has maximized computer-mediated communication on a global scale. According to Gasque (2016), it is anticipated that in the coming years, individuals will increasingly make use of internet resources and digital media.

This digital immersion is transforming the ways we acquire knowledge and engage with the world in contemporary societies. From civic services to work, education, and leisure, our practices are increasingly embedded in virtual environments. Social media platforms and other virtual spaces have become central to various information ecosystems, shaping our actions, thoughts, and relationships with the world and one another.

Libraries, playing a vital role in ensuring access to culture and information, are “por excelência o espaço adequado para o empoderamento das pessoas por meio da alfabetização midiática e informacional “ (Declaração, 2019, p. 1)<sup>1</sup>. As a result, libraries are progressively migrating many of their services and products to virtual environments, enhancing information retrieval from their databases and better serving their users.<sup>2</sup>

These practices are particularly crucial in the current era, where the informational ecosystem facilitates the production, circulation, and consumption of misinformation. This has led to an exponential increase in the volume of information, known as the infodemic and disinfodemic, creating a landscape of informational disorder (Wardle & Derakhshan, 2019; Araujo, 2021).

In this context, the importance and urgency of developing media and information literacy (MIL) policies and strategies become evident. These policies aim to reduce inequalities and provide individuals with the necessary tools to critically engage in the search, analysis, and evaluation of information sources in their daily lives. The ability to assess the quality of knowledge available online is essential for citizens to make informed decisions about their social and personal lives.

According to the *Declaração de Santiago* (2019), libraries are “strategic” partners in disseminating content across various fields. Initiatives that promote engagement with the digital information universe, emphasizing sharing, reuse, adaptation, readaptation, translation, and localization, have given rise to a movement around new resources for teaching and learning practices, known as Open Educational Resources (OER).

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1 Translation: “ideally positioned to empower individuals through media and information literacy” (Declaração, 2019, p. 1, editorial translation).

2 Processes that gained greater support and adherence with the onset of the SARS-COVID-19 pandemic in 2020, which forced the closure of many libraries due to circulation restrictions, accelerated the shift towards computer networks as the primary channel for communication with readers.

OER are designed to provide flexible educational opportunities without barriers to access. At the World Congress on OER held in Paris by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), OER were defined as,

[...] os materiais de ensino, aprendizagem e investigação em quaisquer suportes, digitais ou outros, que se situem no domínio público ou que tenham sido divulgados sob licença aberta que permite acesso, uso, adaptação e redistribuição gratuito por terceiros, mediante nenhuma restrição ou poucas restrições. O licenciamento aberto é construído no âmbito da estrutura existente dos direitos de propriedade intelectual, tais como se encontram definidos por convenções internacionais pertinentes, e respeita a autoria da obra (UNESCO, 2012)<sup>3</sup>.

Arimoto and Barbosa (2012) suggest that Open Educational Resources (OER) were inspired by the open-source software movement, with the aim of providing quality educational materials with open access. In this context, open data and content can be shared, transformed, and utilized by anyone for various purposes, which are fundamental principles of open science<sup>4</sup>.

From another angle, this paper proposes a reflection on OER through the lens of virtual reference services<sup>5</sup> in libraries, as this service is characterized by the establishment of relationships between the reader, the library, and information through technological mediation. Supporting this perspective, Accart (2012, p. 183)<sup>6</sup> notes:

[...] o serviço de referência virtual não constitui, falando propriamente, uma ferramenta da web 2.0, mas disso se aproxima muito, com as múltiplas possibilidades de interação oferecidas: pela troca de mensagens de correio eletrônico com a finalidade de esclarecer uma questão, a entrevista de referência se “virtualiza”; pelo bate-papo que permite travar um diálogo ao vivo; grupo de discussão, etc.

In this scenario, the library emerges as a space to foster practices that encourage democratic access to knowledge through OER, making them readily available to its users. This paper aims to provide an overview of the scientific production on OER within the library and information science field in Brazil and Latin America.

With that in mind, this study performed a mapping of the scientific production on OER in the national and Latin American contexts. The research was structured using the Capes journal database, accessed through the Sucupira platform, to establish parameters for data collection.

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3 Translation: “[...] teaching, learning, and research materials in any format, digital or otherwise, that reside in the public domain or have been released under an open license, permitting no-cost access, use, adaptation, and redistribution by others with no or limited restrictions. Open licensing functions within the established framework of intellectual property rights, as defined by relevant international conventions, and fully respects the authorship of the work ” (UNESCO, 2012, editorial translation).

4 According to the Open Science Training Handbook, “open science is the practice that allows others to collaborate and contribute, where research data, laboratory notes, and other research processes are freely available” (Rodrigues; Fernandes; Correia, 2019, online).

5 The term “virtual” carries some implications, as highlighted by the author Pierre Levy (1996), which are beyond the scope of this paper. Instead, the perspective advocated by Accart (2012) has been adopted to frame the definition of Virtual Reference Service as discussed herein.

6 Translation: “[...] the virtual reference service is not, strictly speaking, a Web 2.0 tool, but it is very close to it, with the multiple possibilities of interaction offered: through the exchange of e-mail messages with the aim of clarifying a question, the reference interview is “virtualized”; through chat, which allows for a live dialogue; discussion groups, etc.” (Accart, 2012, p. 183, editorial translation).

Firstly, it is important to elucidate the research protocols employed in this study. The initial phase of research involved identifying relevant journals in the field. Utilizing the Sucupira platform, the search was refined to include only publications with Qualis ratings A1, A2, B1, and B2, specifically from Brazil and Latin America. The timeframe was limited to 2013-2016 due to constraints within the database.<sup>7</sup> The descriptor “OPEN EDUCATIONAL RESOURCES” was chosen to ensure precise retrieval. The focus on Brazilian and Latin American journals was intended to streamline the research.

During the analysis, the study also sought to establish a dialogue between the central theme of Open Educational Resources (OER) and recurring themes in the library and information science field, particularly “Virtual Reference Service” and “Information Literacy.” The decision to connect these themes to the paper’s central focus during the research phase derived from the study’s bibliographic references pointing to several relationships between these categories.

The thematic analysis aimed to identify the prevalence of topics related to Open Educational Resources in the scientific production of the field. The investigation sought to analyze the current state of discussions on OER in Library and Information Science, highlighting trends in academic production and the practical implications for librarians’ work emerging from this literature.

## **Information and communication technologies and their impact on the library environment**

Libraries, when integrated with contemporary technologies, create a space for the continuous transformation of information. It is imperative for libraries to embrace these technologies to facilitate the interpretation and understanding of information and communication practices. As Prado and Correa (2016, p. 168) assert:<sup>8</sup>

A presença digital de qualquer organização é efetiva quando se aliam suas ferramentas, espaços e estratégias das quais dispõem. Ela é criada e engajada principalmente pelas mídias sociais, que são uma das mais importantes ferramentas da web 2.0.

In this context, ICTs are increasingly woven into the daily lives of readers<sup>9</sup>, shaping their thoughts, actions, and relationships. Reinforcing this notion, Gasque (2016, p. 14)<sup>10</sup> states that “[...] a internet possibilita o acesso à informação, à comunicação e a interação com pessoas em várias partes do mundo”.

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7 Notably, during the paper’s research phase, this was the most recent period available in the database.

8 Translation: “The digital presence of any organization is effective when it aligns its tools, spaces, and strategies. It is primarily created and engaged through social media, which are among the most important tools of Web 2.0.” (Prado; Correa, 2016, p. 168, editorial translation).

9 In this paper, the term “reader” will be primarily used to refer to individuals who are libraries users, as it is the preferred term of the theorist Ranganathan, a key author informing this study. However, alternative terms such as “users,” “clients,” or “interactors” may also be employed regarding library user as well.

10 Translation: “[...] the internet enables access to information, communication, and interaction with people in various parts of the world”. (Gasque, 2016, p. 14, editorial translation).

Given the contemporary sociability processes that unfold in cyberspace and through various ICTs, the digital presence of libraries becomes paramount for establishing meaningful connections between libraries and their users. Prado and Correa (2016, p. 169)<sup>11</sup> underscore this by stating “[...] estar presente no mundo digital representa a possibilidade de tornar a biblioteca conhecida, criar e manter redes de comunicação e informação, ampliar seu espectro de inserção na sociedade e atingir um público ainda maior para além das suas paredes”.

Furthermore, by embracing this trend, libraries can democratize access to information by creating and maintaining virtual environments tailored to their users, as well as providing the means (both material and technical) for users to access the internet within the library space, with the aim of offering personalized and high-quality service. These resources are concentrated in the reference services offered by libraries.

According to Accart (2012), the philosophy of reference service is to highlight the institution’s collection and to elevate the status of information professionals working in reference services. These professionals curate responses provided by search engines and present the results to the reader. However, it is advantageous for readers to develop their own search and research methods, which requires a basic understanding of information search, retrieval, and utilization. Accart (2012) also notes that the internet has facilitated the dissemination of information, providing access to grey literature<sup>12</sup> and scholarly works. Additionally, cyberspace has empowered researchers to take on the role of publishers themselves.

Another aspect to consider is the transformation of reading and writing practices in light of technological advancements. Laufer (2000) suggests that researchers must proactively share information with peers, fostering cooperative dialogues that incorporate new information sources as they emerge. With the rise of the internet, opportunities for these dialogues have expanded, opening up new possibilities and changing reading practices through electronic media. This shift replaces textual linearity with hypertext, allowing readers greater freedom in constructing their own reading paths rather than following a prescribed sequence.

Gradually, libraries are transitioning their practices to virtual environments, moving closer to what Laufer (2000, p. 161)<sup>13</sup> terms the “hyperlibrary.” In line with this thought, he states that:

A ampliação do uso das novas tecnologias nas grandes bibliotecas generalistas vai nos afastar e nos aproximar do passado. Continuaremos a consultar os exemplares de papel, mas a maior parte de nosso trabalho será feita com os dados digitalizados.

This perspective, as presented by Laufer, opens avenues for understanding how library functions, the roles of information professionals, and the emergence of Open Educational Resources (OER) are adapting within the context of the growing integration of information and communication technologies into the knowledge systems and practices of these institutions.

11 Translation: “[...] being present in the digital world represents the possibility of making the library known, creating and maintaining communication and information networks, expanding its societal reach, and attracting a larger audience beyond its walls” (Prado; Correa, 2016, p. 169, editorial translation).

12 According to Cunha and Cavalcanti (2008), these are printed or multi-copied documents that are neither edited nor commercially distributed.

13 Translation: “The expansion of new technologies in large general libraries will simultaneously bridge the gap between the past and present while also transforming traditional practices. While physical books will remain a valuable resource, the majority of library work will increasingly involve digitized data.” (Laufer, 2000, p. 161, editorial translation).

## Reference service, reader, information professional, and the dissemination of knowledge

Ranganathan, through his unique observations of various libraries worldwide and their services, developed influential concepts, theories, and principles. Known as the “father of Indian library science,” his conclusions and observations continue to shape the field of library and information science.

In the domain of reference service, Ranganathan left his mark through two seminal works: “Five Laws of Library Science,” first published in 1931, and “Reference Service,” published in 1961. While the latter, which explores 167 case studies covering various facets of reference service, has not gained the same recognition in Brazilian librarianship as the “Five Laws of Library Science,” it nonetheless remains a valuable resource rich in specialized knowledge.

Ranganathan (1961) believed that reference service is an indispensable practice, particularly in university libraries, where readers, primarily students and professors, engage in more in-depth research. Moreover, reference service serves as the nexus for the implementation of his five laws. The **first law**, “books are for use,” began to gain widespread acceptance in Western college libraries in the 19th century. Ranganathan (2009, pp. 46-47)<sup>14</sup> elaborates:

Para prestar esse serviço pessoal, o conhecimento e a experiência dos funcionários da biblioteca devem ser de tal natureza que eles sejam capazes de recomendar, com o devido discernimento, livros adequados sobre um mesmo assunto para homens e mulheres que difiram amplamente em termos de aptidão, educação e objetivos.

The analysis of the first law of library science reveals that its formulation led to a series of transformations in libraries and their services, including changes in book storage, library layout, furniture design, and the development of a new profile for library staff. However, discussions about reference service began to emerge in other countries even before Ranganathan’s “five laws.” In 1876, American theologian Samuel Swett Green introduced a work titled “The desirableness of establishing personal intercourse between librarians and readers in popular libraries.” (Grogan, 1995, p. 24), which advocated for assisting readers. Grogan (1995) notes that Green’s pioneering work was presented at the Philadelphia Librarians’ Conference, which established the American Library Association (ALA) in October of the same year.

Conceptions of reference service, and the role of the reference librarian, have long been a subject of debate. This division can be traced back to the 19th century, notably at the 1882 American Library Association conference. While Green championed unconditional assistance to readers by librarians, other theorists opposed this new trend, arguing that reference librarians were not expected to have comprehensive knowledge of the entire collections. This is because, for a significant period, supporting readers’ research was a secondary function in these institutions. As Grogan (1995, p. 28)<sup>15</sup> points out, “[...] a assistência

14 Translation: “To provide this personal service, the knowledge and experience of library staff must be such that they can judiciously recommend suitable books on the same subject to men and women who are widely different in term of aptitude, education, and objectives” (Ranganathan, 2009, p. 46-47, editorial translation).

15 Translation: “[...] assistance to readers was practically nonexistent until the mid-20th century” (Grogan, 1995, p. 28, editorial translation).

aos leitores era praticamente inexistente até meados do século XX.” However, with the expansion of the publishing industry, increased access to education, and transformations in science and technology, libraries adapted to these changes. Consequently, a new readership with evolving information needs emerged, shaping the reference service as it exists today.

Ranganathan (1961) posits that reference service establishes a link between the document and the reader, aiding the reader in finding the desired subject matter quickly, accurately, and comprehensively. However, it is crucial to recognize that reference service goes beyond mere assistance; it guides users towards fulfilling their information needs.

The debate on the role of the reference librarian and reader guidance remains pertinent today. With the automation of information search processes facilitated by the internet and digital technologies, readers gain a degree of autonomy in utilizing search tools, provided they possess the skills to effectively navigate and interpret information. The structural possibilities for readers to independently locate, select, organize, and utilize information, transforming it into knowledge, are intertwined with the concept of information literacy, which will be discussed further. Alongside the promotion of these practices, opportunities arise for dialogue between theoretical and practical reflections in the fields of library and information science, education, and technology. It is within this intersection that Open Educational Resources (OER) are situated.

At the heart of the reference process lies the interaction between the reader and books or other resources, perspectives, and plans that fulfill their informational needs. This dynamic can be linked to Ranganathan’s **second law** (2009, p. 179)<sup>16</sup>, “a cada leitor seu livro”, which emphasizes the importance of the library’s collection being tailored to the informational needs of its community. The second law reaffirms the revolution initiated by the first law and expands the idea of interaction between the reader, the book, and the library.

Ranganathan (2009, p. 92)<sup>17</sup> posits that “a segunda lei tratará a todos como iguais e oferecerá a cada um o seu livro”. This law underscores the responsibility of information professionals to understand their readers and the library’s collection, aiding each reader in finding their book. However, it is worth supplementing Grogan’s (1995, p. 8)<sup>18</sup> assertion that “o serviço de referência [...] é mais do que um expediente para a comodidade do usuário”. In this context, reference professionals should not merely select information sources and passively provide them to the user. They must ensure adequate structural conditions so that readers can autonomously exercise their right to information, becoming capable of critically understanding and discerning their informational needs and the appropriate sources to meet those needs.

The **third law**, “to every book its reader,” complements the revolution initiated by the first law. According to Ranganathan (2009), its understanding is linked to the “open

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16 Translation: “to every reader his book” (Ranganathan, 2009, p. 179, editorial translation).

17 Translation: “the second law will treat everyone as equals and provide each with their book” (Ranganathan, 2009, p. 92, editorial translation).

18 Translation: “reference service [...] is more than a convenience for the user.” (Grogan 1995, p. 8, editorial translation).

access system.” For the author, open access means “a oportunidade de ver e examinar o acervo de livros com a mesma liberdade que temos em nossa própria biblioteca particular” (Ranganathan, 2009, p. 189)<sup>19</sup>. (Ranganathan, 2009, p. 189).

This freedom of access to having the shelves available for the readers has significantly increased library usage worldwide. In this scenario, the expectation placed on reference service professionals is to identify essential books and documents for each reader. Reinforcing this idea, Ranganathan (2009, pp. 197-198)<sup>20</sup> states:

Este contato direto com os leitores enseja a observação de seus gostos e carências, suas ações e reações e suas simpatias e antipatias. Como resultado desse contato direto, um experiente bibliotecário de referência instintivamente trava relações entre leitores e livros e, reciprocamente, um livro amiúde sugere um leitor a quem ele atrairá.

Moreover, the librarian’s use of advertising techniques, according to Ranganathan (2009), can further attract readers to these spaces or even transforms non-readers into readers. Consequently, information is produced, organized, and disseminated on a large scale. Bringing this vision of information expansion to the present day, the OER movement is dedicated to broadening and solidifying the sharing of ideas, information, and knowledge on a global level. With the experience of the open access system, Ranganathan (2009) asserts that readers frequently make new discoveries through direct contact with books on the shelves. Connecting this idea of “frequent discoveries” to the present, there is the notion of lifelong learning explored by Demo (2012, p. 12).<sup>21</sup> For the author:

pode-se entender bem a ideia do aprender a aprender como habilidade, quando associada à aprendizagem permanente e ao manejo de conteúdos não restrito à memorização, mas implicando igualmente a capacidade de manter-se aprendendo sempre (renovar os conteúdos).

This notion of continuously developing learning throughout life is closely related to the concept of information literacy. Additionally, it is crucial to keep pace with technological transformations manifested through digital media platforms. This discussion about the consolidation of the digital world and its impact on libraries will be explored further.

## Technology, cyberspace, information literacy, media, and the element of time

While the first three laws prioritize the use of books by the widest possible audience, the **fourth law**, “save the time of the reader,” introduces the element of time and centers

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19 Translation: “the opportunity to see and examine the book collection with the same freedom we have in our own private library” (Ranganathan, 2009, p. 189, editorial translation).

20 Translation: “This direct contact with readers allows for the observation of their tastes and needs, their actions and reactions, and their likes and dislikes. As a result of this direct contact, an experienced reference librarian instinctively establishes connections between readers and books and, reciprocally, a book often suggests a reader to whom it will appeal.” (Ranganathan, 2009, p. 197-198, editorial translation).

21 Translation: “We can understand the idea of learning to learn as a skill when associated with lifelong learning and the handling of content not limited to memorization but also involving the ability to keep learning continuously (renewing the content)” (Demo, 2012, p. 12, editorial translation).



on its significance. This law emphasizes the importance of cataloging, classifying, and indexing documents within libraries. These tools, combined with a skilled team of reference professionals, significantly reduce the time readers spend on research, allowing them to meet their needs more swiftly, efficiently, and effectively. Additionally, the fourth law addresses practices related to library lending services. Ranganathan (2009) notes that once-cumbersome lending systems have been replaced by streamlined procedures designed to save time for both readers and library staff.

This perception of time is reconfigured in the modern world through the nexus of technology and cyberspace. Pierre Levy (1999, p. 92)<sup>22</sup> defines cyberspace as:

espaço de comunicação aberto pela interconexão mundial dos computadores e das memórias dos computadores. Essa definição inclui o conjunto dos sistemas de comunicação eletrônicos (aí incluídos os conjuntos de rede hertzianas e telefônicas clássicas), na medida em que transmitem informações provenientes de fontes digitais ou destinadas à digitalização.

The emergence of cyberspace is inextricably linked to the development of digital technology and its pervasive influence on contemporary societies. Castells (2005, p. 23)<sup>23</sup> supports this perspective, stating that “as pessoas integraram as tecnologias nas suas vidas, ligando a realidade virtual com a virtualidade real, vivendo em várias formas tecnológicas de comunicação, articulando-as conforme as suas necessidades”. Thus, this notion of time evolves in relation to technological adaptations over time, impacting the daily lives of communities.

In this context, communicative processes have shifted from traditional mass media, which offered limited or no interaction with the receiver, to cyberspace, where digital social media platforms, built on interactions between parties, now dominate the landscape of information production and consumption. In this scenario, “o objetivo é fornecer um maior volume de informações multimodais (sons, imagens e textos) de forma simultânea, multiplexados e transmitidos a uma velocidade cada vez maior” (Castells, 2005, p. 227)<sup>24</sup>. All this interaction that happens through the internet aims to be collaborative, at least in theory, as these environments are structured for the production and sharing of content by participants on these platforms.

In this vein, Calil Junior (2017, p. 148)<sup>25</sup> defines social media as “um conjunto de práticas sociotécnicas, em que sujeitos e/ou instituições estabelecem relações com e a partir de artefatos tecnológicos”. With the rise of social media, new practices have emerged

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22 Translation: “a space of communication opened by the worldwide interconnection of computers and computer memories. This definition includes all electronic communication systems (including traditional wireless and telephone networks), as long as they transmit information from digital sources or are intended for digitization.” (Pierre Levy, 1999, p. 92, editorial translation).

23 Translation: “people have integrated technologies into their lives, linking virtual reality with real virtuality, living in various technological forms of communication, and articulating them according to their needs” (Castells, 2005, p. 23, editorial translation).

24 Translation: “the goal is to provide a greater volume of multimodal information (sounds, images, and texts) simultaneously, multiplexed, and transmitted at an ever-increasing speed” (Castells, 2005, p. 227, editorial translation).

25 Translation: “a set of sociotechnical practices, in which individuals and/or institutions establish relationships with and through technological artifacts” (Calil Junior, 2017, p. 148, editorial translation).

around content creation and dissemination in digital environments. According to Okada (2013, p. 166)<sup>26</sup> collaborative productions on social media can be built from the adaptation of existing resources. Thus,

a mídia social pode ser muito útil para o aprendizado colaborativo através de REA, devido a vários fatores importantes, tais como: a disseminação global, respostas e edição instantâneas, a disponibilidade para qualquer usuário de Internet contribuir, interface fácil de usar e pouco ou nenhum custo.

Indeed, the increasing ubiquity of information and communication technologies in people's lives necessitates transformations that also encompass educational practices. Social media platforms like Wikis, Blogs, Groups, Twitter, MySpace, Facebook, LinkedIn, Flickr, YouTube, Last.fm, Second Life, Wikipedia<sup>27</sup> and countless others empower users to create or reproduce content themselves. These environments allow all information produced and disseminated on these platforms to be accessed, reinterpreted, and reshaped collectively and collaboratively. Okada (2013) emphasizes the fundamental importance of social media in providing a space for interaction and fostering more dynamic and autonomous teaching. Following this reasoning, "o conteúdo significativo compartilhado pelas mídias sociais pode permitir o discurso reflexivo, uma nova experiência e a aprendizagem participativa" (Okada, 2013, p. 166)<sup>28</sup>. Thus, the potential of social media platforms for collaboration, information sharing, and the collective production of knowledge is underscored.

As cyberspace expands through the nodes of networks<sup>29</sup> new information proliferates, making this virtual space increasingly nebulous. In this landscape, Castells (2005) emphasizes the importance of contextualizing information, so that it is transformed into specific knowledge through skills related to decision-making, storage, and critical evaluation of the obtained content. Processing, gathering, and organizing the vast amounts of information dispersed in a virtual network is an insurmountable task.

Furthermore, quantity does not always translate into quality, especially in an informational ecosystem that fosters the production, circulation, and consumption of misinformation. Thus, it is essential to focus on the information literacy of communities, understood here as:

conjunto de saberes e práticas articulados dialogicamente e que possibilitam a construção do pensamento crítico, da avaliação criteriosa e do uso solidário e ético da informação, bem como as estruturas que promovam ações cidadãs e engajadas com o bem comum (Calil Junior; Sá; Zattar, 2021)<sup>30</sup>.

26 Translation: "social media can be very useful for collaborative learning through OER, due to several important factors, such as: global dissemination, instant responses and editing, availability for any internet user to contribute, easy-to-use interface, and little or no cost." (Okada, 2013, p. 166, editorial translation).

27 Social media examples given by Okada (2013).

28 Translation: "the meaningful content shared by social media can enable reflective discourse, new experiences, and participatory learning" (Okada, 2013, p. 166, editorial translation).

29 For Recuero (2009), "node" encompasses all types of representations of people in cyberspace.

30 Translation: "a set of knowledge and practices articulated dialogically that enable the construction of critical thinking, careful evaluation, and the ethical and supportive use of information, as well as structures that promote citizen actions engaged with the common good" (Calil Junior; Sá; Zattar, 2021, editorial translation).

Structural conditions must be ensured so that individuals, in their daily lives, have the opportunity to engage with the vast array of information now accessible through cyberspace connections. In this regard, UNESCO (2016, p. 5)<sup>31</sup> advocates that Media and Information Literacy (MIL) “é uma base para aumentar o acesso à informação e ao conhecimento, intensificar a liberdade de expressão e melhorar a qualidade da educação”. MIL supports critical dialogue among social actors through learning that focuses on the development of informational and media competencies arising from the digital environment. The advantage of mastering such effective skills to access information in cyberspace is the assurance of obtaining rational, cohesive, and coherent content from research. In this context, “não há dúvida de que a proliferação das mídias, a explosão de novas tecnologias e o advento das mídias sociais permitiram múltiplas fontes de acesso a informações e conhecimentos (...)” (Unesco, 2016, p. 17)<sup>32</sup>.

Therefore, the intensification of continuous and dynamic knowledge production through technologies and the flexibility of communication are driving trends, influences, and possibilities around the dimension of services offered by libraries to their readers, such as virtual reference service, as we will explore next.

### **The role of the reference professional, the virtual, and the emergence of Open Educational Resources**

Building upon his five laws of library science, S. R. Ranganathan deepened his exploration of reference service, applying insights gleaned from his tenure at the University of Madras Library in India. His 1961 work, “Reference Service,” traces the evolution of this service, revealing how the laws of library science have shaped the library’s ongoing transformations in both function and technique.

According to the Indian author, in the 19th century, the reference service was only responsible for making books available and did not establish any assistance or research relationship with the reader. Additionally, the staff working in libraries at that time were unaware of any quality standards for dealing with readers. Drawing from his personal experience, Ranganathan describes that “[...] o único vestígio de serviço de referência que experimentou em todos os anos que frequentou a escola, foi quando o encarregado da biblioteca apresentou a ele dois documentos que o seu professor estava fazendo cópias” (Ranganathan, 1961, p. 20, tradução nossa)<sup>33</sup>.

However, contrasting this with his perspective as a librarian, Ranganathan emphasized the importance of approaching readers with enthusiasm and warmth, conveying the value of the library as a “human institution.” He advocated for reference professionals to guide new

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31 Translation: “it’s a basis for increasing access to information and knowledge, enhancing freedom of expression, and improving the quality of education.” (Unesco, 2016, p. 5, editorial translation).

32 Translation: “here is no doubt that the proliferation of media, the explosion of new technologies, and the advent of social media have allowed multiple sources of access to information and knowledge [...]” (Unesco, 2016, p. 17, editorial translation).

33 Original: “The attendant in charge of the library was Daniel. He had one essential quality of a reference librarian geniality. But he could read only the backs of books. At the end of a term, I had the benefit of a sort of reference servisse from him. He introduced me to Milne’s Weekly problem Papers. He said, ‘Prof Chinnatambi Pillai has been copying out something from these two books!’ This is the Only kind of reference service experienced by me till my leaving the college” (Ranganathan, 1961, p. 20).

users through the library's collections, classification system, catalog access, and available services. He stressed that effective reference librarians must possess comprehensive bibliographic knowledge, familiarity with the library's subject areas, and an understanding of reader interests.

In essence, Ranganathan believed that libraries should prioritize reader care and information accessibility. This entails personalizing reference services to ensure reader satisfaction, guiding them toward optimal use of resources, and fostering autonomy in the information-seeking process.

The advent of the internet has ushered in a vast and accessible information ecosystem, offering readers a wealth of resources. Given these societal shifts, with the proliferation of content created, reused, and shared on digital platforms, libraries must continually adapt, enhancing their products and services to remain relevant and engaging.

The internet and its associated technologies have enabled the development of virtual interactions with readers, while also unlocking access to previously unattainable information. Notably, the synergy between Virtual Reference Service (VRS) and multimedia technologies has significantly enhanced information search and retrieval, fostering "um ambiente digital de pesquisa apropriado a certas necessidades e sobre determinados assuntos" (Accart, 2012, p. 195)<sup>34</sup>.

These evolving library services exemplify Ranganathan's fifth law of library science: "a biblioteca é um organismo em crescimento" (Ranganathan, 2009, p. 241)<sup>35</sup>. For Ranganathan, this growth is fueled by the interconnectedness of books, readers, and staff. According to him:

Deve-se ter plena consciência de que um acervo de livros sem leitores não tem mais direito de ser chamada de biblioteca do que um grupo de leitores sem livro, e que a mera justaposição de livros e leitores sem o pessoal, que sabe promover o contato certo entre o leitor certo e o livro certo, no tempo certo e do modo certo, tampouco constitui uma biblioteca (Ranganathan, 2009, p. 242)<sup>36</sup>.

The fifth law encourages libraries to growth in various dimensions: expanding collections, increasing staff, attracting more readers, and disseminating knowledge. Above all, Ranganathan (2009, p. 263)<sup>37</sup> highlights that the library's core principle, maintained throughout its evolution, is to serve as, "é ser um instrumento de educação universal que reúne e difunde livremente todos os recursos de ensino e dissemina o conhecimento". In the contemporary landscape, libraries retain their vital role in effecting social change through literacy, learning, and research programs, upholding the right to reading, information, education, and culture.

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34 Translation: "a digital research environment tailored to specific needs and subjects" (Accart, 2012, p. 195, editorial translation).

35 Translation: "the library is a growing organism" (Ranganathan, 2009, p. 241, editorial translation).

36 Translation: "It must be fully understood that a collection of books without readers has no more right to be called a library than a group of readers without books, and that the mere juxtaposition of books and readers without the staff who knows how to promote the right contact between the right reader and the right book, at the right time and in the right way, does not constitute a library" (Ranganathan, 2009, p. 242, editorial translation).

37 Translation: "an instrument of universal education that freely gathers and disseminates all teaching resources and knowledge". (Ranganathan, 2009, p. 263, editorial translation).

However, the task of reimagining and adapting pedagogical practices in conjunction with a culture of collaborative knowledge is not without its challenges. *Open Educational Resources* (OER),<sup>38</sup> have emerged as a global movement offering innovative solutions to teaching and learning. This movement began to coalesce in 2002 with a UNESCO-sponsored event at the Massachusetts Institute of Technology (MIT). In its early stages, Ferreira and Carvalho (2018) note that OER benefited from substantial financial support, particularly from the William and Flora Hewlett Foundation,<sup>39</sup> which continues to champion OER’s educational advancement. They also observe that the OER movement has gained momentum in Brazil, driven by efforts to integrate education and technology with the aim of “democratizar o conhecimento e expandir o acesso à educação” (Ferreira; Carvalho, 2018, p. 740)<sup>40</sup>. This growth is evident in the incorporation of OER into various public education policies in Brazil in recent decades.

The quality of OER has steadily improved, particularly since the 2012 UNESCO World Congress on Open Educational Resources in Paris.<sup>41</sup> The resulting Paris Declaration offers recommendations for promoting OER access to enhance education quality worldwide. In this context, Sebriam and Gonsales (2017, p. 39)<sup>42</sup>, assert that OER:

é focado em três princípios básicos: conteúdo de aprendizagem; licenças de uso que permitam maior flexibilidade e o uso legal de recursos didáticos e o uso de formatos técnicos abertos que sejam fáceis de modificar em qualquer software.

Reinforcing this notion, Santos (2013) posits that Open Educational Resources offer the potential for democratic access to education through technologies like the internet, wikis, and virtual learning environments. The core principles of OER are encapsulated in the 5 Rs<sup>43</sup>: reuse, revise, remix, redistribute, and retain. The following table (**TABLE 1**) provides a detailed explanation of each term:

**TABLE 1 – Terms and Definitions of the 5 Rs**

Term	Definition
<b>Reuse</b>	Use the content in its unaltered form
<b>Revise</b>	Adapt, adjust, or alter the content
<b>Remix</b>	Combine the original or revised content with other material to create something new
<b>Redistribute</b>	Share copies of the original content, your revisions, or your remixes with others

38 OER are also referred to as learning objects or open content (Santos, 2013).

39 Site: <https://hewlett.org/about-us/>.

40 Translation: “democratizing knowledge and expanding access to education” (Ferreira; Carvalho, 2018, p. 740, editorial translation).

41 Site: [http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/WPFD2009/Portuguese\\_Declaration.html](http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/CI/WPFD2009/Portuguese_Declaration.html).

42 Translation: “is focused on three basic principles: learning content; usage licenses that allow greater flexibility and the legal use of educational resources; and the use of open technical formats that are easy to modify in any software”. (Sebriam; Gonsales, 2017, p. 39, editorial translation).

43 Terms and definitions as per David Wiley. Available at: <https://opencontent.org/blog/archives/3221>. Accessed on: August 14 ago, 2020.

Term	Definition
<b>Retain</b>	Make, own, and control a copy of the content

Source: Based on the study by David Wiley (2014).

In this context, Open Educational Resources offers authors more flexible copyright management. They have the autonomy to determine which freedoms (portions of their work) will be available to end users through more adaptable licenses.

## **ANALYSIS AND DISCUSSION OF RESULTS**

Building upon the discussions regarding Open Educational Resources and their significance within library and information science, this investigation identified national and Latin American journals that have published content on OER.

The search strategy involved a semantic analysis of the Portuguese and Spanish terms for OER, respectively: “Recursos Educacionais Abertos” in Portuguese and “Recursos Educativos Abiertos” in Spanish, found across 24 library and information science journals with Qualis ratings of A1, A2, B1, and B2. The subsequent tables present the titles of the analyzed journals, categorized as national or Latin American based on their country of origin, along with their CAPES classification and the number of articles focused on Open Educational Resources

**TABLE 2** – Brazilian journals analyzed

Journal Title	Origin	Classification	Return of articles on OER
<b>Perspectivas em ciência da informação</b>	Brazil	A1	0
<b>Transformação</b>	Brazil	A1	0
<b>Em questão</b>	Brazil	A2	1
<b>Encontros Bibli</b>	Brazil	A2	3
<b>Informação &amp; Informação</b>	Brazil	A2	1
<b>Brazilian Journal of information science</b>	Brazil	B1	0
<b>Ciência da Informação</b>	Brazil	B1	0
<b>InCID: Revista de Ciência da Informação e Comunicação</b>	Brazil	B1	1
<b>Intexto</b>	Brazil	B1	0
<b>Liinc em Revista</b>	Brazil	B1	1
<b>Perspectiva em Gestão e Conhecimento</b>	Brazil	B1	0
<b>Pesquisa Brasileira em Ciência da Informação e Biblioteconomia</b>	Brazil	B1	2
<b>Revista Ponto de Acesso</b>	Brazil	B1	0
<b>RBBB Revista Brasileira de Biblioteconomia e Documentação</b>	Brazil	B1	0

Journal Title	Origin	Classification	Return of articles on OER
<b>RDBCI: Revista Digital de Biblioteconomia e Ciência da Informação</b>	Brazil	B1	0
<b>Revista Ibero-Americana de Ciência da Informação</b>	Brazil	B1	1
<b>Tendências da pesquisa Brasileira em Ciência da Informação</b>	Brazil	B1	0
<b>ATOZ: Novas Práticas de Informação e conhecimento</b>	Brazil	B2	0
<b>Cadernos de Biblioteconomia, Arquivística e Documentação*</b>	Brazil	B2	0
<b>Comunicação e informação</b>	Brazil	B2	0
<b>Revista ABC: Biblioteconomia em Santa Catarina</b>	Brazil	2	0

Source: Created by the author (2020).

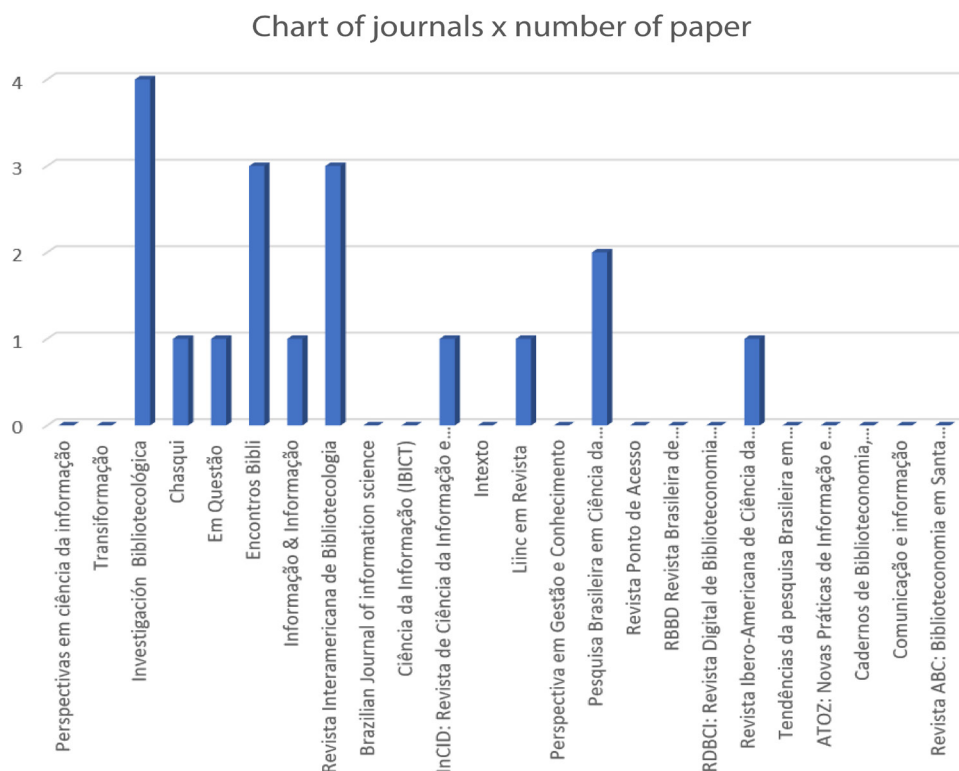
**TABELA 3 – Latin American journals analyzed**

Journal Title	Origin	Classification	Return of articles on OER
<b>Investigación Bibliotecológica</b>	Mexico	A1	4
<b>Chasqui</b>	Equator	A2	1
<b>Revista Interamericana de Bibliotecología</b>	Colombia	A2	3

Source: Created by the author (2020).

Given the low number of papers, one can infer that the topic of Open Educational Resources is not widely disseminated in the field of library and information science. In the 24 journals investigated, only 10 of them had published a total of 18 papers about OER. From the analysis of the table were found, regarding the journals that disseminated any information about Open Educational Resources, three publications contained three and four diverse contents about OER: *Investigación Bibliotecológica*, *Encontros Bibli*, and *Revista Interamericana de Bibliotecología*. It is also worth noting that the journal with the highest concentration of articles on OER was *Investigación Bibliotecológica*, from Mexico, with four papers on the subject.

**FIGURE 1** – Chart of journals x number of paper



Source: Created by the author (2020).

Analysis of the scholarly output on Open Educational Resources (OER) reveals distinct categories within the reviewed literature, prominently including “information sources,” “distance education,” “democratic access to knowledge,” and “communication spaces,” among others. Building upon these frameworks, many authors investigating the topic understand OER as embodying innovative proposals that encourage a rethinking of teaching and learning processes based on autonomy and collaborative practices.

The discussions surrounding OER in academic articles are categorized along various thematic lines, with a particular emphasis on information sources, distance education, democratic access to knowledge, and communication spaces. Many authors perceive OER as presenting a novel approach to shaping the teaching and learning process in a more autonomous way, creating space for collaborative teaching practices. Another aspect explored in the articles is the dialogue between learning theories and reflections on technology, emphasizing perspectives that highlight the possibilities of providing access to education anywhere, at any time. The foundation of debates involving Open Educational Resources lies in its potential to promote the dissemination of knowledge through access and sharing of educational materials in various formats, with the aim of enabling comprehensive and borderless learning.

In this respect, considering the categorization of the research, the discourse produced by both Brazilian and Latin American authors aligns with the conceptualization of Open



Educational Resources from an educational perspective. Moreover, both Brazilian and Latin American articles converge in highlighting the importance of technologies in supporting OER, elucidating the trend of collaborative learning as a new global pedagogical model.

## **CONCLUSIONS**

As of January 2022, the world was facing the third year of the SARS-CoV-2 pandemic. The trajectory of the pandemic and the end of the health emergency remained uncertain, despite widespread yearning for a return to normalcy frequently expressed in traditional and social media. However, amidst the uncertainties, it is evident that the pandemic has accelerated ongoing societal processes. The necessity for physical distancing has propelled products, services, and practices into virtual environments.

In this context, theoretical and practical reflection on OER becomes both necessary and urgent, as contemporary information and communication practices increasingly converge in virtual spaces. Individuals with the structural and material means to access the internet often opt to consult information sources available online, regardless of their reliability, including messages circulating on platforms like WhatsApp or Telegram.

This paper's research finds points to several directions that merit highlighting: Primarily, it reveals that, within the established scope, scholarly production on OER within the library and information science field is still in its early stages. Given the increasing use of OER as information sources, there is a clear need for more research on the topic, with the goal of building a critical mass of knowledge regarding theoretical and methodological approaches, as well as the use and adoption of OER in libraries and other information units.

The identification of the most prevalent categories in the literature – such as “information sources,” “distance education,” and “access to knowledge” – highlights the points of dialogue and convergence that have been used thus far in addressing OER within the library and information science field. While this article could not fully explore the meanings attributed to these categories from the perspective of OER use, their emergence in the analysis points to two key perspectives regarding OER.

In the first one of them, OER is seen as an “innovation,” enabling both autonomy in teaching and learning processes and the fostering of a collaborative approach inherent in these practices through the use of OER. This perspective is accompanied by an “optimistic” view of technological transformations, in which technologies, including OER, are presented as tools that facilitate democratic access to education and information.

However, it is important to emphasize that despite the many opportunities that arise from the adoption of OER by libraries and the pressing need to develop a theoretical and methodological framework on the topic within the library and information science field, there are crucial issues that need to be addressed. These issues include the material and structural conditions for accessing OER, the integration of information literacy into society, and the complexities of the current information ecosystem. Furthermore, the widespread dissemination

of misinformation and the role of libraries should be central to debates and practical actions surrounding OER, ensuring that libraries (and their participants) are actively involved in the pursuit of social justice and the fight against inequality.

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