## Contents

### Editorial
A new era: Exploring the possibilities and expanding the boundaries
Nafiz Zaman Shuva, Jamie Johnston, Péter Murdnyi and Tania Todorova  
3

### In Memoriam
In memoriam: István Papp, a librarian for all seasons
Ragnar Audunson  
6

### Original Articles
Making libraries accessible: The vision of Access City Award winners
Radoslav S Hristov  
7

Public library services for people with dementia: A study of students’ perceptions
Tomislava Žilić and Sanjica Faletar  
16

Multicultural libraries: A study on the information behaviour of the Terena people, Brazil
Lilian Aguilar Teixeira, Ana Lúcia Terra, Oswaldo Francisco de Almeida Júnior and Antônio Hilário Aguilera Urquiza  
26

On making libraries and museums more accessible for autistic people
Tirill Bjørkeli Svaler  
42

Sexual orientation for the LGBTQ+ community: Information sources and barriers
Marina Clavijo-Toledano, Laia Heredero-Cardona, Noelia Ubeda-Cano and Juan-José Boté-Vericad  
53

### Case Studies
The role of users in the organization of digital information: A Portuguese experience in an academic museum and archive setting
Patrícia Isabel Silva and Ana Lúcia Terra  
64

Towards a STEAM model for digital fluency skills: Perceptions of students and teachers
Marina Encheva, Anna Maria Tammara, Gergana Yancheva, Plamena Zlatkova, Giulia Conti and Mari Maasilta  
75

### Cultural heritage on the Semantic Web: The Europeana Data Model
Ana Luisa Silva and Ana Lúcia Terra  
93

Prejudice but no pride: The Portuguese Universal Decimal Classification’s labelling of sexual orientation
Paula Vicente, Ana Lúcia Terra, Maria Cristina Vieira de Freitas and Maria Manuela Tavares de Matos Cardoso  
108

A gender perspective in the design of a video-on-demand search engine
Lara Díaz Martínez and Davinia Pérez López  
118

Open educational resources on preservation: An overview
Marija Milošević, Ines Horvat and Damir Hasenay  
138

Integrating print reference materials, curated digital collections, and information needs
Olga Makarova and Katherine Ashcraft  
151

### Guidelines on assigning the subjects of theses and dissertations in repositories
Mariangela Spotti Lopes Fujita and Jessica Cristina Panuto  
160

Expanding information behaviour boundaries: A study with religious leaders
Evandro Ribeiro Rodrigues and Ana Lúcia Terra  
170

### Abstracts
Aims and Scope
IFLA Journal is an international journal publishing peer reviewed articles on library and information services and the social, political and economic issues that impact access to information through libraries. The Journal publishes research, case studies and essays that reflect the broad spectrum of the profession internationally. To submit an article to IFLA Journal please visit: journals.sagepub.com/home/ifl
Editorial

A new era: Exploring the possibilities and expanding the boundaries

The BOBCATSSS 2023 conference took place in Oslo, Norway, from 25 to 27 January 2023. The conference theme, ‘A new era: Exploring the possibilities and expanding the boundaries’, aimed to explore the possibilities for services and programming, as well as the expansion of physical and virtual boundaries in this new era for libraries, archives and information services. The theme reflects the trend that libraries, archives and information services of all types are exploring opportunities to promote access to information, culture and knowledge through the development of their collections, as well as serve as meeting places and foster knowledge-exchange processes. As will be explored in depth in this special issue, understanding these trends demands consideration for the digital and physical provision of programming and services, as well as the information needs of special groups.

BOBCATSSS 2023 was organized by Oslo Metropolitan University in collaboration with University College London and the University of Borås, and marked the conference’s 31st year of excellence in promoting library and information science (LIS) research in Europe and beyond. The conference received over 50 submissions for presentations, posters and workshops from LIS students, faculty members, researchers and practitioners globally. While the majority of the submissions came from LIS students in various European universities, the organizers also received submissions from faculty members and researchers outside of Europe. Committees, primarily composed of students and some faculty from the organizing universities, as well as universities internationally, were involved in every aspect of the conference planning. This included the review of abstracts and papers, organization and creation of the conference programme, selection and invitation of keynote speakers, budgeting, website and media promotion, and compilation and publication of the conference proceedings.

As noted, for over three decades, the BOBCATSSS conference has been a prestigious European initiative for LIS students, fostering academic and intercultural communication, exchanging best practices, and bridging traditional and innovative forms of education. BOBCATSSS, founded by Professor Ruud Bruyns (also known as Father BOBCATSSS) along with other European colleagues, represents one of the many contributions of EUCLID (European Association for Library and Information Education and Research) to the LIS community (see, https://bobcatsss.info/ for more information about the association). The name BOBCATSSS is an acronym representing the university network, with the letters denoting the initial letters of the cities where the universities that initiated the BOBCATSSS symposium are located: Budapest (Hungary), Oslo (Norway), Barcelona (Spain), Copenhagen (Denmark), Amsterdam (The Netherlands), Tampere (Finland), Stuttgart (Germany), Szombathely (Hungary) and Sheffield (England). In recent years, additional members have joined the network from Borås (Sweden), Riga (Latvia), Moscow (Russia), Tallinn (Estonia), Krakow, Torun and Warsaw (Poland), Sofia (Bulgaria), Kharkiv (Ukraine), Ljubljana (Slovenia), Bratislava (Slovakia), Prague (Czech Republic), Osijek and Zadar (Croatia), Berlin and Potsdam (Germany), Porto (Portugal), Ankara (Turkey) and Parma (Italy). In 2019, EUCLID was renamed to BOBCATSSS Association, acknowledging the name’s wider recognition. Since its inception and continuing to the present day, the BOBCATSSS symposium has been organized and managed by students from various LIS departments at European universities spanning both eastern and western Europe.

Thanks to the efforts of the conference organizers and the support of Steven Witt, editor of IFLA Journal, selected papers from BOBCATSSS 2023 are featured in this special issue. This special issue gives the participating students, along with LIS researchers and professionals, the opportunity to engage – many for the first time – in scholarly communication through the publication of peer-reviewed articles. The authors from the conference submitted their papers to IFLA Journal, following its guidelines and undergoing a rigorous peer-review process. Out of 28 submissions, 14 were accepted for publication in this special issue. Two other papers submitted to the special issue are under consideration for a regular
issue of *IFLA Journal*. The BOBCATSSS community values highly the support provided by the journal to the BOBCATSSS community and future LIS professionals.

In relation to the conference theme – exploring the possibilities for services and programming, as well as the expansion of physical and virtual boundaries, in this new era for libraries, archives and information services – three themes emerged in the accepted papers. The first concerns the accessibility and inclusiveness of libraries, archives and museums for various, often overlooked or underserved, user groups. The first article under this theme, ‘Making libraries accessible: The vision of Access City Award winners’, by Radoslav S Hristov, highlights good practices in providing access to libraries for people with disabilities and summarizes current library service trends for this broadly defined user group. The subsequent two articles address services and programming in relation to more specific groups. In ‘On making libraries and museums more accessible for autistic people’, Tirill Bjørkeli Svaler studies how libraries and museums can become more accessible and, in turn, more inclusive for autistic users. Based on Bjørkeli Svaler’s investigation, a list of ideas for how to make library and museum spaces more suitable for autistic people is offered. Then, in ‘Public library services for people with dementia: A study into students’ perceptions’, Tomislava Žilic and Sanjica Faletar present the findings from a study investigating Croatian LIS students’ knowledge about dementia and their perceptions of the role of public libraries in developing dementia-friendly communities. This study responds to libraries’ work in offering cognitive engagement and social inclusion events for people with dementia, as well as their efforts to provide information to caregivers and educate the general public about dementia. The final article within this theme, ‘Prejudice but no pride: The Portuguese Universal Decimal Classification’s labelling of sexual orientation’, by Paulo Vicente, Ana Lúcia Terra, Maria Cristina Vieira de Freitas and Maria Manuela Tavares de Matos Cardoso, investigates the cultural and religious biases embedded in library collections and the resulting implications for library inclusiveness for the LGBTQ+ (lesbian, gay, bisexual, transgender, queer and others) community.

The second theme concerns the information behaviour of certain communities. The first article, ‘Sexual orientation for the LGBTQ+ community: Information sources and barriers’, by Marina Clavijo-Toledano, Laia Heredero-Cardona, Noelia Úbeda-Cano and Juan-José Boté-Vericad, explores the information access barriers faced by LGBTQ+ community members. Their study found that the participants preferred to use Internet resources to meet their information needs. In the second article under this theme, ‘Expanding information behaviour boundaries: A study with religious leaders’, Evandro Ribeiro Rodrigues and Ana Lúcia Terra report that religious leaders of Santo Daime required information to guide participants in spiritual programmes, deal with administrative issues, and strengthen religious knowledge and faith. The leaders indicated that they consulted various sources to meet their information needs, including interpersonal information networks.

Lastly, the third article, ‘Multicultural libraries: A study on the information behaviour of the Terena people, Brazil’, by Lilian Aguilar Teixeira, Ana Lúcia Terra, Oswaldo Francisco de Almeida Júnior and Antônio Hilario Aguilera Urquiza, investigates the information behaviour of the indigenous Terena people. The study aims to develop a multicultural library model, trace the Terena’s information profile, identify information mediators, and discuss the social role of information science in maintaining the Terena’s identity within Brazilian society.

The third theme concerns the accessibility, representation, and inclusiveness of digital collections and environments. Within this theme, ‘The role of users in the organization of digital information: A Portuguese experience in an academic museum and archive setting’, by Patricia Isabel Silva and Ana Lúcia Terra, highlights the importance and value of user participation in organizing digital collections based on a case study involving six users. The second article with this theme, by Ana Luisa Silva and Ana Lúcia Terra and entitled ‘Cultural heritage on the Semantic Web: The Europeana Data Model’, discusses the principles and technologies of Linked Data. It presents the Europeana Data Model, with two representation approaches, and addresses the challenges faced by cultural heritage institutions in adopting these data models. The contribution by Lara Díaz Martínez and Davinia Pérez López is titled ‘A gender perspective in the design of a video-on-demand search engine’. They offer a prototype design for an advanced search engine within a video-on-demand platform to eliminate gender gaps, leading to an inclusive, satisfactory and pleasant user experience. In their article ‘Open educational resources on preservation: An overview’, Marija Milošević, Ines Horvat and Damir Hasenay provide an overview of the available open educational resources on preservation. Their study investigates open educational resource platforms, identifies relevant resources, and analyses them using an existing theoretical framework on preservation. In ‘Integrating print reference materials,
curated digital collections, and information needs’, by Olga Makarova and Katherine Ashcraft, the current status of print reference materials – mainly bibliographies – is examined. The authors propose solutions to improve their usability and appeal as dependable reference points for researchers. Marina Encheva, Anna Maria Tammaro, Gergana Yancheva, Plamena Zlatkova, Giulia Conti and Mari Maasilta discuss the perceptions of students and teachers with regard to a ‘STEAM model for digital fluency skills’, while the final article under this theme, ‘Guidelines on assigning the subjects of theses and dissertations in repositories’, by Mariângela Spotti Lopes Fujita and Jessica Cristina Panuto, explores how Brazilian university repositories guide subject representation in the self-archiving of their information resources. It highlights the value of the self-archiving process in the dissemination and broader access of scientific information.

The publication of this special issue sadly comes shortly after the passing of István Papp, one of the founding fathers of BOBCATSSS and a leading figure in the Hungarian as well as international LIS community. This special issue concludes with a tribute to István, ‘In memoriam: István Papp, a librarian for all seasons’, by his long-time collaborator, fellow BOBCATSSS founder and friend Ragnar Audunson.

The guest editorial board comprises Péter Murányi, a retired associate professor and the representative of Berzsenyi College, Szombathely, Hungary in 1994, one of the founding institutions of BOBCATSSS; Tania Todorova, a professor and former chair of the BOBCATSSS board, as well as BOBCAT of the Year 2023; Jamie Johnston, an associate professor and chair of BOBCATSSS 2023; and Nafiz Zaman Shuva, an assistant professor and chair of the Proceedings and Publication Committee of BOBCATSSS 2023. The members of the board extend their deep gratitude to all who served as reviewers for this special issue. We want to convey our sincere appreciation to the authors for their invaluable contributions to this special issue. Your dedicated efforts to investigate and illuminate the possibilities, as well as extend the boundaries, in this new era for libraries, archives and information services have significantly enriched the scholarly discourse. Through your insights and research, you play an essential role in shaping the future of the LIS profession, and we appreciate the impact of your work on the broader community.

We warmly invite students, faculty members, researchers and practitioners worldwide in the field of LIS to explore the contents of this special issue. Happy reading!

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István Papp passed away on 20 October 2023, only one month before his 92nd birthday. His death represents a significant loss to the Hungarian and international library community.

István embodied Hungarian and European history over the past almost 100 years. He was born during the Horthy regime, was a schoolboy during the Second World War and the extreme Szalasi period, finished his gymnasium education and then became a student during the Stalinist period. He completed his university studies shortly before and started work just after the Hungarian Revolution of 1956. He spent the greater part of his professional career during the more relaxed Kádár period and finished his professional life after the change in the political system in 1989.

During his professional career, amid shifting social and political circumstances, István held prominent positions in Hungarian librarianship and made decisive contributions to the development of public librarianship in the country. He served as the chief official of the library office in the Ministry of Culture, director of the library institute at the National Library of Hungary and, for the last 13 years of his career, deputy director general of the Fővárosi Szabó Ervin Könyvtár – the public library of Budapest – from 1985 until his retirement in 1998. He carried out these leadership roles with professional authority and competence, never compromising on his values and integrity. During the communist era, when offered a leading position, his consistent response was: ‘Yes, I can accept the position, but you must know that I will never join the Party.’

His tenure as deputy director general of the Budapest public library may have been one of the happiest and most fulfilling periods of his professional life. During this time, he was able to leverage all of his professional competence and creativity to transform a somewhat backward library system into an efficient, modern, user-friendly library network. Perhaps the crowning achievement of his legacy from this period is the restored central library in Budapest, the Wenckheim Palace, which opened its doors in 2001.

Undoubtedly one of the most magnificent libraries in Europe, it seamlessly combines tradition and classical beauty with functionality and modern librarianship – a testament to István’s untiring work during his tenure as deputy director general.

István actively engaged in the international library organization IFLA. In 1974, he was elected as a member of the editorial board of *IFLA Journal* and later served as its head. He assumed prominent roles in both the IFLA Public Libraries Section and the IFLA Library Buildings and Equipment Section. In 1983, he received the IFLA Medal for his activities in this field. He also played a leading role in the Association of Hungarian Librarians, serving as a secretary from 1991 to 1994. Before this, he was a member of the central board. An important aspect of István’s international legacy is the BOBCATSSS conference, which originated in Budapest in 1993–1994 and is still held annually; it would not have materialized without his significant contributions.

István continued to contribute professionally even after his retirement. Among other things, he co-edited a series of handbooks on library science that are used in the education of new librarians in Hungary to this day. His significant work includes the code of ethics of Hungarian librarianship, published in 2006.

István was the most liberal, open-minded and unprejudiced man I have known. Not only did he embody history from the 1930s onwards, but he also embodied the fundamental values of liberalism and openness upon which democracy as well as librarianship are founded. We have lost a truly great librarian.

Personally, I have lost a great friend and mentor. Our condolences and thoughts are with Adrienne, his wife, who steadfastly supported him from their marriage in 1959 up until his passing, as well as with his son, Dániel.

István Papp was truly a librarian for all seasons.

Ragnar Audunson
Making libraries accessible: The vision of Access City Award winners

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Abstract
For over 10 years, the Access City Award, presented by the European Commission in conjunction with the European Disability Forum, has raised awareness of and concern for the issues of people with disabilities, while continuing to promote accessibility for all European citizens. Looking at the whole palette of good practices in providing accessible environments implemented by the prizewinners, it is striking that library accessibility is not only part of them but is being established as a priority for many cities. This article presents the library accessibility activities of 20 cities that have won the Access City Award from its first iteration in 2011 to 2022 and have focused on this type of accessibility in their portfolio. It is concluded that far from being a luxury, library accessibility is now a necessary normality, and the achievements of Access City Award winners in this field are an inspiration for all cities that adopt accessibility as their mission.

Keywords
Libraries, accessibility, people with disabilities, Access City Award

Introduction
In 2021, around 100 million Europeans were living with some form of disability – that is more than a fifth of the European Union’s population. Accessibility is more important than ever, as the population continues to age. The Strategy for the Rights of Persons with Disabilities 2021–2030 (European Commission, 2021b) states that the accessibility of architectural and virtual environments, information and communications technologies, goods and services, including transport and infrastructure, is an indivisible part of human rights as it is a prerequisite for the full participation of people with disabilities on an equal footing with others. Over the last decade, several European Union rules have been adopted in various areas to make these and other public spaces more accessible to people with disabilities. European accessibility standards have been introduced to support their application in the architectural environment and information and communications technology.

Also, the Strategy for the Rights of Persons with Disabilities 2021–2030 emphasizes that accessible and inclusive arts and culture, sports, recreation and amateur activities, as well as tourism, are essential for full participation in society. According to the text of the Strategy, they increase well-being and enable everyone to develop and use their potential. Accessible tourism for people with disabilities is key to supporting their participation, as well as socio-economic development (European Commission, 2021b).

In addition to the normative documents adopted in the last 10 years, among the good practices in the direction of ensuring accessibility for people with disabilities, the Strategy also takes into account the role of the Access City Award, which stimulates a coordinated cross-sectoral approach that exceeds the minimum standards set by law. The initiative, which was launched by the European Commission in conjunction with the European Disability Forum in 2010, recognizes cities that have made efforts to make their public spaces, services and infrastructure more accessible to more of their citizens. The award aims to raise awareness
of and concern about the problems of people with disabilities, and promote accessibility for all European citizens.

The Access City Award is presented to cities with more than 50,000 inhabitants that exemplify some of the best practices in these areas. According to the organizers, the satisfaction of participating in and winning a prestigious European award stimulates cities to make additional efforts and improve awareness even further. Such an award allows cities to draw inspiration from each other and share examples of good practice on the ground. All winning cities are rewarded for their perseverance in achieving high standards of accessibility and their commitment to ambitious goals (European Commission, 2021a).

Furthermore, the significance of the award today is complemented by the fact that, in addition to inspiring new accessibility initiatives, it is a helpful resource in academia. The best practices and examples from the Access City Award are included in the training of students in the disciplines of Access to Information for People with Special Needs and Accessible Tourism at the University of Library Studies and Information Technologies in Sofia, Bulgaria (Sachanska and Todorova, 2021; Todorova, 2020; Todorova and Eftimova, 2019).

This article traces the commitment of the cities that have won the Access City Award to the accessibility of their libraries for people with disabilities. The study presents 20 cities – from the first iteration of the award in 2011 to 2022 – that have highlighted the accessibility of local libraries as their priority. Current trends and good practices in accessibility for disabled people are also highlighted.

**Literature review**

All over the world, libraries are the most democratic institutions when it comes to accessibility to information resources and services. In the IFLA-UNESCO Public Library Manifesto 2022 (IFLA and UNESCO, 2022) and the *IFLA/UNESCO Guidelines for Development* (Gill, 2001), the concept of universal access is emphasized. According to the ‘IFLA Trend Report 2021 update’ (IFLA, 2022), when new opportunities are not available to all, it can lead to the widening of divides and inequalities. As an example, there are people without access to the Internet and the skills to use it. During the pandemic, they faced much greater problems in their education, work and social lives than those who were able simply to move their lives online. In many cases, these may be people who already face exclusion – people experiencing poverty or disability, as well as women and refugees (IFLA, 2022).

Library services should be accessible to all – for example, people with different disabilities, minority groups in their respective languages, elderly people and those living in remote areas. An accessible environment is needed in all aspects of access when serving people with disabilities. All disabilities have their particularities, and libraries must offer services in an appropriate form so that every user can benefit from the library’s resources (Todorova, 2010). While this sounds so simple and appropriate, in many countries around the world access to different types of libraries is still not ensured for people with disabilities. One reason is that many of them have been constructed in a way that makes it difficult or impossible for people with disabilities to enter them. On the other hand, there may be other barriers, such as insufficient accessibility to materials and poor signage, or other reasons that may make a visit to a library if not impossible, then at least very difficult. In addition to being built in such a way that they are accessible to people with disabilities, libraries must present services on their websites that meet the needs of these users. Communication between service users and library staff must be clear and understandable so that disabled people who enter a library feel comfortable. In this regard, the best option for ensuring this is that library staff are well trained and educated about different disabilities and the specific needs that arise from them. To ensure equal opportunities for all library users, it is necessary to look at libraries through the eyes of these user groups (Irvall and Nielsen, 2005).

Library accessibility has a long and remarkable history, and the achievements of many libraries around the world in this area have left a mark in the scholarly literature. Jaeger (2018) notes that libraries are often the first government or social institutions in many communities to confront the dehumanization of people with disabilities and provide services that promote their rights in the community, as well as equality among people. The history of libraries serving people with disabilities is traced in several publications, from an examination of the origins of this type of service in the mid 19th century, access for the blind to the reading room at the US Library of Congress in 1897 and the establishment in 1906 of the first American Library Association Committee on Services to the Handicapped to the development of collections in new formats (such as records and talking books) and modern technology and its impact on the development of library services for people with disabilities. The references in the literature review have been removed,
leaving only the relevant places in the discussion. Those not mentioned in the discussion have been removed from the list of references used.

Studies focusing on smaller regions or a particular community provide an interesting insight into the current state of library services for people with disabilities. In a study of 20 different libraries in Argentina providing services for the visually impaired and physically disabled, Todaro (2005) concludes that these libraries are not able to provide the best services for these groups of people and offers guidelines for improving conditions for people with disabilities. The lack of library services for people with disabilities in Greece and possible obstacles to them are analysed by Koulikouri (2008), who discusses recent steps for improvement and development in local libraries. Looking specifically at university libraries in Tanzania, Majinge and Stilwell (2013) find that they provide services for people with visual impairments and in wheelchairs, but these services are not inclusive or universal. Based on this and in the context of the social model of disability, Majinge and Stilwell recommend that academic libraries should strive to provide inclusive services to all users, including people with disabilities. University libraries are also the focus of a study by Todorova and Vasileva (2008), in which they present some of the best practices in Bulgaria for serving people with disabilities. They provide recommendations for future coordination and optimization of collaboration between university libraries in serving students with disabilities.

Fitzgerald et al. (2015) examine Australian public libraries and how they have developed and delivered inclusive services for people with disabilities over the past decade, highlighting some of the better examples of service practice. In their study of public library services in Singapore for young people in wheelchairs, Leong and Higgins (2010) found that problems with library use were mainly related to architectural and physical access to library facilities and services. The study concludes that there is a need and demand for library services for young people in wheelchairs. Their information needs and reading habits are no different from those of any other young person.

Examining how Kazakhstan is finding ways to increase accessibility and promote inclusion in education, Spires and CohenMiller (2018) describe the collaborative efforts of Nazarbayev University’s Library and Graduate School (Astana) to provide access for the university’s first student with a documented disability. Bae et al. (2007) present a project at the LG Sangnam Library in South Korea, which aims to provide a service so that people with print disabilities can benefit from the library system and information services by using mobile phones, without complicated connection and certification procedures.

**Research methods**

The research methodology was based on general scientific methods of analysis and synthesis, and relevant sources were studied. The thematic publications of the European Commission dedicated to the Access City Award and official documents, as well as information from the websites of local administrations, organizations and libraries, were reviewed and analysed to achieve this goal. Special attention has been paid to the Access City Award brochures, which present the portfolio of each of the cities applying for the award, tracking the information of those that have declared library accessibility as their priority. Scholarly literature on the topic was studied, tracing the history of library accessibility, as well as the current state of the issues and challenges faced by professionals in this field. The data collection was undertaken from February to July 2022 using the Scopus, Web of Science and Google Scholar databases.

The main research task was to highlight good practices in providing access to libraries for people with disabilities and summarize current library service trends for this user group. Approaches to improving understanding of accessibility were also studied – from providing not only an accessible physical environment, but also digital and sensory accessibility, as well as introducing alternative forms of services for people with disabilities. Attention was also paid to the cities – examples of good practice in the field of accessible libraries and information services in terms of their geographical location.

**Findings**

With the Access City Award, the European Commission recognizes the commitment of cities across the European Union to ensure that persons with disabilities have equal access to their fundamental rights and all the resources a city has to offer. Addressing the Access City Award in 2022 (which was won by Luxembourg), Helena Dalli, the European Commissioner for Equality, stated:

> Cities and local communities are essential partners in creating a barrier-free Europe. They implement concrete solutions that improve people’s lives and foster common values of inclusion and equality. Accessible cities benefit everyone. Accessibility improves the quality of life and contributes to inclusive and thriving cities. (European Commission, 2022: 4)
It is noteworthy that, in 2022, three of the winning cities shared in their presentations their vision for library accessibility. Among them was the winner of the second prize, Helsinki, whose commitment to accessible libraries had garnered wide recognition seven years earlier when the Finnish capital was also ranked second. For more than 10 years, the Helsinki metropolitan area has been developing a Map of Services – an open-source online resource that allows residents and visitors to find services and related information, such as their opening hours, contact details and accessibility information. A revised and more accessible Map of Services was published in January 2020 and, by 2022, it included information on more than 15,000 services – from libraries and schools to gyms and sports activities. The city’s administration believes that it is crucial to include persons with disabilities in the planning of public buildings in order to ensure that such buildings are truly accessible. In the case of the new central library, Oodi, the Helsinki Council on Disability was consulted, and persons with disabilities were able to talk directly with the building’s architects (European Commission, 2022).

Barcelona has also been a winner of the Access City Award when it came second in 2011, losing out to Ávila, also in Spain. The libraries in the city, which was ranked third in the 2022 Award, have computers for the visually impaired and specialized software for them to work on the Internet. Also, all libraries provide handheld and desktop magnifiers. In addition, the Francesc Candel Library features a manual letter magnifier and an optical reader with a speech synthesizer that scans all types of paper documents to make it easier for people with visual impairments to read. The JAWS (Job Access With Speech) and NonVisual Desktop Access (NVDA) screen-reader programmes are also available in libraries in Barcelona (Ajuntament de Barcelona, n.d.).

Furthermore, the Municipal Institute for Persons with Disabilities is currently taking a leading role in Barcelona’s Accessibility Plan 2018–2026, which is analysing accessibility in the city. So far, it has analysed 889 playgrounds, 33 parks and beaches, 249 municipal services (markets, libraries, sports and leisure venues), 75 social services, 53 health centres, 38 university buildings, 22 cinemas, 60 websites, 106 hotels and restaurants, and 61 neighbourhoods (over 1000 kilometres of streets). The data collected has been integrated into a geographic information system so that all units involved in public work and maintenance can check and update it. A basic accessibility analysis has also been carried out in over 3668 apartment buildings, 52,161 shops and 404 schools (European Commission, 2022).

The Belgian city of Leuven, the winner of the special award for Integrating Accessibility in 2022, also deserves attention. The University Library in Leuven is accessible to people with disabilities. It has a ramp as well as an elevator providing access to the fifth floor, where the exhibition hall is located. The library also has two bathrooms that have been adapted for people with disabilities (Visit Flanders, 2020).

However, to get a broader vision of the achievements of European cities in library accessibility in the years since the establishment of the Access City Award in 2011, and the improvements in the understanding of an accessible library, we need to follow the development of good practices from the beginning of the initiative to the present day. As noted, the Access City Award was first presented in 2011, with the historic Spanish city of Ávila as its first winner. Barcelona, Cologne and Turku were named as runners-up, and the jury also selected four cities as examples of good practices. Two of them – Malmö and Dublin – share a commitment to making their local libraries accessible for people with disabilities. Malmö, the third-largest city in Sweden, noted its success in adapting to provide for the needs of people with hearing, visual or other physical disabilities when they are visiting entertainment and cultural facilities, in addition to all 10 libraries in the city. Another good practice related to access to libraries that was recognized in 2011 also came from northern Europe. The Irish capital, Dublin, showed examples of modernizing its library services by increasing the number of e-books and audiobooks on offer, as well as the ability to deliver books to the homes of people with disabilities (European Commission, 2011).

Access to libraries for people with disabilities is a priority policy in Ljubljana. The Slovenian capital, which received the special award for Accessible Transport and Related Infrastructure in 2012, has managed to make 15 city libraries accessible to people with disabilities and is also actively working to raise awareness of accessibility. The German city of Marburg – one of the finalists for the Access City Award in 2012 – has also made various adaptations to its local public library (European Commission, 2012).

A different point of view on the understanding of accessibility can be witnessed in Berlin, which won the Award in 2013. In the German capital, a database has been created called Mobidat. It contains 31,000 records providing information on accessibility to facilities in all areas of life, including libraries. The
portal is designed for people with sensory, motor and cognitive disabilities, helping them with information about accessibility in their daily lives. For example, when typing ‘library’ in the search bar, the site offers navigation to the location of libraries, their working hours and general information, as well as which groups of people with disabilities they are accessible to. Questionnaires on the degree of accessibility have been created for each place or facility. The information is checked on-site by experts and volunteers, most of whom are people with disabilities (European Commission, 2013).

Sweden’s second-largest city, Gothenburg, won the 2014 Access City Award for its mission to make the city accessible to all. As part of this commitment, all institutions are required to prepare inventories of their public buildings and spaces to assess their accessibility. All the buildings and spaces in Gothenburg that are considered public are included – preschools, schools, homes for the elderly, museums, libraries, arenas, sports facilities, playgrounds and parks, among others – with special attention paid to meeting the accessibility needs of people with disabilities in the City Library. Another good example is Kortedala Library, the largest and most modern branch library in Sweden, which offers a wide range of services for people with disabilities (IFLA, 2010).

The 2015 winner was also Swedish – the city of Borås. Its city libraries have increased the number of books available in simplified forms and language designed for people with cognitive impairments, and they have quiet places to read (European Commission, 2015). The runner-up to Borås in 2015, Helsinki, is proud of its large number of libraries and museums, as well as new music centre, which have facilities for the disabled. Celia Library, for the visually impaired, also operates in the Finnish capital. This is a state-funded specialized facility with a library, which produces and offers for use (also on request through public libraries) literature in the form of audiobooks, Braille books and e-books (The Global Libraries – Bulgaria Foundation, 2016: 4).

In 2016, a good example of library accessibility was the Finnish city of Vaasa, which won the special award of Commitment to Improving the Working Environment. The city’s public library has computers and Internet access for visitors, with free access to counselling services for those in need. Courses for groups with special needs can also be organized there (European Commission, 2016).

Jūrmala in Latvia was in third place in 2017. It has redesigned the official website of the local administration to make it accessible to people with visual impairments. The information is also available through the local visitor centre and all of the libraries in the city. Almost all the public buildings in Chester in the UK, which was designated as the winner of the Access City Award in 2017, have been adapted for access by people with disabilities, and all new buildings are designed to be accessible. These include the Forum customer service centre and 12 libraries throughout the city. In addition, they are equipped with interactive video terminals for iConnect so that people can connect with a member of the customer service team if necessary. British Sign Language interpreters are available on request, and materials can be provided in large-print, Braille or audio formats. The local council is especially proud of Storyhouse, which opened in May 2017. It is a multifunctional space that serves the community as a library, theatre, cinema and community centre, and offers over 2000 activities each year for local marginalized groups, including activities suitable for people with autism and classes for groups of isolated and elderly people (European Commission, 2017).

Another good example of library accessibility can be found in the French city of Lyon, winner of the 2018 Access City Award. The network of libraries in the city stores over 3500 audiobooks and provides services to help the elderly and people with disabilities. The Public Library of Lyon offers its readers the Navette+ service. Through it, people with disabilities have the opportunity to request that their desired library items be delivered to them from the nearest branch of the network (16 in total and a mobile library) or from the library they are visiting. For this purpose, they only need to present a document certifying their disability and fill in a form with their information and the library items they wish to borrow. The librarian then notifies them by phone or email with regard to when the items can be expected to arrive. In Lyon, some of the library services for people with disabilities are provided by the BIB’A DOM’ (Library at Home) association, which has over 100 volunteers who deliver the desired materials to the homes of those in need (Bibliotheque municipale de Lyon, n.d. b). Libraries in Lyon also have specialized equipment that helps people with disabilities become full library service users. This includes adapted computer terminals, tablets and DAISY digital readers (Bibliotheque municipale de Lyon, n.d. a).

In 2019, the prize was awarded to the Dutch city of Breda, whose library develops products for people with low levels of literacy (Bibliotheek Breda, n.d.), and among the cities recognized in 2020 was Tartu in Estonia, which won the special award for Civic Approach to Accessibility. In Tartu, free services for people with disabilities are provided through a mobile
library. Once a month, on Wednesdays or Thursdays, the ‘bibliobus’ delivers books and magazines to readers who have requested this service. The subscribers to the service can order books from the ESTER electronic catalogue themselves, and their requests can be made by email or phone. Librarians can also assist readers by offering them a curated selection of books and magazines. The service is intended for those residents of Tartu for whom access to the library is temporarily or permanently difficult due to health reasons (Tartu Linnaraamatukogu, n.d.).

Accessible libraries are part of the portfolio of four other cities that won special awards in 2021. One of them was Poznan, which received a special award for Accessibility to Public Services during the Pandemic. The cinemas, theatres and libraries in the Polish city use induction loops, audio descriptions, sign language translations and alternative text to ensure accessibility to cultural offerings. The accessibility plan of the local government of Florence – winner of the special award for the Built Environment – covers a variety of areas, ranging from roads, pavements and car parks to gardens, sports facilities, libraries and museums. Florence has renovated 29 public facilities, including schools, sports centres and libraries, to make them more accessible. Another notable example comes from the Balkans with the Greek city of Komotini, which was the winner of the special award for Accessibility through providing opportunities for the whole city. Three-quarters of its municipal buildings are now accessible to people with disabilities, including the city hospital, medical centres, the police academy, theatres and the library. Among the fully accessible public buildings in Jönköping, Sweden, winner of the Access City Award in 2021, is the library, which has a collection of tactile maps. Its accessible media includes DAISY players and tactile, easy-to-read and large-print books. Jönköping also has a mobile library that delivers books to the homes of people who cannot visit the library in person (European Commission, 2021a).

Discussion

Ensuring access to libraries for people with disabilities is a clearly established commitment for most European countries. Long-term accessibility policies today go far beyond simply providing access to people with motor disabilities. The review of the good practices applied by the cities awarded in the Access City initiative reveals a wide range of tools that, in the hands of administrations and engaged local communities, make accessibility not a luxury but a necessary normality. And if we consider physical accessibility as the basis, as a first step towards achieving this normality, then upgrading through the initiation and introduction of innovative models and care for people with disabilities of different natures gives cause for optimism. In a review of library services for people with disabilities, Arndt and Schnitzer (2018) make the point that making libraries accessible does not always involve large financial investments. According to Arndt and Schnitzer, many good practices are feasible in any library, even those located in smaller cities. Among the winners of the Access City Award, we can highlight cities such as Jūrmala, Vaasa and Komotini, which do not have the budget of other winners such as Barcelona, Berlin or Lyon, and also have far fewer inhabitants. Proving the importance of a sustainable and consistent policy regarding accessibility, as well as care for people with disabilities, they can now be proud of what they have achieved and serve as a good example for other European cities.

Although reviewed over a relatively short period of 11 years, the stated good practices in the field of library accessibility clearly outline the evolution in the understanding of accessibility and what exactly people with disabilities need. There is also a remarkable advance in terms of understanding the importance of the participation of people with disabilities in decision-making. Burke (2009) recommends that more in-depth research be conducted on the perceptions of people with disabilities about access to libraries and library services. She argues that by including people with disabilities in library research and evaluation, and by improving library access and services for people with disabilities, libraries are doing their part to ensure equal treatment, equal access and equality for people with disabilities. Analysing results over 10 years, from 2000 to 2010, Hill (2013) advocates that specifically in the context of library accessibility, the participation of people with disabilities needs to be greater, and attention needs to be paid to the views of this group of people. Since the creation of the Access City Award, the active participation of vulnerable groups of people in the creation of accessible environments is not only an example of successful collaboration with local administrations, but also an indispensable element in the mission of equal access for all. A notable example is Oodi, the new central library in Helsinki, where the Helsinki Council on Disability was actively involved in its construction. People with disabilities from the Finnish city also had a say in the design of the building. Special attention has been paid to the needs of people with motor and functional disabilities. Oodi’s accessibility was among the good examples of accessibility that the Finnish capital highlighted when applying for
the Access City Award in 2022. However, as Kumbier and Starkey (2016) note, the popular disability-justice slogan ‘Nothing about us without us’ also implies leadership on the part of people with disabilities – not just participation. In this sense, the leadership of local disability organizations would contribute to even more active work towards ensuring library accessibility and the implementation of successful practices in the libraries of European cities. The voice of people with disabilities should be at the forefront of creating accessible environments, and libraries are no exception. In the context of the cities that have won the Access City Award, it is worth mentioning Barcelona and the local Municipal Institute for Persons with Disabilities, which has played a leading role in the development of Barcelona’s Accessibility Plan 2018–2026.

Modern technologies – that today are part of every sphere of life – also find their place. The lack of access to modern technologies, and therefore to information, is today often tantamount to isolation, and the commitment of many of the represented cities and their libraries demonstrates the will to integrate vulnerable groups fully into society. While facing different challenges, libraries have been, and continue to be, access champions, as noted by Bertot and Jaeger (2015) in their study, highlighting as an example a meta-analysis of web accessibility studies which showed that the highest average levels of website accessibility were found in libraries. Since 2000, many libraries have been developing online services and resources specifically for people with disabilities, with inclusive technologies becoming increasingly popular. New online resources are being created, and the number of digital libraries is also growing (Wentz et al., 2015). In this sense, it should be noted that the winners of the Access City Award can be defined as a representative sample of some of the most advanced library services for people with disabilities. From computers for the visually impaired and specialized software for working on the Internet to the JAWS and NVDA screen-reader programmes or DAISY players and e-books, the best practices represented include a wide palette of contemporary library accessibility options.

As for the geographical location of the cities and implementing good practices to make their libraries accessible to all their inhabitants, it is impressive – and probably not surprising to many – that most are located in northern Europe, and the Nordic countries are among the most active in emphasizing library accessibility. The consistent and long-standing policy of these countries in the field of librarianship, combined with care for local communities in terms of accessibility, has long yielded excellent results, which can be used as useful examples by all for whom an accessible environment is a pursuit and mission.

Conclusion
The winning cities and special award winners in the Access City initiative present a wide range of cultural, topographical and climatic conditions that affect accessibility. These cities are different in size and from different countries, and have different cultures. Some of them face additional challenges related to their history and topography, while others are more modern. However, two clear features characterize them all: (1) a strong and sustainable commitment at the political level to ensure accessibility and (2) the ongoing commitment of the city administrations and organizations for people with disabilities and the elderly to set priorities and monitor their implementation (European Commission, 2020).

Considered in the context of these two common characteristics, library accessibility undoubtedly emerges as one of the important and consistently demonstrated priorities of the winners of the Access City Award. Understanding the meaning of providing access to libraries unites the policies of European cities in a common vision, and the prominent good practices ignite the spark for new initiatives in different parts of the old continent. The outlined trends lead to important conclusions that could be a valuable part of the tool kit not only of library professionals but also of administrations involved in library accessibility. First, it should be stressed that library accessibility is not necessarily a costly endeavour that is only possible in wealthy cities with large libraries, but depends on the initiative of local communities and the desire for equal access for all. Second, the information society requires the pursuit and application of modern technologies in terms of library accessibility and, as is evident from the good practices presented, different resources are successfully finding their place in various parts of Europe. And last but not least, the participation of people with disabilities in the development of accessible environments is becoming not just an unavoidable factor, but also a prerequisite for sustainability and equal opportunities for all.

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Public library services for people with dementia: A study of students’ perceptions

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Abstract
Although librarians have not been traditionally recognized as professionals who provide care for persons with dementia, recent research indicates that libraries can contribute to the development of dementia-friendly communities. They can offer cognitive engagement and social inclusion events for people with dementia, provide information to their caregivers and educate the general public about dementia. In this article, the authors present the findings from a study that attempted to answer the following research questions: ‘How much do library and information science students in Croatia know about dementia?’ and ‘How do they perceive the role of public libraries in developing dementia-friendly communities?’ The study was conducted using a quantitative methodology among 183 library and information science students. Although the respondents had somewhat poor knowledge about dementia, they believed people with dementia have an inherent right to library materials and programmes suited to their specific needs, and that libraries can raise the quality of their life in the community.

Keywords
Dementia, public libraries, dementia-friendly communities, library and information science students, Croatia

Introduction
Alzheimer’s disease is the most common type of major neurocognitive disorder (dementia) of unknown cause (Ellison, 2021), and is regarded as a significant cause of disability and dependency among older adults (World Health Organization, 2017). It is a progressive and incurable disease, where dementia symptoms worsen over time. Alzheimer’s disease starts gradually with minor (short-term) memory problems but, over a number of years, develops into more severe symptoms, such as confusion and disorientation in familiar places; difficulties with planning, making decisions and carrying out daily and self-care tasks; problems with speaking; and serious personality and mood changes (Alzheimer’s Disease International, 2016). Ultimately, people with dementia become completely dependent on others and, in the final phase of the disease, require 24-hour support and care. Their (unpaid and uneducated) caregivers are in most cases family members, such as spouses and (grand)children, who provide assistance with eating, personal hygiene and therapy (Brodaty and Donkin, 2009).

The greatest risk factor for Alzheimer’s disease is age (with the majority with Alzheimer’s disease aged 65 and above), but dementia is not a normal part of aging. Next to genetic risk factors, research has established a relationship between dementia and some lifestyle-related risk factors, such as physical inactivity, obesity, an unbalanced diet, tobacco and alcohol consumption, and mid-life hypertension. In 2015, dementia affected 47 million people worldwide

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(approximately 5% of the world’s elderly population) and it is predicted that this figure will increase to 75 million by 2030 and 132 million by 2050. Dementia leads to increased costs not only for families, who face a significant financial impact, but also for communities and governments. In 2015, dementia costs (direct medical costs, social care costs and the costs of informal care) were estimated at US$818 billion. By 2030, it is projected that the cost for caring for people with dementia worldwide will rise to US$2 trillion (World Health Organization, 2017).

Since the prevalence of dementia is expected to increase exponentially in the coming years due to an increasingly aging population, the World Health Organization (2012) has recognized Alzheimer’s disease as a global public health priority and called on governments and policymakers to implement sustained and coordinated action across multiple levels. In its Global action plan on the public health response to dementia: 2017–2025, the World Health Organization (2017) invites all stakeholders to improve the lives of people with dementia and their caregivers and families in seven action areas: ‘dementia as a public health priority’; ‘dementia awareness and friendliness’; ‘dementia risk reduction’; ‘dementia diagnosis, treatment, care and support’; ‘support for dementia carers’; ‘information systems for dementia’; and ‘dementia research and innovation’. Only a comprehensive and concerted effort by local governments and businesses, health-care institutions, social care services, civil society organizations, and educational and cultural institutions will result in establishment of dementia-friendly communities. The latter are understood as physical and social environments comprising individuals, businesses, organizations and services that are responsive to the needs of people with dementia, where they are understood, respected and supported. In these communities, they are regarded as productive members of society; feel welcome, included and involved; and have choices and control over their day-to-day lives (Alzheimer’s Society, 2015).

People with dementia in Croatia

In Croatia, approximately 300,000 people are affected by Alzheimer’s disease. It is estimated that there are 100,000 people with Alzheimer’s disease and an additional 200,000 people who care for them (Mimica et al., 2015). Many cases of dementia remain undiagnosed until the later stages of the disease, and the majority of people with Alzheimer’s disease are not treated with standard anti-dementia drugs (which are expensive) but with supportive (alternative) medication, such as, for example, Gingko biloba, statins, Vitamin E or curcuma (Mimica and Prešček, 2010). Health-care professionals and social workers do not have adequate training to work with people with Alzheimer’s disease (Samardžija, 2013); the existing capacity for medical care in hospitals, long-term care facilities and day-care centres is insufficient; and palliative care is underdeveloped (Dološić et al., 2019). A national dementia strategy has not yet been adopted, and people with dementia are often exposed to potential human rights violations and loss of dignity (Dološić et al., 2019). Psychological counselling and legal advice are sporadically available in larger hospitals and can be obtained from civic and religious organizations, but it is insufficient because it is available only in some parts of the country and is subject to the availability of resources. It can be said that, currently, there is a wide gap between the needs of people with people affected by dementia in Croatia dementia in Croatia (in relation to diagnosis, treatment, care and support) and the actual provision of dementia services. People with Alzheimer’s disease and their families in Croatia are in urgent need of comprehensive and responsive health-care, legal, social and information systems that will support their needs and help them live a good and dignified life, in spite of dementia (Erdelez et al., 2019).

Literature review

Although librarians have not been traditionally recognized as professionals who provide care for persons with dementia, recently there has been a shift in the way our society thinks about people with dementia. Howarth (2020) explains that such persons are now viewed as citizens with a disability who have legal rights to certain levels of service in support of their autonomy, independence and quality of life in their community, as long as it is determined personally safe to do so. Accordingly, the overview of recent library and information science (LIS) literature indicates that librarians and information professionals have started to critically evaluate the potential contribution of libraries to the development of dementia-supportive environments in the context of their role in community-building, social justice and social inclusion (Dai et al., 2021; Dickey, 2020; Erdelez et al., 2015; McNicol, 2023; Riedner et al., 2020).

Public libraries as local gateways to information that make all kinds of knowledge available to users (IFLA and UNESCO, 2022) can satisfy the diverse information needs of people with dementia and their caregivers, who repeatedly report a lack of knowledge
about the following topics: symptoms of the disease and its progression; the genetic aspects of Alzheimer’s disease; medication and treatment; non-pharmacological therapy; caring for people with dementia; coping with the disease; dealing with friends and family; legal and financial information; benefits information; available local services and how to access them; contact details for organizations and places in community where they can obtain reliable information; and advice and psychological support (Alzheimer’s Society, 2010; Erdelez et al., 2019; Petr Balog et al., 2020; Steffen et al., 1999). Since evidence suggests that people with dementia and their caregivers have a preference for printed information, which allows them to go over the information several times and go back to it when needed, and that they often do not know where to go to get the information they need (Alzheimer’s Society, 2010), public libraries are in a perfect position to provide them with access to the required information in their preferred format. By providing their broader communities, and not only people with dementia and their caregivers, with access to relevant resources about healthy lifestyles and dementia (symptoms and risk factors), and opportunities for cognitive activity across the lifespan, which has an association with slower late-life cognitive decline (Wilson et al., 2013), public libraries can assume a proactive role in the prevention of the disease and be recognized as important partners in community-based health literacy efforts and tackling digital health inequality (Gann, 2019).

Since caring for family members with dementia may affect caregivers’ physical and mental health, well-being and social relations, public libraries can provide relevant resources and appropriate information for caregivers (who are non-professionals) not only to improve their knowledge and skills, but also to reduce their emotional stress (Baker et al., 2018; Mortensen and Nielsen, 2007). Therefore, libraries should acquire not only a broad selection of informational (non-fiction) books about dementia, but also dementia memoirs or biographies and fiction to meet caregivers’ emotional needs. Adult fiction (different genres), young adult fiction and picture books should be widely available for recreational reading about people living with dementia (Dickey, 2020).

Since public libraries have the ambition to proactively keep their communities informed and aware (IFLA and UNESCO, 2022), they can also encourage and support dementia-friendly attitudes in the community by developing awareness programmes and activities that reduce the stigmatization and discrimination associated with dementia, and foster an accurate understanding of it. Since the attitudes and understanding around dementia among those with whom people with dementia interact can impact their self-esteem, confidence and dignity (Smith et al., 2016), and social stigma and discrimination can heighten the already significant psychological, social, emotional and financial impacts of dementia (World Health Organization, 2021), it is extremely important that libraries raise public awareness and improve understanding of dementia in their communities through collections and programming (events, lectures, exhibitions, living libraries, etc.) that build on fundamental values such as human rights, democracy, equality, diversity and tolerance.

Since people with dementia often feel lonely and isolated, libraries as living forces of inclusion (IFLA and UNESCO, 2022) can support their social inclusion and social interactions through the organization of special programmes and activities such as film screenings, music events (Vincent, 2018) and programmes like ‘Tales & Travel Memories’ (Dai et al., 2021; Riedner et al., 2020). Social interaction and mental stimulation can improve their cognitive engagement and resilience, and have positive effects on their health. Libraries can also organize or host (in collaboration with external organizations) programmes that support social interaction, offer peer support or allow caregivers to share their experiences (Smith et al., 2016). Many libraries organize memory cafes as informal social gatherings, which provide caregivers (and people in the early stages of dementia) with access to relevant information and resources, reduce social isolation, facilitate social interaction and offer brief respite in a safe environment (Dickey, 2020).

Studies have indicated that even as dementia progresses and reading comprehension deteriorates, some capacity for reading, and in particular reading aloud, remains (Bourgeois and Hickey, 2009; Paque and Warrington, 1995; Rimkeit and Claridge, 2017). Reading – like music, dance, pets and the arts – can have therapeutical benefits. Storytelling and reading programmes (such as individual reading, reading aloud and shared reading) can positively stimulate the mind of a person with dementia by encouraging concentration, triggering memory activity and new thoughts, reducing agitation, supporting emotional engagement and fostering social interaction (Billington et al., 2013; Dickey, 2020). Baker et al. (2018) report that people with dementia can benefit from the enjoyment of music and rhythm, the enjoyment of the beauty and inventiveness of language, the stimulation of cognitive performance by evoking memories and the improvement of empathy with others. Riedner et al. (2020) conclude that people with dementia may not read in the same way as they did in the past, but
this does not mean that they cannot benefit from books and reading. Howarth (2020) emphasizes that the preferred materials for a dementia-friendly library collection must follow the principles of person-centred care and be stage-appropriate. Public libraries already have many resources – such as books and magazines, talking books, moving images, music, puzzles, toys, board games and objects – that can be used in library activities designed specifically for this group, such as reminiscence treatment, which uses all the senses to help individuals with dementia remember events, people and places from their lives by providing them with so-called ‘reminiscence kits’ or ‘reminiscence bags’. Next to reading, this therapy has been identified as one of many non-pharmacological interventions that can be beneficial for improving the quality of life of people with dementia by reducing agitation, increasing engagement, improving cognition and slowing the development of the disease. Libraries can buy reminiscence kits from commercial or not-for-profit agencies, or make their own.

Public libraries, as trusted and respected institutions in their communities, are uniquely positioned to take a proactive role in supporting health and well-being, building understanding and raising awareness in their communities. By providing accessible resources, engaging programming, and trusted and non-stigmatized community spaces, libraries can improve the quality of life of people with dementia by focusing on the abilities that have been retained rather than those that have been lost (Riedner et al., 2020). Bearing in mind the growing awareness of dementia among library professionals (Dai et al., 2021), the aim of this article is to understand how future librarians in Croatia understand Alzheimer’s disease and perceive the role of public libraries in the development of dementia-friendly communities.

Research methods
In this article, the authors present the findings from a study that attempted to answer the following research questions:

1. How much do LIS students in Croatia know about dementia?
2. How do LIS students in Croatia perceive the role of public libraries in developing dementia-friendly communities?

The study was conducted from February to April 2022 among undergraduate and graduate LIS students from the Josip Juraj Strossmayer University of Osijek and the University of Zadar, both in Croatia, using a quantitative methodology. A quantitative approach was chosen in order to reach as many respondents as possible.

Printed and online questionnaires were distributed to students during their classes. Out of the 287 students enrolled at both universities, a total of 183 students participated in the study (63.76% response rate). The questionnaire was anonymous and included 13 questions (open-ended, multiple-choice and Likert-type questions). The first group of questions collected the demographic information of the respondents. In this section, the respondents were also asked about their prior contact with dementia in order to learn about their personal knowledge of dementia. In the second part of the questionnaire, the authors sought to learn how knowledgeable the respondents were about dementia. They were also asked to self-assess their knowledge about dementia in order to see how their perceived dementia knowledge correlated with their actual dementia knowledge. In the final section, the respondents answered questions about their perception of the role public libraries play in developing dementia-friendly communities. The quantitative data was analysed using the statistical software SPSS. Only simple descriptive statistics were used, including frequency analysis and the mean for the Likert-type scales.

Findings
Demographic information
The majority of the respondents were female (79.4%), from the University of Osijek (68.7%) and at the undergraduate level of their studies (63.7%). The university affiliation, study level and gender make-up of the respondents correlate closely with the general make-up of the student population under study. The spread of dementia was confirmed by the finding that almost a third of the respondents (28.1%) had been in contact with someone with dementia (e.g. family members or neighbours) before they took part in this study (Table 1).

Knowledge of dementia
Self-assessment of knowledge of dementia. When asked to self-assess their knowledge of dementia, on a scale from 1 (very poor) to 5 (very good) almost half of the respondents indicated that their knowledge was either poor or very poor. Only 8.2% of the respondents thought that their knowledge of dementia was either good or very good (Table 2).

Knowledge about dementia. In order to test the respondents’ actual knowledge about dementia – that is, Alzheimer’s disease in general and the circumstances
in Croatia – they were asked to state whether six statements were true or false (Table 3). They could also check the option ‘I do not know’ if they did not know the answer and did not want to make a guess. The findings show that only 40.9% of the respondents know that Alzheimer’s disease cannot be cured, and 39.2% of the respondents falsely thought that Alzheimer’s disease can be cured, and 39.2% mistakenly believed that mental exercise can prevent a person from getting Alzheimer’s. However, if we agree that the ‘I do not know’ option means that the respondent was ignorant of the issue in question, these numbers are even higher. In this case, we can say that as many as 59.1% of the respondents thought that Alzheimer’s disease can be cured (although it is incurable) and 74% thought that mental exercise can prevent a person from getting Alzheimer’s (although this is not the case). Furthermore, 60.2% incorrectly thought that people in their thirties cannot get Alzheimer’s disease (although younger people can get Alzheimer’s) and 52.5% believed that most people with Alzheimer’s remember recent events better than things that happened in the past (although it is the other way round – they remember past events better). A total of 68% of the respondents thought that people with Alzheimer’s disease in Croatia have the right to free pharmacological therapy and 55.3% thought that people in the final stages of Alzheimer’s live in specialized nursing homes. Both of these statements are not true for Croatia: people with Alzheimer’s disease cannot obtain antidementives on prescription but have

Table 1. Respondents’ demographic characteristics.

<table>
<thead>
<tr>
<th>Demographic characteristics</th>
<th>n</th>
<th>%</th>
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<tr>
<td>Gender</td>
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<tr>
<td>Female</td>
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<tr>
<td>Graduate</td>
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<td>0</td>
</tr>
<tr>
<td>University</td>
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<td></td>
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<tr>
<td>University of Osijek</td>
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</tr>
<tr>
<td>University of Zadar</td>
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<td>31.3</td>
</tr>
<tr>
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<tr>
<td>Prior contact with dementia</td>
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<td></td>
</tr>
<tr>
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<td>51</td>
<td>28.1</td>
</tr>
<tr>
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<td>130</td>
<td>71.8</td>
</tr>
<tr>
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<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>183</td>
<td>100</td>
</tr>
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</table>

Table 2. Self-assessment of knowledge of dementia.

<table>
<thead>
<tr>
<th>Knowledge about dementia</th>
<th>n (%)</th>
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<tbody>
<tr>
<td></td>
<td>1 = very poor</td>
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<td></td>
<td>21 (11.5)</td>
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</tbody>
</table>

Table 3. Knowledge about dementia.

<table>
<thead>
<tr>
<th>Statements</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>[Alzheimer’s disease cannot be cured] True</td>
<td></td>
</tr>
<tr>
<td>False</td>
<td></td>
</tr>
<tr>
<td>[Mental exercise can prevent a person from getting Alzheimer’s disease] True</td>
<td></td>
</tr>
<tr>
<td>False</td>
<td></td>
</tr>
<tr>
<td>[Most people with Alzheimer’s disease remember recent events better than things that happened in the past] True</td>
<td></td>
</tr>
<tr>
<td>False</td>
<td></td>
</tr>
<tr>
<td>[People in their thirties can get Alzheimer’s disease] True</td>
<td></td>
</tr>
<tr>
<td>False</td>
<td></td>
</tr>
<tr>
<td>[People with Alzheimer’s disease in Croatia have the right to free pharmacological therapy] True</td>
<td></td>
</tr>
<tr>
<td>False</td>
<td></td>
</tr>
<tr>
<td>[In Croatia, most people in the final stages of Alzheimer’s disease are placed in nursing homes] True</td>
<td></td>
</tr>
<tr>
<td>False</td>
<td></td>
</tr>
</tbody>
</table>
to pay for them, and the majority are cared for by their family members at home because the care facilities for people with dementia are almost non-existent. The findings presented in Table 3 indicate that the respondents had relatively poor knowledge about both dementia in general and the circumstances in Croatia: none of the six statements were answered correctly by more than 50% of the respondents.

**Sources of information about dementia.** The majority of the respondents (97.2%) learned about dementia from the media (television, newspapers, websites, etc.), films and fiction books (93.2%), and people such as family members (88.6%). Less than a quarter reported that they learned about dementia and working with people with dementia at university (21.5%). Only 2.8% of the respondents further indicated that their study programme had provided them with sufficient knowledge about dementia and providing services for people affected by dementia (Table 4).

**Perceptions of dementia.** In order to understand how the respondents perceived dementia, in the next question they were asked to indicate the extent to which they agreed with a set of four statements about Alzheimer’s disease on a scale from 1 (strongly disagree) to 5 (strongly agree). The respondents agreed to the greatest extent with the following two statements: ‘Persons in the early stages of Alzheimer’s disease should have the opportunity to actively participate in the cultural life (cinema, theatre, concerts, etc.) of the community’ ($M = 4.52$) and ‘Non-pharmacological and creative methods such as music, art and reading can improve the quality of life of people with Alzheimer’s disease and slow down the course of the disease’ ($M = 4.02$). They disagreed with the following two statements: ‘People with Alzheimer’s disease cannot enjoy reading because of a sudden decline in their intellectual abilities’ ($M = 2.15$) and ‘It is better for people with Alzheimer’s disease to avoid family and/or social gatherings in order not to embarrass themselves and put themselves and their family members in an awkward position’ ($M = 1.35$). The findings presented in Table 5 indicate that the respondents had an extremely positive perception of people with dementia and did not stigmatize them.

**Public libraries and dementia**

In the final section of the questionnaire, the respondents were asked to indicate the extent to which they agreed with a set of statements on the role of public libraries in developing dementia-friendly communities on a scale from 1 (strongly disagree) to 5 (strongly agree). Although the majority agreed that working with people with dementia in libraries is

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**Table 4. Sources of information about dementia.**

<table>
<thead>
<tr>
<th>Sources of information about dementia</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media</td>
<td>141 (97.2)</td>
</tr>
<tr>
<td>Books and films</td>
<td>82 (93.2)</td>
</tr>
<tr>
<td>Other people</td>
<td>70 (88.6)</td>
</tr>
<tr>
<td>University</td>
<td>41 (21.5)</td>
</tr>
<tr>
<td>Other</td>
<td>13 (52)</td>
</tr>
</tbody>
</table>

**Table 5. Perceptions of dementia.**

<table>
<thead>
<tr>
<th>Statements</th>
<th>1 = strongly disagree</th>
<th>2 = disagree</th>
<th>3 = neither disagree nor agree</th>
<th>4 = agree</th>
<th>5 = strongly agree</th>
<th>$M$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persons in the early stages of Alzheimer’s disease should have the opportunity to actively participate in the cultural life (cinema, theatre, concerts, etc.) of the community</td>
<td>0 (0)</td>
<td>2 (1.1)</td>
<td>16 (8.8)</td>
<td>49 (27.1)</td>
<td>114 (63)</td>
<td>4.52</td>
</tr>
<tr>
<td>Non-pharmacological and creative methods such as music, art and reading can improve the quality of life of people with Alzheimer’s disease and slow down the course of the disease</td>
<td>0 (0)</td>
<td>7 (3.9)</td>
<td>42 (23.2)</td>
<td>72 (39.8)</td>
<td>60 (33.1)</td>
<td>4.02</td>
</tr>
<tr>
<td>People with Alzheimer’s disease cannot enjoy reading because of a sudden decline in their intellectual abilities</td>
<td>61 (33.7)</td>
<td>50 (27.6)</td>
<td>53 (29.3)</td>
<td>16 (8.8)</td>
<td>1 (0.6)</td>
<td>2.15</td>
</tr>
<tr>
<td>It is better for people with Alzheimer’s disease to avoid family and/or social gatherings in order not to embarrass themselves and put themselves and their family members in an awkward position</td>
<td>137 (75.7)</td>
<td>29 (16)</td>
<td>11 (6.1)</td>
<td>3 (1.7)</td>
<td>1 (0.6)</td>
<td>1.35</td>
</tr>
</tbody>
</table>
demanding and difficult (61.3%), they believed that people with dementia should have access to library materials and services suited to their needs and interests (92.9%), regardless of the (limited) size of their community. The respondents also thought that high-quality library services can improve the quality of life of persons with dementia and their family members (91.2%), and that public libraries can contribute to public awareness about Alzheimer’s disease and the removal of the social stigma connected with it (90.1%). They also believed that librarians should have access to continuing professional development programmes that equip them with the knowledge and skills required to provide library services for people with Alzheimer’s disease (87.8%), and that librarians should be taught how to adapt their services to people with Alzheimer’s disease and their family members (93.9%).

**Discussion**

The study presented in this article aimed to identify the knowledge of Croatian LIS students about dementia and their perceptions of the role of public libraries in developing dementia-friendly communities. It was conducted using a quantitative methodology (an online and printed questionnaire) from February to April 2022 among 183 LIS students at two public universities in Croatia. The response rate was 63.78%.

The findings show that the respondents had a relatively poor knowledge of dementia, which was in line with their poor self-assessment of their dementia knowledge. The majority of the respondents (about 90%) obtained information about dementia from the media, films and books. While only a small percentage of the respondents (about a quarter) reported that dementia and library services for people with dementia were included at a very basic level in their study programmes, they all agreed that librarians need specific knowledge and skills to provide services that are tailored to the needs of people with dementia. Both LIS students and seasoned librarians should be introduced to this topic within their obligatory or elective university courses or continuing professional education programmes.
The participants in this study had an extremely positive perception of people with dementia and the use of non-pharmacological therapies such as art therapy and reading in its treatment. Moreover, they thought that public libraries can play an important role in developing dementia-friendly communities by improving the quality of life of persons with dementia and their family members, and by contributing to public awareness about dementia and the removal of the social stigma connected to it. Similar results were obtained in a study among Croatian librarians, who did not see themselves as an integral part of the care team for dementia yet believed that public libraries should provide quality services for people with dementia and their family members (Faletar Tanacković et al., 2021).

Although the study’s findings cannot be readily generalized due to the limited sample size, and an additional qualitative study is needed to obtain a deeper understanding of the problem, it offers some novel insights because the literature review did not reveal any previous studies into the knowledge and perceptions of library services for this user group among LIS professionals.

**Conclusion**

Dementia is one of the most significant public health problems in modern society, where the global increase in dementia cases is bringing about medical, economic and social challenges for individuals, families and communities. In Croatia, as in many other countries worldwide, there is still no adequate health, social, legal and information support system for people with Alzheimer’s disease and their families. As a result, they face numerous challenges in their everyday lives, which often result in their social exclusion, stigmatization and early death. The lack of a strategic direction and systematic response to this critical health-care and social problem is also reflected in the general perception of dementia. A recent study has shown that 45% of Croatian citizens believe that dementia is a mental illness and part of the normal ageing process (HUAB, 2018). Although libraries worldwide are increasingly serving this vulnerable and growing user group, libraries in Croatia currently do not offer any dementia programmes on a regular basis (Faletar Tanacković et al., 2021).

While our respondents – future librarians – had poor knowledge about dementia and current LIS programmes do not teach them about dementia, the findings of this study show that LIS students in Croatia had a feeling of professional responsibility towards this vulnerable population and perceived public libraries as important players in developing dementia-friendly communities and improve the quality of life of persons with dementia and their caregivers can live well and receive the care and support they need to live their lives with dignity, respect, autonomy and equality.

Despite the limitations of this study (e.g. the drawbacks of the quantitative method itself and the limited sample size) and the relatively poor knowledge of dementia among the respondents, the findings on the students’ perceptions of public libraries and dementia support the emerging role of public libraries as important players in the social justice agenda and the increasing importance of community-based library programmes for socially excluded user groups and people with differing needs. The respondents believed that public libraries, as cornerstones of community services, should join the care team for people with dementia (Riedner, 2015) and participate in community-based dementia care in order to support the development of dementia-friendly communities and improve the quality of life of this underserved social group.

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References


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Multicultural libraries: A study on the information behaviour of the Terena people, Brazil

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Abstract
This article reports on research on the information behaviour of the Terena people from a Brazilian indigenous community. The aim of this study is to present and analyse the data collected on the information behaviour of the Terena people, which will serve as a basis to propose a model for creating a multicultural library linked to a sociocultural perspective as part of a PhD research study. A qualitative and explanatory study was conducted within the ethnographic structure for data collection. Field appointments and interviews were conducted with 18 research participants from the indigenous peoples of the Bananal community between 2021 and 2022. The data analysis shows that their information behaviour was influenced by cultural factors, and it is therefore essential to address multicultural issues within this context. It is important to ensure that the information addresses cultural diversities, promoting the social visibility of indigenous peoples and preventing their exclusion. Future research should improve multicultural access to information by developing inclusive strategies that consider indigenous perspectives and knowledge.

Keywords
Multicultural library, information behaviour, indigenous peoples, information needs, information mediators

Introduction
Promoting values and respecting cultural diversity are fundamental issues in contemporary society and are widely discussed among social movements and minorities that claim recognition and the preservation of their culture. Lately, there has been a significant increase in debates about ‘multiculturalism’. As De Sousa Santos (2004) points out, this term originally referred to the coexistence of different cultural forms within ‘modern society’.

Multiculturalism is part of the historical context of Brazil, partly because there is immense cultural diversity among the indigenous peoples living in the country. In 2012, it was estimated that there were around 897,000, indigenous people 305 ethnic groups and 274 languages spoken in Brazil (Instituto Brasileiro, 2012). To maintain their culture, these peoples continue to seek their rights and often experience conflict when trying preserve their traditions.

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Libraries play a crucial role in preserving and disseminating information, meeting users’ wide demands. It is essential that libraries focus on meeting the information needs of multicultural communities, including the indigenous population, if they really wish to be considered inclusive spaces. In this way, libraries will not only fulﬁl their role in promoting access to knowledge, but will also contribute to the 2030 Agenda for Sustainable Development of the United Nations, which sets speciﬁc goals for indigenous peoples with the aim of eradicating hunger, as well as promoting inclusive education and the active participation of indigenous peoples in deﬁning and reviewing United Nations (2015) policies.

In the 21st century, information plays a key role in driving progress and innovation in all areas of society, being an essential element for the development of a fair and democratic society. Although human rights treaties protect access to information, it is important to question whether this right to information is being effectively upheld, as pointed out in a 2022 International Telecommunication Union report. This report reveals the grim reality of exclusion, in which the poorest people still have no access to information services. It is therefore extremely important to promote studies that offer strategies to guarantee everyone’s information rights, taking into account that Brazil is a multicultural country with a wide diversity of indigenous peoples. In this context, libraries play a key role in identifying the information and service needs of multicultural communities. All of this is much more than providing materials in their own languages and respecting their cultural traditions. In other words, understanding the diverse perspectives and interests of these communities will help libraries offer relevant information and resources in order to promote intercultural dialogue. Thus, they will contribute to a society that values diversity and promotes understanding among its people (Sturges, 2005).

This study is theoretically grounded in discussions related to information behaviour linked to the perspective of sociocultural studies by some Brazilian (e.g. Araújo, 2012; Moreira and Sirihal Duarte, 2016; Rocha and Gandra, 2018) as well as international authors (e.g. Capurro, 1999; Savolainen, 2007; Talja et al., 2005; Tuominen et al., 2005). The question is whether indigenous people’s information practices are being managed according to their multiculturalism and within a cultural context. By focusing on the social paradigm of information science, this study aims to investigate the information behaviour of Terena people from the Bananal community in the state of Mato Grosso do Sul, Brazil. It is part of a PhD project that aims to propose a multicultural library model with targeted outcomes for Terena indigenous people. Based on the hypothesis that the Terena indigenous population has multicultural information needs, this PhD research is currently in progress, with the goal of investigating and analysing these needs. The focus is on the following objectives:

1. Identifying research based on the information needs of indigenous people in national and international literature;
2. Outlining the information proﬁle of Terena indigenous people by verifying their information-behaviour practices;
3. Mapping the formal and informal units that act as information mediators in the Terena community;
4. Formulating guidelines for a model for a multicultural library, paying attention to the needs of Terena indigenous people;
5. Debating the social role of information science – namely, with regard to the relevance of the information dynamics of indigenous people in maintaining their identity while being placed back within the current Brazilian society.

For the purposes of this article, the focus is on the first three objectives.

The justification for this research lies in the absence of Brazilian studies from the perspective of the information behaviour of traditional Brazilian people. Regarding this context, it may be said that research on the information needs of indigenous people is an opportunity for information science to contribute to empowering and organizing, as well as preserving, the cultural identity of a people, promoting their inclusion – in other words, making access to information possible for all, without restrictions.

This article begins with a literature review focusing on information behaviour in general and, speciﬁcally, the information behaviour of indigenous people, as they are the focus of the present study. In addition, studies related to the multicultural library are presented. Next, the research methods are described, which is followed by the presentation and discussion of the ﬁndings. Finally, some relevant considerations are made, providing a summary of the information behaviour of indigenous people, as well as exploring the implications and contributions of the ﬁndings obtained.

**Literature review**

**Information behaviour**

Information-behaviour research has occupied information scientists since before the term ‘information science’ was coined. We can trace its origins back to
the Royal Society Scientific Information Conference of 1948 (Wilson, 1999). It is not a field that is monopolized by information science. Several studies involving human behaviour have been carried out, generally involving the study of personality in psychology and information, including design and information systems (Moreira and Sirihal Duarte, 2016). In view of this context, it is evident that the field of user studies has expanded considerably since the initial research focused on the context of libraries. Currently, it covers the analysis of the behaviour and attitudes of information users in a much broader way, covering several areas of knowledge (Wilson, 1994).

In the 1970s, a paradigm shift in understanding information behaviour began. The first approach was the physical paradigm, which aimed to use the system focused on the information search process. This was followed by the emergence of the second paradigm – the cognitive paradigm – which was influenced by the research of Wilson (1981), Ellis (1989) and Kuhlthau (1991) based on user studies – that is, users themselves seek their own information needs. The third paradigm – the social paradigm – is grounded in Tuominen et al.’s (2005) research, which focuses on the individual as a transforming subject.

Information-behaviour studies presented a significant progress with Wilson (1981), who stands up for his contribution to analyse information needs. Wilson argued that information behaviour arises as a consequence of a user’s needs, who, to satisfy such needs, requires formal and informal information sources and systems, resulting in success or failure during information seeking. Later, Wilson (1999) modified his approach and pointed out that information is not a primary but a secondary need, and that it is likely that a user will encounter different barriers.

Dervin (1999) took a critical stance towards some approaches on users concept, and tried to predict information-seeking behaviour based on an individual’s personality structure. In Dervin’s view, information seeking and information use are situationally constructive and interconnected activities. Dervin also states that the presence of a desire for information is neither a necessary nor sufficient condition for.

With regard to searching for information, Savolainen (1995) found that search habits are part of life’s domain, often rooted in the unconscious. Individuals make choices in various situations, but they always choose within the limits of their competence, which is built on social and cultural factors. Savolainen (1995) also states that a way of life alone does not determine information-seeking behaviour. People may belong to the same social class, have the same educational level, and have similar hobbies and jobs, but they may differ notably in their information-seeking behaviour. McKenzie (2003) draws attention to the fact that users do not only seek information when there is a problem to solve; information can be found serendipitously or used to satisfy one’s curiosity.

It should be noted that information behaviour is not a uniform activity. It comprises several factors and elements involved in behaviour processes – information is sought in different ways and human behaviour is highly complex. Wilson (1999) states that information behaviour can be seen as the general field of investigation, which includes information seeking as a subfield. And Wilson adds that information-seeking behaviour in information systems can be understood as a subfield of information behaviour.

More recently, Wilson (2022) expanded on his reflections, stressing that it can be inferred that human behaviour is influenced by a complex set of factors, which can be classified as intrinsic personal aspects, as well as demographic characteristics such as educational level, occupation and income, among others. Additionally, Wilson points out the relevance of the social groups to which a person belongs, such as family, work environment and circle of friends, as well as the impact of the norms and values present in society in general.

According to Silva (2010), information behaviour is the way of being, or reacting, of a person or group in a particular situation and context, influenced by induced or spontaneous needs with regard exclusively to production/emission, reception, memorization/storage, reproduction and the sharing of information. Thus, studies have started to have a wider vision, instead of being restricted to the individual’s interaction with the information system. That means that an understanding of the context that generated the need for information has been taken into account, as well as the use made of the information once it has been assimilated in the solution of problems or in situations that implied the need for information. These studies assess not only the information-seeking behaviour but also the entire information behaviour of the individual (Sirihal Duarte, 2012).

This study is based on the concept of context used by Agarwal, which consists of elements such as environment, task, actor–source relationship, time, etc. that are relevant to the behavior during the course of interaction and vary based on magnitude, dynamism, patterns and combinations, and that appear differently to the actor than to others, who make an in-group/out-group differentiation of these.
In this sense, it is considered that, for individuals in indigenous communities, the context of their information behaviour involves aspects such as the environment, the task, the need, the actor, the source or the system, the relationship between the actor and the source, and the time and space that are relevant to that behaviour.

Information behaviour varies according to each population group, and it is crucial to develop sensitive approaches in the provision of information services. It is essential to take into account the cultural, social and environmental context in which they are inserted, as well as their specific needs and practices in searching and using information, especially for the most excluded populations. In the next section, we analyse the information behaviour of indigenous peoples in various countries, exploring their practices, challenges and opportunities to strengthen their information autonomy. This allows us to better understand their information dynamics and develop inclusive and effective strategies for accessing information.

**Information behaviour of indigenous people**

Research that addresses the topic of the information behaviour of indigenous peoples seems to be underexplored. One of the first authors who wrote on the subject was Chakrabarti (2001), who investigated the information behaviour of the Totos, a small marginal tribal community in sub-Himalayan North Bengal, India. The main points of this work underline that these people obtained information mainly from non-traditional sources and they were dependent on the head of the community – the priest or religious leader.

From Mexico, several studies can be highlighted. Graniel Parra’s (2002) research analysed indigenous communities and library services in Mexico, and proposes a design and improvements aimed at the indigenous community in Zautla, a city in the Sierra Norte de Puebla. Ramirez Velásquez has carried out several studies with indigenous communities. In his first, from 2006, he analysed the information needs of indigenous communities of the Tepehua, proving that their information needs were the product of the social development of each individual in particular and the community as a whole. The information needs of indigenous immigrants from the Nahua people in Mexico City were analysed by Valdez Angeles (2010), identifying the core topics as well as the information sources. In relation to the analysis and information behaviour of indigenous university students from the Autonomous University of Chiapas, Pinto Lopez (2011) observed their habits, customs, attitudes, procedures and skills in finding information sources. With regard to the information behaviour of an indigenous community in a public library environment, Alfaro Rincón (2014) analysed the information needs of the Tsotsil indigenous community and the importance of integrating library services with their cultural context. Rivera López (2019) investigated the information needs of indigenous students at a music centre in Serra de Mixte, as well as their information behaviour, identifying that indigenous music students were also users of information.

Yeh’s (2007) study used an ethnographic research approach with two Taiwanese aboriginal communities: the Yami and the Tsau. This study presents a new model of information behaviour, focusing on the role and importance of the culture of thought as well as the study of human information behaviour. This research demonstrates how the ethnographic method can contribute to exploring the influence of culture in human life, as well as detailed aspects of the world and the information behaviour of individuals.

Lilley (2008) published an article that investigates the information-seeking behaviour of Māori high school students in New Zealand, revealing the barriers faced by these students in this process. Over the years, Lilley has maintained a research focus on topics such as indigenous information behaviour, information literacy issues, and professional and cultural development for libraries and information management teams. His articles, including those published in 2010 and 2019, have received international recognition, and Lilley has been the recipient of Marsden Awards from the Royal Society of New Zealand.

Regarding the sharing of cultural information, Meyer’s (2009) analyzed that the information behaviour of indigenous peoples proves that it is the underlying factor in determining the sharing of information across cultural boundaries between literate and oral cultures.

Dutta’s (2009) work is based on the information needs and information-seeking behaviour of indigenous people in developing countries, analysing urban and rural communities in Argentina, Botswana, Ghana, India, Malawi, Malaysia, Nigeria and Uganda. Dutta identified that the division of information and communication was not so much defined by the economic status of a geographic location than by the users’ knowledge.

Research conducted in Australia by Du and Haines (2017) suggests that the Internet was not the main source of information to meet everyday information needs; rather, their research participants’ source of
information remained family knowledge-sharing. Another study, carried out by Haines et al. (2017), involved elders from an Australian community and investigated the construction of oral knowledge and its transmission; it was found to have a direct impact on collective history and the practices shared by elders.

Haines (2021) addresses the context of indigenous people in an interdisciplinary study using the ethnographic method related to information behaviour. This research has made a significant contribution to information science, winning the ProQuest Doctoral Dissertation Award from the Association for Information Science and Technology (2022), and has encouraged further studies related to indigenous populations.

Hunt and Shoaps (2018) investigated the information-seeking behaviour and information-sharing practices of bilingual students and adults in a Mayan community in Guatemala, identifying that librarians were not, and never had been, the main providers of information in Nahuala.

Burke (2020) analysed the health information behaviour with participatory and interdisciplinary research models within indigenous communities. The research promoted collaborative partnerships among community members, linguists and information professionals to create health information resources that were culturally appropriate for the indigenous community mother tongue.

Two studies can be identified from Brazil. Prado et al. (2017) addressed the information-literacy competence of Brazilian indigenous students at the State University of Londrina. The main results indicate that the Internet was the most accessed source of information, with a preference for the Google search engine. Queiroz and Paiva (2018) analysed the search behaviour and use of information by indigenous university students at the University of Paraíba. They identified students from nine communities of the Potiguara Indigenous Lands reflecting their cultural and environmental identifications.

The studies discussed above investigate the information behaviour of indigenous peoples in various parts of the world, including India, Mexico, Taiwan, New Zealand, South Africa, Australia, Guatemala and Brazil. Each study addresses a specific aspect of information behaviour, such as information sources, information needs, the main obstacles, use of information technologies and indigenous knowledge. These studies reveal differences in cultural traditions, languages and the available resources, and the challenges faced by indigenous communities in each region. Overall, they broaden our understanding of the information behaviour of indigenous communities and reinforce the importance of culture, local contexts and specific needs when developing information services and public policies. On the basis of the above, it can be said that a multicultural library is one of the services that could be reformulated or created to meet the specific needs of indigenous peoples.

The multicultural library

As societies become increasingly multicultural, it is evident that there are diverse people around the world who represent this cultural diversity, especially indigenous peoples. These communities are characterized by a wide variety of languages, customs, traditions and world views, which reflect the richness and diversity of their identities and ways of life. Considering the fundamental role of archives, museums and libraries as cultural organizations throughout history, whose primary objective is to preserve cultural production and promote the continuity of different cultures (Araújo, 2014), the need for services that focus on multicultural communities arises. This is crucial, in order to enable the creation of spaces to host the diversity of vulnerable groups in society and develop library services in a multicultural spirit.

Multicultural libraries should encourage literacy and the dissemination of relevant information, as well as the fight against exclusion, and develop strategies to promote lifelong learning with inclusive education, reducing inequalities and promoting inclusion. Tello (2020: 62) states that ‘the multicultural library should seek to convert itself into an institution of support in the construction of fairer societies, basing itself on freedoms and equity of access to information and knowledge for all’. Civallero (2017) adds that multicultural library structures play an important role in preserving oral and historical traditions, supporting different languages and heritages, and promoting bilingual education. In this way, multicultural libraries become essential instruments in community cohesion, acting as a reconstructive power and supporting the structures that connect communities to their ancestral lineages, thus allowing future generations to know and understand their origins.

In order to meet the multicultural demands present in libraries, at the 1986 IFLA conference in Tokyo, the IFLA Round Table on Library Services to Ethnic and Linguistic Minorities formally became the IFLA Section on Library Services to Multicultural Populations. Its main objectives are

- To bring together libraries and institutions interested in the development and availability
of library services designed to meet the needs of cultural and linguistic minorities.

- To share its experience in library services to multicultural populations and to ensure that every member in our global society has access to a full range of library and information services. (IFLA, 2023)

In 2009, IFLA and UNESCO established a joint Multicultural Library Manifesto. This manifesto underscores the importance of libraries paying special attention to culturally diverse groups in their communities. These include indigenous peoples, immigrant communities, people of mixed cultural backgrounds, transnational and diaspora people, asylum-seekers, refugees, residents on temporary residence permits, migrant workers and national minorities (IFLA, 2009).

In order to fulfil the missions set out in the manifesto and respond to diverse multicultural realities, it is essential that libraries develop policies and strategic plans based on an analysis of user needs. To meet the requirements of the manifesto, it is necessary to develop a multicultural library model that is adequate and applicable, taking into account the information needs of different groups. In this context, the objective of the PhD research (still a work in progress) is to finalize the elaboration of a specific multicultural library model to meet the demands of the Terena ethnic group. Through this model, it is intended to ensure that the library acts as a multicultural space, providing services that are relevant and adequate for the needs of the Terena community.

Research methods

Although ethnography is considered a complex method, as it requires individual investment for a detailed study (Khoo et al., 2012), its use in the field of library and information science has experienced a significant increase. However, adapting approaches based on shorter data collection deadlines is usual when conducting ethnographic studies in the field of library and information science, taking into account restrictions imposed by budgets or the research team (Lanclos and Asher, 2016).

According to Rocha and Gandra (2018), the use of ethnography is an appropriate method for the purpose of seeking to understand users’ behaviour. An ethnographic approach goes beyond the mere presentation of data or sociodemographic profiles; instead, ethnography seeks to visually articulate data without the subjectivity of each theme. According to Creswell (2014), this approach is especially successful if one

wishes to describe how a cultural group works and explore the beliefs, language, behaviours and issues faced by a group, such as power, resistance and domination.

When using an ethnographic method, it is essential to establish contact with individuals who are part of the environment to be studied, as they are valuable information sources on the functioning of that specific context, and to find primary contacts in carrying out the study (Stake, 2011). In the case of the PhD project of which this study is a part, the researcher had the opportunity to get in touch with a Professor of Anthropology at the Federal University of Mato Grosso do Sul, who was involved in the ‘Saberes Indígenas na Escola’ (Indigenous Knowledge at School) project with the Bananal community. This connection with the professor was beneficial for contacting the head of the community and presenting the project to him for authorization.

Research setting

The location chosen for the research was the state of Mato Grosso do Sul, located in the Central-West region of Brazil. The research was carried out in the state of Mato Grosso do Sul, located in the Central-West region of Brazil. This state has the second highest proportion of Brazilian cities with indigenous people, indicating a significant population of indigenous peoples. There are 73,295 indigenous peoples who live exclusively in the state of Mato Grosso do Sul (Instituto Brasileiro, 2012).

The indigenous population of Mato Grosso do Sul includes the following ethnic groups: Atikum, Guarani Kaiówá, Guarani Ñandeva, Guató, Kadiwéu, Kinikinawa, Ofaié and Terena. The Guarani (Kaiówá and Ñandeva) and Terena have the largest populations, which is one of the main reasons why the Terena people were chosen for this study.

The location of the research is the Bananal community in the Taunay-Ipegue Indigenous Land, which is situated in the Aquidauana municipality 190 kilometres from Campo Grande, the capital city of the state (see Figure 1). It is estimated that approximately 2000 people live within the community. The choice of this community was based on Fialho’s (2010) research, which states that there is a large population density linked to the Terena language. Within this community, there are two schools that serve approximately 300 elementary school students and 200 high school students, with one reading room in one of the schools.
**Sampling and data collection instrument**

In order to carry out research involving indigenous peoples, some regulatory procedures must be followed. The National Indian Foundation (Fundação Nacional dos Povos Indígenas) is the body that is responsible for regulating access to indigenous lands. Obtaining authorization from the head of the community and submitting the PhD research project and documentation to the National Indian Foundation and the National Research Ethics Committee were some of the steps required. Due to the COVID-19 pandemic, there was a delay in obtaining authorization from the National Indian Foundation. However, following approval by the relevant authorities, Scientific Merit Advice Number 5,074,596 was issued on 3 November 2021. This allowed for visits, interviews and observations, ensuring that all activities were conducted in accordance with the applicable laws.

Considering the research objectives and the impossibility of investigating the entire community, 10% (11) of the students from Prof. Domingos V. Marcondes-MIHIN Indigenous Public School were interviewed. This school has a total of 111 students, according to data from the school office available in 2022, which has a total of 111 students, according to data from the school office available in 2022. Figure 2 is a photograph of the school and serves as a visual reference in this context. In addition to the students, 5 teachers, 1 elder and 1 head of community were included, totalling 18 research participants.

The sample size was based on Fachin’s (2006) research, who suggests the use of 10% of the population, although, in ethnographic research, it is not necessary to select a proportional and representative sample, and the sampling choice is usually based on the researcher’s criteria (Gil, 2021). In this case, this sampling approach was chosen due to limited financial resources for frequent trips to the community and the geographical distance involved.

Ethnographic research often requires the use of various research tools. In this study, semi-structured interviews were used, following the guidelines of the IFLA/UNESCO Multicultural Library Manifesto Toolkit (IFLA, 2018). These guidelines include a template entitled ‘Community analysis and needs assessment’, which allows one to identify the cultural traits and linguistic characteristics of users in order to gain greater clarity about the community and develop materials, programmes and services that serve the diverse populations identified. The ideas in the questionnaire used in the research conducted by Du and Haines (2017), which addressed topics related to information, information search and use, needs and information sources also served as a reference for the development of the interview guide.

The script used for the interviews consisted of a comprehensive set of carefully crafted questions,
which were addressed to the participants and divided into three distinct groups: teachers, students and community elders. These questions were designed with the purpose of responding to the objectives of the PhD thesis, which are related to the use of information in everyday life, information sources, access to technological resources, and the perception and use of libraries, as well as the preservation of Terena culture. This interview guide has been developed in order to obtain valuable and comprehensive information, allowing for a deep understanding of these issues within the context of the research.

**Procedures**

Interviews were scheduled with the head of community and the school coordinator in November 2021 and took place over three days. The coordinator was responsible for selecting the participants, taking into account those who felt more comfortable talking. This preference was considered due to the natural tendency of many students to be shy during interactions with unknown people. After presenting the project, the participants received a free and informed consent form to sign. With due authorization, the interviews lasted on average 20 to 30 minutes.

During this period, the second data-gathering technique was also implemented, which involved visual ethnography, guided by the principles of community-based participatory research, and visiting places in the community, such as the memory centre, the celebration centre, the health centre and the radio station. These face-to-face visits were complemented by virtual observations by using the Facebook profile of the community, as well as the radio station, and follow-up visits to the Bananal community and other communities of the Terena ethnic group in May 2022. The observations focused on facts that pointed to the way in which the members of this community were informed, the topics they addressed and the type of information resources they needed.

Following these steps, the interviews were transcribed and, for their interpretation, the content analysis technique proposed by Bardin (2011) was used in addition to successive readings of the interviews. Attending to the proposed objectives of the study and the literature on the subject of indigenous information behaviour and information behaviour in general, six categories were identified. These categories are aligned with the research objectives from the perspective of information behaviour, according to Table 1 with the categories chosen for the research. These categories are aligned with the research objectives and are presented in Table 1 with subcategories and short descriptions of each one.

**Findings**

In this section, we present the categories identified during the analysis of the collected data (Table 1),

![Exterior of Prof. Domingos V. Marcos-MIHIN Indigenous Public School.](image)
providing related discussions in order to understand the research problem and answer the questions raised.

**Information**

The ‘Information’ category aims to explore the participants’ understanding of the meaning of information in their specific context. During the preliminary interviews, some relevant perceptions were identified:

Information? It’s a source of knowledge that . . . ah, let me explain, it’s a source of oral knowledge, some kind of knowledge, something like that, I guess. (Participant 9)

It’s easier to find information with my grandmother or my mother because they have a lot of information. (Participant 10)

These excerpts highlight the perspective of information as a crucial way of acquiring knowledge. During the preliminary interviews, the value given to information from ancestors in the indigenous community was evident. The participants highlighted that ancestral knowledge was a crucial tool for dealing with everyday issues, recognizing ancestors as guides and guardians of the community. This perception underscores the importance of information as a vital link with cultural roots, emphasizing the appreciation of ancestral wisdom.

**Need for information**

The category ‘Need for information’ aims to identify the types of information the participants use in their daily lives and in the educational environment. Some of the responses identified that they sought to update themselves on a variety of topics, such as culture, politics and everyday life, as well as Terena ethnicity, land reparations, politics, school research, history, YouTube videos, music and television series:

Some things draw our attention, right? But not much, just this issue of demarcation, these things we monitor more, right? Now there’s no way not to talk about the price increase, you know? We see these things in the newspaper, right? (Participant 3)

I try to find out more, like, when the teacher asks us to research about school. (Participant 4)

These comments demonstrate the diversity of interests among the participants and the importance of being informed on a wide range of subjects. In addition, they demonstrate an active search for external information, identifying that they are engaged in understanding and defending their rights, especially in the territorial context. It also verifies that the school works as a catalyst for information seeking, promoting the search for answers.

**Information seeking**

In the category ‘Information seeking’, we have attempted to identify which sources and means the participants used to access information. It was found that most of the interviewees who used the Internet were teachers and they used it as a work tool to help

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<td>Traditional information sharing</td>
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plan their classes. On the other hand, some of the participants mentioned the difficulties of accessing the Internet due to the high cost for a residential connection:

I think that if they improve access to infrastructure in terms of the Internet, the information here would improve a lot – that the Internet here is very precarious, indeed. Taunay is the only place where Internet access is really good, but it's still expensive, you know? (Participant 9)

It got better a lot, you know! There wasn't before, right? Before it was . . . we learned things from others, or those who had time to watch the news watched it, right? But now it’s improved, these years. I think that after this pandemic, when it started, it seems that everything sped up, the process was faster to acquire, right? Studying at home and remote classes transformed the Internet into a working tool for students. (Participant 3)

These infrastructure-related complaints reflect a recurring problem pointed out by IFLA (2019). The lack of guaranteed access to relevant information affects people, resulting in fewer learning and communication opportunities. Improving the Internet infrastructure is critical to promoting equity of access to information for all and ensuring an enabling environment for knowledge acquisition. These comments also verify that information seeking has diversified with the Internet to complement interpersonal contacts or the viewing of traditional media for access to news. Thus, as mentioned by one of the interviewees, there is a perception that there has been an improvement in information-seeking options, especially in recent years, and also an acceleration motivated by Internet access, particularly after the COVID-19 pandemic.

Library

The ‘Library’ category aims to identify the usefulness and importance of the library to the community. However, in the reports, it was evident that most of the respondents preferred to use the Internet due to the scarcity of specific books that addressed their culture. They mentioned that the material available in the library came from the Federal Government of Brazil and was only available in Portuguese (see Figure 3).

It’s complicated to find what you are looking up in a book. If you got it, you are in luck. (Participant 9)

There is no material. Unfortunately, we get everything, I mean, not everything, but almost everything over the Internet, right? (Participant 3)

The interviews highlighted the need to improve the library’s collection, which would be fundamental to providing a more comprehensive and enriching education for students. By offering a wide selection of books that cover a variety of topics and cultures, the library has the potential to encourage students to explore new perspectives and cultivate a deeper interest in reading and learning. An example of an initiative that aims to overcome some of the difficulties mentioned is the ‘Saberes Indígenas na Escola’ (Indigenous Knowledge at School) project. This project is a partnership between the Ministry of Education, some universities in Mato Grosso do Sul and indigenous teachers. One of the main actions of this project is the continuous training of indigenous teachers, as well as the production and printing of textbooks in their mother tongues, taking into account the specificities of community organization and the importance of literacy in the mother tongue.

Taking linguistic diversity into account, including resources in the Terena language and not just Portuguese, is a way of disseminating, preserving and helping to keep a native language alive. As a consequence, the inclusion of materials in the Terena language would help to preserve and transmit the world view of indigenous peoples – to the extent that language is a way of categorizing and fixing a certain view of the world (Hill and Mannheim, 1992).

Technological mediation in accessing information resources

The category of ‘Technological mediation in accessing information resources’ aims to identify whether these resources are being used in information seeking. When considering access to information devices, it was observed that most of the survey participants had access to some electronic resources. However, it is important to emphasize that not all residents of the indigenous community had the ability to carry out their activities through these means:

At work, nowadays, we use a lot of information via the Internet. At home, with family, for example my parents are illiterate, so information comes more from the television, right? They watch the television, they also listen to the radio. (Participant 2)

Access to all technological means does not cover all of the people in the community, whether due to personal choice, lack of available resources or geographical distance. These challenges limit the promotion of access to information through the Internet. As an alternative, many people look for other ways of obtaining information, such as the radio, television or books. During the COVID-19 pandemic, a solution was offered by the ‘[Connected villages]’ project, which was developed by the Federal University of
Mato Grosso do Sul in partnership with the Ministry of Education. This project installed three broadcasting towers for Internet transmission via radio (Universidade Federal, 2021).

Traditional information sharing
The category of ‘Traditional information sharing’ aims to identify the sharing and preservation of memory. For indigenous peoples, information is traditionally transmitted orally, with elders being responsible for passing on their stories. However, it is important to analyse how this practice is currently being carried out and if it has been modified with the advent of existing technologies. As Participant 3 observed: ‘Here, in our community, our radio, right? There is a radio here, so we listen to it and stay on top of things that happen, right?’

The interviews identified that, over time, the practice of sharing information exclusively orally had decreased, but that it had been improved with the use of the community radio as a means of communication between the head of the community and the indigenous residents. The Bananal community has a radio station (Figure 4), which allows the dissemination of information orally to people who do not have access to other technological means. In this way, the radio is incorporated into community practices to share information, preserving the oral essence of its indigenous culture. This is due to the technological challenges faced by the community and the limited
familiarity and lack of technological resources of some of its members.

Acculturation has had a significant impact on modifying some of the traditions of indigenous peoples. However, it is important to note that they still strive to preserve their cultures and keep the practice of sharing their stories alive. The participants’ interviews emphasized the diversity of their interests, the active search for external information and the challenges faced, such as limited access to the Internet and the scarcity of specific materials in the library. In addition, the importance of preserving indigenous traditions was highlighted, such as the oral sharing of stories and the use of community radio as a means of communication. These reflections contribute to a deeper understanding of the role of information in the indigenous community and highlight the need to promote equity of access to information, valuing traditions and stimulating educational and cultural development.

**Discussion**

Several of the categories analysed in this research have been previously addressed in different contexts, covering several ethnicities, languages, places and social conditions. While every situation is unique, by comparing our findings with previous research, we have been able to identify some significant similarities.

This research highlights the main types of information sought by the participants related to their interest in historical events in the community and school topics. These findings are similar to those of Ramírez Velásquez’s (2006) study, who found young people from an indigenous community in Mexico very curious about studying historical events, as well as Valdez Angeles’s (2010) research, who demonstrated the interest of indigenous migrant students from Mexico in school issues. However, they differ from Du and Haines’ (2017) study, in which participants from a community in Australia demonstrated a desire to obtain information on weather forecasts mainly because most of them were foresters who needed to know the weather conditions to better prepare for their work.

The Internet was widely recognized as a primary source of information to meet the daily needs of the interviewed teachers, corroborating Du and Haines’ (2017) study conducted in an indigenous community in Australia. However, Internet access at the Bananal community school is restricted to employees only, which is in line with Lilley’s (2008) research. In his research, it was found that access to the Internet by students at a school in an indigenous community in New Zealand was limited due to strict filtering by the school, which blocked access to suspicious websites.

![Figure 4. Bananal community’s radio station, Cacique FM.](image-url)
The use of the Internet outside the school environment in the Bananal community was reported by the interviewees as a challenge due to the high costs, which reinforces a common problem faced by indigenous communities. This is supported by a study carried out by Alfaro Rincón (2014) in an indigenous community in Mexico, in which more than half of the interviewees also faced difficulties in accessing the Internet.

The lack of use of the library by students at the Bananal community school is mainly due to the scarcity of materials. The library’s collection consists mainly of textbooks provided by the federal government, which limits reading and research options. This scenario is similar to that found in Lilley’s (2008) research, where only a minority used the library due to the lack of adequate resources and limited availability when they needed to use it. Similar findings were observed in a study conducted by Hunt and Shoaps (2018) in Guatemala, in which virtually no adults used a library.

Indigenous peoples have power structures established by elders and leaders within their communities, where they coordinate the population and are responsible for transmitting knowledge. In the Bananal community, the head of the community is responsible for the community radio, playing a crucial role as a source of information. A similar situation is evidenced in a study conducted by Chakrabarti (2001) in an indigenous community in India, where orality emerged as the main and fundamental source of information. However, it is important to note that studies carried out by other researchers, such as Hunt and Shoaps (2018), show that most people use television as their main means of obtaining information.

The preliminary findings highlight that information behaviour is influenced by cultural context, pointing to the importance of a library model that is able to meet the multiculturalism of a given location. It is crucial to preserve the culture of a people, but it is also essential to provide them with relevant information that can help them, considering that social changes have a significant impact on their lives. In this sense, it is necessary to find a balance between maintaining the culture and including the people, guaranteeing access to the information needed for their development and welfare.

Conclusion

The preliminary findings of this PhD research have sought to analyse the information behaviour of the Terena indigenous people of the Bananal community, with the aim of recognizing the importance of cultural diversity and indigenous knowledge, and highlighting the need to implement a multicultural library model that meets the community’s needs. The proposal is to implement such a library model. This model will seek to create an inclusive and welcoming environment, in which resources and activities meet the specific demands and interests of the indigenous people identified in the present study.

During the analysis, difficulties in accessing information were identified, including the lack of equitable access and information materials that address the Terena language. By improving access to information in the Bananal community, we will contribute to the objectives of the United Nations 2030 Agenda, which aim to guarantee the right to freedom and equity of access to information and knowledge for all.

The results of this phase of the research show that the multicultural library should be beyond traditional physical books, also covering digital resources, media files, interactive programmes and cultural events. It is essential that it is a dynamic space and that it promotes the appreciation and preservation of indigenous culture, providing access to a wide range of information related to both academic matters and the rich cultural heritage of the indigenous peoples of the region. To achieve this objective, it is important to design and implement activities that actively involve members of the indigenous community, creating a space for horizontal meeting and sharing. Community members should be not only library users, but also active participants in developing the services and activities offered, transforming the library into a participatory space. By offering a diverse collection that represents indigenous culture, knowledge and traditions, the multicultural library will become a meeting and learning place, strengthening the cultural identity of the community. In addition, it is essential to allow the active participation of the community, encouraging the creation and exchange of local knowledge.

The establishment of such a multicultural library in the Bananal community is essential to guarantee access to relevant information and promote inclusive and culturally sensitive education. This library model will contribute to strengthening indigenous identity, valuing traditional knowledge and promoting the self-esteem of community members. This is an important step towards building a fairer and more respectful society that recognizes and values cultural diversity and indigenous knowledge.

It is important to emphasize that, although this study has contributed to the understanding of the information behaviour of the Terena people from the Bananal community, research on this topic in the field of information science is still scarce in Brazil when compared to.
Mexico, a country that stands out for the largest number of publications on the subject. Therefore, it is essential to promote interdisciplinary studies in Brazil that address the information behaviour of indigenous communities, taking into account their cultural characteristics, languages and specific ways of life, with the aim of identifying their needs as well as facilitating broader and more relevant access to information in a significant way, promoting respect for their rights in the context of Brazilian society and supporting the preservation and dissemination of their culture.

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On making libraries and museums more accessible for autistic people

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Abstract
This article explores how libraries and museums can become more accessible, and in turn also more inclusive, for autistic users. Through a small survey, a literature review and a short case study, it evaluates what steps to take in order to make these places more accessible for this part of the population. The survey had 126 participants, where 12 were diagnosed as autistic and 28 self-diagnosed as autistic. The survey shows that over half of the participants struggled with sensory overload, social interactions and anxiety in these places. A list of ideas on how to make these spaces more suitable for autistic people is offered in the conclusion, including different types of sensory-friendly and social provisions.

Keywords
Autism, neurodivergent, disability, libraries, accessibility

Introduction
Librarians serve the community through access, knowledge, a safe environment, and motivation. (Lankes, 2011: 154)

Access means not only physical access, but conceptual, intellectual and multi-sensory access as well. (McGinnis, 2004: 281)

The aim of this article is to explore aspects of inclusivity and accessibility for neurodivergent people in institutions promoting culture and information, with a primary focus on libraries and, to a lesser degree, museums. It takes into account some of the difficulties this group can face in institutions such as these, and how to promote inclusive and safe public spheres that can help limit potentially negative input for this group, in this case focusing on sensory sensitivities but also including other aspects that can play a role in the lives of neurodiverse people.

Especially in recent years, there has been consensus that if neurodivergent people lived in a society that fostered inclusivity and understanding, their lives would be enhanced and several stressors would be reduced (Bennie, 2022). However, the society we live in today can be loud, fast-paced, chaotic and bright. Little research has been done regarding autism and libraries to date (Berget and MacFarlane, 2020: 596), although this theme has been explored more over the past decade than before. Although it is not possible to determine exactly how many articles have been written, a quick search of autism AND librar* refined to the field of library and information science, on the Web of Science results in 32 articles from 2013 to 2023 versus no articles originating before 2013. Nearly 44% of the articles found through the search stem from 2020–2023, showing a clear increase in interest around the topic.

This article will have libraries as its main focus, although museums will be referenced to gather information from a similar, yet different, field that may be relevant in bridging gaps of knowledge and further pushing towards better accessibility to culture and information for all. The article will also primarily focus on accessibility for people with autism, but many of the ideas discussed are also related to other types of neurodiversity, as many of the different diagnoses have similar or overlapping symptoms and these individuals may face similar difficulties in navigating the public sphere.

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To explore these aspects of the libraries, archives and museums (ALM) sphere, the main question that will be asked in this article is: How can libraries and museums make their physical spaces more inclusive and accessible for the autistic population? In order to attempt to answer this research question, a small survey, a short case study and a literature review will be presented. These will attempt to shed light on not only the common barriers autistic people might face in institutions promoting information and culture, but also what solutions might be relevant to remove or reduce these barriers.

The first part of the article outlines the theoretical framework, including a few key terms relating to autism and access to information and culture, and also introduces some concepts from the previous literature. The second section focuses on the methodology and explains the processes of the data collection, survey and case study. The results from the data collection are then presented and discussed. The article ends with a conclusion, which includes ideas for how to make libraries and museums more accessible for autistic users, drawing on the previous literature and findings from the data.

Theoretical framework
As stated, there has been little research in the ALM field regarding accommodating neurodivergent people, but an increasing number of articles have been published on the topic over the past decade. Shea and Derry (2019: 326–327) also point out that most of the research previously done in the area is based on ‘the experience of parents, faculty, and administrators and not the ASD [autism spectrum disorder] students themselves’. In this section, the ideas and findings from a few articles relevant to the theme of this article, as well as an explanation of terms, theories and ideas, will be discussed.

The autism spectrum
To begin, an explanation of the autism spectrum and terms often related to autism will be presented. In this article, autism spectrum disorder (hereafter, ASD or the spectrum) includes the debated term Asperger’s syndrome, but use of this term is avoided as it is slowly being phased out of everyday use, having been removed from the autism diagnostic criteria of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (Harvard Health Publishing, n.d.). As explained by the UK’s National Health Service, autistic people may

- find it hard to communicate and interact with other people
- find it hard to understand how other people think or feel
- find things like bright lights or loud noises overwhelming, stressful or uncomfortable
- get anxious or upset about unfamiliar situations and social events
- take longer to understand information
- do or think the same things over and over

(National Health Service, 2019)

These difficulties can be a big hinderance when it comes to ALM institutions and interacting with the social sphere. Not only can it be difficult to navigate a space that can easily be overwhelming, but anxiousness about unfamiliarity and social interaction may also stop autistic people from interacting with the library or museum sphere altogether, especially if these spaces have been previously experienced negatively.

Sensory sensitivities are often accompanying factors of ASD. Sensory processing disorder, which is the official term, is ‘characterized by oversensitivity or undersensitivity to sensory stimuli, motor control problems, unusually high or low activity levels, and emotional instability’ (The American Heritage Medical Dictionary, n.d.). Many of the issues that arise when navigating the ALM sphere are connected to sensory processing sensitivities and/or difficulties in communication and interaction. As stated by Anderson (2021: 104), students in a library may, for instance, be overstimulated by ‘flickering lights, movement in a lecture hall, or the sound of typing on a keyboard’.

Because there are many highly debated terms used when talking about autistic people, some of which can be harmful to the group, I will here highlight some terms that will and will not be used in this article, and the reasons why. Using the correct words when speaking of marginalized groups can be vital for creating an inclusive, safe space, showing the group that one has actually taken into consideration their views of themselves. Person-first versus identity-first language has been highly debated, but it is clear that most autistic people prefer identity-first language since autism is understood as a fundamental part of the individual, being there from birth and being the foundation on which the person’s identity is built (Autistic Self Advocacy Network, n.d.). The idea here is that since autism is something you are born with and live with all your life, you are inherently autistic, in comparison to, for instance, most cases of anxiety and depression, where the illness may come and go, and thus may not always be a part of the individual.
The second issue regards functioning labels. It is evident that although often used, functioning labels are harmful when referring to autistic people for a multitude of reasons. One autistic advocate states:

This reduction of autistics to one label or the other fails to take our differing abilities into consideration. It does not recognise that our state of being is subject to fluctuation; there will be days or week[s] where we are on top of the world – other times we hit rock bottom. (Burns, 2019)

Another comments:

When you call an individual high-functioning, it can be used in a way to diminish their struggles, or suggest we don’t have it as hard as typically considered ‘low-functioning’ autistics. But that’s not true. Everyone’s ability changes depending on the situation, their mood, the amount of sleep they’ve had, etc. . . . [Furthermore] [t]he low-functioning label dismisses what those individuals are good at. It takes away some of their humanity, and it can make people less willing to help them achieve more because they automatically think they wouldn’t have the ability. (Flynn, 2018)

These acknowledgements focus on how functioning labels are primarily based on what everyone around the autistic person sees and experiences, and how they help to put a highly fluctuating condition into boxes. Instead of using functioning labels, I will focus on autistic people in general, not putting limits within the research on their need for support.

Accessibility and universal design

A central part of inclusive practices in the ALM sphere is universal design and universal design for learning. Although it may not be possible to use every principle, and although large changes may be impossible, universal design and the accessibility of various forms are key elements of making information and culture more accessible for autistic users.

Universal design is described as

the design and composition of an environment so that it can be accessed, understood and used to the greatest extent possible by all people regardless of their age, size, ability or disability . . . . If an environment is accessible, usable, convenient and a pleasure to use, everyone benefits. (Centre for Excellence in Universal Design, n.d.b)

The principles of universal design that may be more relevant in this situation include

[to provide] the same means of use for all users: identical whenever possible; equivalent when not . . . , provide choice in methods of use . . . , provide adaptability to the user’s pace . . . , accommodate a wide range of literacy and language skills . . . , use different modes (pictorial, verbal, tactile) for redundant presentation of essential information . . . , provide a clear line of sight to important elements for any seated or standing user . . . , etc. (Centre for Excellence in Universal Design, n.d.a)

Universal design for learning ‘is a three-part framework that recommends instructors vary how they engage and motivate students, present information, and allow students to demonstrate what they have learned’ (Saunders and Wong, 2020: 104). While universal design for learning is often used for instruction in a school or university setting, it can also be applied to libraries and museums when it comes to the dissemination of information and culture. Applying universal design for learning can be a good way to accommodate neurodiversity and may take away stressors caused by anxiety and social interaction differences. Shea and Derry (2019: 328–329) point out that addressing potential barriers should include the use of both universal design and universal design for learning in order to ‘help librarians create more inclusive learning environments that accommodate student learning differences’.

Stereotype threat

Stereotype threat is mentioned in the mini-survey and will be briefly explained here. Stereotype threat is described as the ‘fear of being seen as reinforcing a negative stereotype’ and often affects minority groups that have been stereotyped over the years through racism, ableism and so on, particularly in the media (Katopol, 2005: 237). Katopol (2005: 237) points out that ‘[r]esearch is needed on how stereotype threat and library anxiety may affect the information behavior of other minorities’, and it may be that as people who are often perceived based on stereotypes formed by the media and medical professionals, and with underlying anxiety and knowledge about their differences, the neurodivergent group might have an enforced sense of library anxiety and stereotype threat. Although there is not the space to explore this further in this article, it could be an area for future study.

Access to information

In her article ‘From mutual awareness to collaboration: Academic libraries and autism support programs’, Anderson states:
Academic libraries can be a welcoming environment for college students in general, and some studies are beginning to show that this is particularly true for autistic students, who use the library to pursue special interests, as an escape from a bustling sensory environment on campus, and, of course, for studying and pursuing academic success. (Anderson, 2021: 103)

This shows not only that the library is a good source of information for autistic users, but also that the information sourced may link directly to their autism through finding ways to meet their special interests.

In an article on how academic librarians can provide ‘services to students with autism spectrum disorder’, Cho states that libraries and librarians should prepare as ‘more and more students with ASD enter post-secondary educational institutions’ (Cho, 2018: 325, 326). Anderson (2018: 646) explains how, as ASD diagnoses increase, so does the number of diagnosed ASD students, and that despite their barriers, they also ‘display many strengths in the higher education environment’. Anderson and Layden (2023: 2) also point out how librarians can help those working with autistic students by ‘providing accommodations and supports’ for students on the spectrum.

Although the library can be a good source of information for autistic users, for many people living with different disabilities, this access may be lacking. Several laws and treatises relate to this problem, such as the Convention on the Rights of Persons with Disabilities (Department of Economic and Social Affairs, 2006b) and the Norwegian act relating to equality and the prohibition of discrimination (the Equality and Anti-Discrimination Act, 2018). In relation to access to information, the Convention on the Rights of Persons with Disabilities states that appropriate measures should be taken in order to ensure that persons with disabilities can exercise the right to freedom of expression and opinion, including the freedom to seek, receive and impart information and ideas on an equal basis with others and through all forms of communication of their choice. (Department of Economic and Social Affairs, 2006a: Article 21)

Similarly, the Equality and Anti-Discrimination Act states under the section on the universal design of information and communications technology:

Public undertakings and private undertakings have a duty to ensure that main solutions for information and communications technology (ICT) focused on or made available to users have a universal design, such that the general functions of the undertaking can be used by as many people as possible, regardless of disability. (Equality and Anti-Discrimination Act, 2018: Section 18)

**Barriers to access**

Roberson et al. (2022: 3) discuss how disabled users report a fear of being misunderstood and that their needs will be deemed dramatic and unfair, as well as how the more ‘invisible’ disabilities tend to receive less support than the ‘visible’ ones. Although the library has a duty to be accessible to all, as, for instance, seen through the Convention on the Rights of Persons with Disabilities (Department of Economic and Social Affairs, 2006a), barriers to access may be experienced by autistic users. Anderson (2021: 104) suggests that some of the barriers that autistic students might encounter include ‘those associated with executive functioning skills, navigating social situations, and self-determination or so-called “life skills”’, as well as sensory sensitivities that can lead to sensory overload and, in turn, cause ‘anxiety, stress, and fatigue’. Cho (2018: 327) states that such barriers can involve ‘central coherence, rigid and literal thinking and sensory confusion’.

Although there are many obvious barriers and perhaps more hidden ones that are barely mentioned in the research, there are also solutions that can help this group have a more comfortable experience in these institutions.

**Creating access and inclusivity**

In her Master’s dissertation regarding museum programmes for children with autism, Freed-Brown (2010) discusses how museums can, through specified programmes, ‘alleviate concerns of the autism community by welcoming them and providing for them a safe place to learn and play’ (1). She explains that ‘[w]hile museums have made terrific strides in accommodating those with physical disabilities, developmental disabilities can be overlooked’ (2). She suggests that in order to make their spaces more inclusive for autistic people, museums should aim to set realistic goals in planning museum programmes, consulting with experts, keeping groups small, creating routines, scheduling the programmes for quiet hours and planning a variety of sensory activities, for example (41–44). She concludes that even the simplest changes, such as providing sensory activities or quiet hours, are wonderful for making the museum experience better for children on the spectrum (48). Freed-Brown also points out that ‘autism appears different in each person because it is a spectrum disorder,'
ranging from mild to severe’ (8). Although it is true that autism is a spectrum disorder (Harvard Health Publishing, n.d.), that it ranges ‘from mild to severe’ has been debated to the same degree as the aforementioned use of ‘high-functioning’ and ‘low-functioning’ to explain someone’s autism. As explained by Green (2020) in her article on the matter: ‘most people on the autism spectrum are often “high-functioning” in one area…but need more support in another…. In addition, functionality often changes over the course of the lifespan of an autistic person’. Furthermore, as Heyworth notes:

Our function at any given day, on any given week, or month, or year, fluctuates depending on the many variables and contextual elements of our lives…. We are not one isolated element; we are the sum of our parts, the whole made up of the immeasurable number of lines that would be necessary to comprise the entirety of human experience. (Heyworth, 2021)

This means that the functioning level of an autistic person fluctuates depending on their sociocultural experiences, levels of fatigue or stress, and what is happening around them and to them in their everyday life.

Relating to libraries, Anderson (2021: 104) also writes that the support needs of autistic students may differ from those of students with disabilities, and points out that ‘a growing practice on some college campuses is to institute a program for students [on the spectrum]’ that is tailored to meet these needs. In order to aid people with autism when coming into contact with libraries and museums, several suggestions have been made, including, in relation specifically to museums, ‘the use of special equipment and tools, separate tours, sensory-based art activities, and providing special hours just for families of children with ASDs’ (Freed-Brown, 2010: 26).

With regard to libraries, the suggestions include fostering collaboration with autism support programmes (Anderson, 2021: 113); having different lighting options to avoid sensory aversion to fluorescent lights; being able to guarantee the same study space each time an autistic user visits in order to help maintain predictability and routine; study space availability maps (Roberson et al., 2022: 6); quiet spaces to study or read; spaces with modifications such as ‘non-fluorescent lighting, improved signage, and incorporating principles of Universal Design wherever possible’; tutors, such as creating a space where students with ASD can ‘tutor other students in their area of expertise’; chat references ‘as an alternative to traditional reference desk-based assistance’ in order to help avoid face-to-face interactions; personal librarians; and campus outreach (Shea and Derry, 2019: 330).

Institutions that have handouts, as well as obvious signage and online information alerting their users about where there are quiet spaces, can help their users prepare for their visit in advance (Anderson, 2018: 654). Having a clear overview of the rules within the institution can help ASD users better understand how to use the space (Anderson, 2018: 654–655). In addition, it could be possible for libraries to create groups organized, for instance, by special interest in order to foster inclusivity and create a space where ASD users can socialize in a safe environment and pursue their special interests at the same time (Anderson, 2018: 655). Cho (2018: 337) mentions that, in an academic library setting, librarians ‘can learn to educate themselves about their students and learn how students with ASD best learn’. Asking questions around what ASD is and figuring out which students display symptoms and how to reach out to those students is a step in helping autistic students to succeed academically, as well as working out how to tailor instruction to individual students and the strategies and techniques to help them learn most effectively (Cho, 2018: 337). Spending more time sharing information about autism and the knowledge gained in the process can help librarians acquire a better understanding and learn how to support autistic library users (Anderson and Layden, 2023: 9), in turn creating a better library experience for the autistic user and librarians themselves (Anderson, 2018: 655).

Methodology

An anonymous questionnaire and a small case study were chosen in an attempt to better understand the barriers autistic users might face in libraries and museums, as well as look at how institutions have endeavoured to accommodate this user group in the past. The data collected here, as well as the literature review, will be used to conclude with some points that may be useful in promoting an inclusive sphere with easier access to information for autistic users.

Data collection

The data was collected through a short case study and an anonymous open questionnaire containing questions based on findings from previous research. The questionnaire was open for a month and a half during the autumn of 2021 and there were 126 respondents. Of these, 12 were diagnosed autistic, 28 were self-diagnosed/suspected autistic and 34 were unsure. In addition, 55 participants did not consider themselves
to be on the autism spectrum. The participants were sourced on various social media platforms. A post was made linking to the questionnaire and asking neurodivergent people to complete it if they wanted to. The questionnaire was also open to anyone who wanted to complete it to see if people who were not on the spectrum, or even not neurodivergent, could benefit from the same accessibility practices as neurodivergent people might benefit from. The questionnaire was completely anonymous and was open to anyone who might see it, regardless of their socio-economic background, age or country of origin.

The questionnaire asked what the participants’ main struggles were with being in libraries and/or museums. A list of possible barriers was provided where the participants could choose the options that applied to them. This list was based on previous literature and observations made on museum and library visits before conducting the study, where the researcher made notes of potential barriers that could be found in the physical spaces based on knowledge gathered about both autism as a disability in itself and its potential comorbid disabilities. In addition, there was an optional question, asking if the participants had ever had their needs met in a library or museum. Of the 126 participants, only 22 answered this question. The findings presented below focus only on the results of the diagnosed and self-diagnosed autistics, although it might be relevant to create a study comparing the barriers and needs of both autistic and non-autistic people in the future in order to see if there are things that could be of benefit for all.

In addition to the questionnaire, a small case study was conducted where some libraries and museums were selected in order to determine what is already being done in terms of making collections accessible for autistic people. Only a small number of cases were chosen for the study in order to keep within the time frame for writing this article. They were selected based on a results list on Google regarding which library and museum websites had anything written about what they were doing for autistic people in particular. The case study looked at the actions taken by institutions that were meant to foster inclusivity and accessibility to culture and information. Because of the time frame for the study, only the institutions’ own written words were looked at. In a future study, it might be interesting to look at how their information pages relate to their actual actions to figure out what their actions represent in practical terms; this would also be an opportunity to ask questions and have a discussion that might open up to both inspiration and solutions.

Findings
The survey
Figure 1 shows the survey results for the diagnosed and undiagnosed autistic participants, as well as their results combined.
Of the different potential barriers, the five that stand out are social interaction; anxiety; sensory overload; not enough seating places; and not having anywhere to hide. Next to these, less than half of the participants selected barriers such as not having safe spaces for meltdowns or shutdowns; uncertainty or confusion; not knowing how or where to ask for help; difficulties navigating the physical space; and a feeling of misplacement or of not being accepted. Very few chose reading and/or learning difficulties; fear of being stereotyped; being understimulated; difficulties reading information posters; or none of the above.

In addition to the results displayed in Figure 1, the question regarding whether or not the participants had had their needs met in a library or museum showed that, out of the 22 replies, 8 stated that they had not and 6 said that they had. The other participants’ answers were more focused on which needs had or had not been met, and their overall experience. One participant mentioned that the seats in their university library were often taken and that most of the seating options were meant for groups, which triggered their social anxiety. Another mentioned how the text descriptions in museum exhibitions helped to ground their anxiety when there was a garden or pleasant spaces nearby where they could talk a walk and a break from the social and sensory input. This can be connected back to the need to have somewhere to be alone for a while, be it a separate space next to the facility or a room or similar within the facility. The other respondents mentioned that their anxiety could make it difficult for them to ask for help, but when they did, they usually had a good experience because the librarians they encountered were good at giving them both space and the right help. One stated specifically: ‘I do not feel like my needs are unmet. As long as there are other people around, I am slightly uncomfortable’. Another participant commented:

As someone who has felt a lot of anxiety prior, it’s nice that librarians are good at giving space and letting me explore rather than someone working at a shop who aims for a social interaction the moment you enter the door.

This part of the survey shows that the library or museum in itself might not be the core issue with regard to barriers, but rather the experiences and outward stimuli that can be found in these places. It could then, be useful for libraries and museums to have maps and information posts regarding where to find a quiet space or somewhere to decompress, and also which hours are less busy if the person visiting has needs relating to crowds and sensory stimuli.

The case study

Steps to make library or museum spaces more inclusive and accessible for autistic people have already been taken. This small case study briefly describes the steps taken by some museums and libraries based on articles and institution web pages regarding access for autistic users. As mentioned, it would be relevant to look into what this means in practice, as it is difficult to know whether these programmes and changes have actually been beneficial for autistic individuals. However, looking into what institutions have done previously can help other institutions find inspiration and motivation to take actions towards better inclusive and accessible practices.

The Smithsonian. In 2018, the Smithsonian Magazine published an article on its website regarding the work of The Smithsonian towards making the museum as accessible and safe as possible for autistic people. The article’s primary focus is Freed-Brown’s work on making museum spaces that are tailored so as not to overload the senses of autistic children. It states:

Providing special hours is a common and effective method for cutting out lots of stimuli, as a crowd itself induces stress, along with all the unexpected noises it brings with it. Museums can also dim lights, lower volumes and be cognizant of other possible distractions. (Shrikant, 2018)

As one of the first to develop this kind of accommodating programming, the museum started its ‘Morning at the Museum’ programme in 2011, which ‘offers early entry and sensory-friendly activities to those on the spectrum of any age’ (Shrikant, 2018). Not only have these changes offered a calmer visit, but a permanent schedule also brings with it routine, which helps autistics deal with challenges and transitions (Shrikant, 2018).

The Smithsonian’s web page ‘Accessibility for visitors: Making all visitors feel welcome’ gives an overview of some of its accessibility features, including pre-visit videos ‘designed to help prepare for situations one may encounter at the Smithsonian museums. [They] address what to expect, museum rules and routines, safety information, and more’ (The Smithsonian, n.d.). These videos are a good aid in lessening
the impact of unexpected occurrences for autistic people in the museum.

**The University of Warwick Library.** The University of Warwick Library has various sensory study rooms with different options. Some have alternative lighting, such as bubble tubes, LED (light-emitting diode) strip lighting or galaxy star projectors. Some rooms have a yoga mat, while another room has additional seating options like rocking chairs, wobble cushions and soft seating. Many of the rooms come with computers that have accessible applications, such as Audio Notetaker, Essay Writer, Mindjet MindManager and Read&Write Gold. Its web page also has a video on how to use the library and book accessible study rooms (University of Warwick Library, n.d.). The University of Warwick itself provides an extensive overview of its support systems and resources for students (Wellbeing Support Services, 2021).

**The British Museum.** From a review of its detailed accessibility web page, it is clear that the British Museum has taken several groups into consideration. It contains, among other things, information about quieter times, which indicates what time of the day is usually the calmest as well as the busiest periods being at weekends; quieter areas, which indicates which rooms tend to be calmer and which tend to be more crowded and noisy; and what the lighting and temperature are like in the different rooms of the museum (The British Museum, n.d.a). It also has a link to a sensory map that can help visitors identify sensory-friendly areas in the museum. This map has a more detailed overview of what is described in the accessibility web page regarding lighting, noise, temperatures and so on (The British Museum, 2019).

The museum usually also has themed backpacks available, which are ‘designed to engage families with the galleries [and] include an activity booklet which will guide you around the museum giving you information about the collection and activities you can complete along the route’ (The British Museum, n.d.c). Each backpack has a theme, with items that help visitors engage with the exhibits in a different way. In addition, the museum has a sensory-support backpack for children aged 3–11, which contains ‘resources and ideas to support young visitors with additional sensory needs in [the] busy Museum environment’ (The British Museum, n.d.b). All of the backpacks are free but require a £10 deposit. Creating sensory backpacks and sensory-support backpacks is an excellent way to make the museum experience better for children. However, the option to borrow sunglasses or stim toys for teens and adults should also be considered, especially since many might be forgetful or not have anticipated the sensory overload in the museum during the day.

**Multnomah County Library.** Multnomah County Library (n.d) has specific ‘kits to assist with sensory processing differences ... to help with background noises and other distractions, and to help calm’. Even though these are focused on children, having such kits available for everyone would be a good way to make the library more accessible for autistic individuals while still maintaining the library a social public sphere for those who might not need these assisting tools. The library also has a special hour for autistic people, where ‘[n]atural and limited lighting and limited patron access will help support a sensory friendly environment’ (Multnomah County Library, n.d.).

**Pickerington Public Library.** In an article in the *Columbus Dispatch*, Ellis (2021) writes about how ‘Pickerington Public Library makes programs more accessible for sensory-sensitive patrons’. The article goes into depth about how the library has been given sensory bags containing ‘noise-canceling headphones, fidget tools, verbal cue cards and weighted lap pads’ in order to help all patrons visiting the library deal with sensory overload (Ellis, 2021). In addition to sensory-friendly initiatives, the library staff members completed a sensory-inclusion course through KultureCity. KultureCity (n.d.) is a ‘nonprofit on sensory accessibility and acceptance for those with invisible disabilities’. The organization has several programmes on sensory inclusivity and information on sensory processing difficulties that can be a source for learning for ALM institutions.

**Accommodating alterations and practices**

The data and information sourced from the literature review, survey and case study shed light on which barriers are most often experienced by autistic users in libraries and museums. Although many barriers have been revealed, it is worth mentioning that there may still be those that have been left unexplored, and it may be relevant for an institution to be able to change and add to its accommodations as the results of research are updated.

Autistic people usually encounter many barriers in their daily life, and some of these barriers may also be seen in their interactions with libraries and museums. The barriers mentioned were, among others, sensory sensitivities that can, for instance, be experienced through flickering or bright lights and different kinds of sounds; executive functioning skills; social
navigation and interaction; anxiety; communication; and lack of awareness. The survey revealed that some of the most difficult areas in relation to libraries and museums were social interaction, anxiety, sensory overload, not having enough seating places, and not having anywhere to hide. In addition, some of the participants had experienced a lack of safe areas to be alone during shutdowns or meltdowns, as well as difficulties navigating the physical space. Although autism is a spectrum disorder, and thus each individual is different, many autistics have similar traits and experience similar barriers, and being able to remove or ease some of these barriers may be of considerable help when it comes to navigating libraries and museums.

From the case study, a number of practical solutions came to light: special hours with dimmed lighting, lower volumes and limited patron access; sensory maps and information sources that show statistically when there are fewer people in the institution, as well as give an overview of the sound, lighting and temperature; sensory support kits or bags with resources like fidget toys, noise-cancelling headphones and weighted lap pads; sensory-inclusion courses to help staff understand how to act in situations where an autistic user may need help; updated accessibility web pages; and sensory study rooms that have different options for lighting, seating and sound. From the literature review, further suggested solutions include collaboration with autism support programmes; different lighting options in general; a guarantee that an autistic person has the same study space each time they visit; study space maps; quiet spaces; chat references to avoid face-to-face interaction; personal librarians; handouts and obvious online signage to inform users about quiet areas; a clear overview of the rules; organizing special interest groups; and better education for staff.

Implications for future research

This study was limited with regard to both time and length, and only touches on some areas related to autism and accessibility in libraries and museums. It would be useful for future research to identify what more can be done to accommodate autistic users – not only in terms of sensory accommodation, but also in regard to interaction with libraries and museums, and how to make inclusive meeting spaces for autistic people that will be considered relevant enough for them to seek out. This could, for instance, be done in relation to their special interests and figuring out how to integrate teaching or social gatherings surrounding niche interests into library or museum programmes. Other research could investigate which accommodations actually help autistic people, and how best to reach out to both autistic users and employees to find a way to collaborate about which changes may realistically be made. In addition, research on information needs and search behaviour may help find ways to make the navigation of collections and information easier for this group. There are many possible areas to touch on regarding this topic and, with time, researchers may be able to figure out how to accommodate this group in a way that is realistic for each institution and perhaps also beneficial for more than just autistic users.

Conclusion

A library can be an important place for many. Students can, for instance, find an escape from sensory distractions by going to a library. It is also a place where autistic users can find room to explore their special interests or pursue academic success. This article has attempted to source information on barriers, and solutions to those barriers, when it comes to the autistic experience in libraries and museums. There has been a focus on libraries, but information sources regarding museums have also been considered, as these too are institutions that promote culture and information, and may be a good source of both inspiration and motivation for libraries seeking to make their spaces and collections more accessible for the autistic user group. The research question used to help frame the study was: How can libraries and museums make their physical spaces more inclusive and accessible for the autistic population? There has been an attempt to answer this research question through a small survey, a short case study and a literature review. The data found that many of the barriers autistic people face in libraries and museums are related to sensory differences and social difficulties or anxiety. A summary of the changes that can be made to help accommodate this group is as follows:

- Using inclusive language based on the preferences of the user group or individual;
- Including universal design and universal design for learning wherever possible;
- Making available quiet spaces for silent study or reading, which may include non-fluorescent lighting or several lighting choices allowing for individual preferences, good signage that shows where these spaces are located, and different types of seating to support different sensory needs;
- Chat references;
- Personal librarians;
- Collaboration with autism support programmes;
- Special hours with dimmed lights, lower volumes and limited patron access;
- Sensory maps and easily available information sources and websites;
- Sensory kits or bags including, among other things, fidget toys, noise-cancelling headphones and weighted lap pads;
- Sensory-inclusion courses;
- Giving patrons space to explore without the pressure of being sociable.

Although certain accessibility changes may be modified to fit each individual library or museum, and although these are only a few solutions, having something concrete to begin with may make it easier for institutions to make the appropriate accommodations and get the ball rolling in the right direction. Making sure to include autistic people in the decision-making process is also advisable as they know their barriers and needs best. While many museums and libraries have started to take action in making their spaces more accessible for autistic people, there is still a long way to go to make them more comfortable for this group, and more research is recommended in order to figure out what works and how best to help this user group, not only in terms of sensory inclusion, but also in terms of information needs, search behaviour, social inclusion and community-building.

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Sexual orientation for the LGBTQ+ community: Information sources and barriers

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Abstract
This study aims to identify the information barriers that the LGBTQ+ (lesbian, gay, bisexual, transgender, queer, other) community encounters when seeking information about sexual orientation. For this study, a qualitative methodology was followed based on a questionnaire that was answered by various groups within the community. The findings reveal that the respondents preferred the Internet when searching for information due to the abundance of resources, easy accessibility and anonymity. However, they found it insufficient to determine their sexuality due to the presence of inaccurate information and hurtful comments from other users. Additionally, only a few of the respondents were aware of the existence of specialized LGBTQ+ libraries. They believed that the lack of financial resources results in these libraries selecting some resources over others. Therefore, libraries can play a key role in serving the LGBTQ+ community by curating collections in relation to their sexual orientation. This could overcome barriers by providing reliable information for the LGBTQ+ community.

Keywords
LGBTQ+, qualitative research, specialized libraries, information barriers, information behaviour, Internet

Introduction
This article explores the information barriers that the LGBTQ+ (lesbian, gay, bisexual, transgender, queer, other) community faces in meeting their information needs and how members of this community seek information on their sexual orientation. This article is addressed to a wide audience in the library and information science (LIS) field, but is especially relevant to LIS students commencing research. The authors consider how this community looks for health information sources, such as web pages that feature medical authorship or books and sexual health information. Sexuality education, especially among youth, is essential for their healthy development. UNESCO (2018) published an international guidelines report on how sexuality education should be addressed in primary and secondary schools. The guidelines establish eight key factors: relationships; values, rights, culture and sexuality; understanding gender; violence and staying safe; skills for health and well-being; the
human body and development; sexuality and sexual behaviour; and sexual and reproductive health. In some countries, such as the USA and Spain, sexuality education is not part of the school curriculum (Delmonaco and Haimson, 2023; Sexuality Information and Education Council, 2022; Tenga, 2020; World Health Organization, 2010).

Nearly two centuries after the first wave of the LGBTQ+ movement began, the struggle for visibility and acceptance continues. The LGBTQ+ community advocates for equal rights and a more inclusive perspective that includes all people who identify as part of the community. This approach will lead to a more inclusive society (Vázquez, 2021). Our approach in this research starts in the District of Columbia in the USA where the LGBTQ+ community comprises nearly 10% of the population, more than in other states and even countries (Movement Advancement Project, 2022). In contrast, the LGBT+ Pride 2021 Global Survey reveals that 10% of the Spanish population is primarily or exclusively attracted to an individual of the same sex (Ipsos, 2021). Discovering one’s sexual orientation is crucial as it helps people develop healthy relationships with their environment, friends and themselves. However, current technology trends have affected the way we access information. Diverse studies show that the Internet has become the primary source of information for the LGBTQ+ community to understand and explore their sexuality (Augustaitis et al., 2021; Baker et al., 2021; Burton and Avilla, 2021).

Undergraduate LIS students, as future librarians and information professionals, have a responsibility to respect different cultures and facilitate access to information for all people, as libraries become anchors that ‘actively influence their communities, and are constantly making choices that shape informed citizenship through public access to information’ (Gibson, et al., 2017). LIS students can play a vital role in promoting the provision of curated information for library users. As they study to become librarians and information professionals, they learn about the principles of information organization, access and management, as well as the ethical considerations involved in providing access to information. These future LIS professionals can contribute to the role of libraries in providing information in several ways.

First, they can work to ensure that library collections are diverse, inclusive and representative of a wide range of viewpoints and perspectives. By providing access to a variety of resources, they can help users to make informed decisions and think critically about the information they encounter (Abiola and Okere, 2012; Connaway et al., 2017; Miller, 2017). Second, future LIS professionals can help to develop and implement policies and procedures that support the provision of information in libraries. For example, they can advocate for policies that protect the privacy of library users and ensure that library resources are free from bias or censorship (Ali and Gattiti, 2020; Ma et al., 2018; Vassilakaki and Moniarou-Papaconstantinou, 2015).

Third, future LIS professionals can engage in outreach and education efforts to promote the use of libraries as a source of curated information. They can work with library users to help them navigate the information landscape and identify reliable sources of information, as well as teach them how to evaluate information critically to determine its credibility (Laybats, 2018; Tucker, 2019).

Our work tends to follow the approach of information practices rather than information behaviour. Information behaviour is an area of information science that relies on information search and information seeking to define an information system beyond an individual user (Boté-Vericad, 2022). However, our approach tends to examine information practice; it is an approach to the constructionist perspective that is a more sociologically and contextually oriented space where the processes of information seeking and use are socially and dialogically constituted, rather than being based on the ideas and motives of individual actors. All human practices are social and originate from interactions among members of a community (Savolainen, 2007).

The primary objective of this research is therefore to identify the information barriers that the LGBTQ+ community faces when seeking information about their sexual orientation in a diverse information ecosystem, including libraries. We use the acronym LGBTQ+ (to include lesbian, gay, bisexual, transgender, queer and other identities that fall outside of cisgender and heterosexual paradigms) to encompass all members of the community. We are aware that the acronym is forever changing and, even in the scientific literature, there is no consensus. For example, in different works published in 2023 there are different versions: LGBTQ (Villarroya and Boté-Vericad, 2023), LGBTQIA2S+ (Moreira et al., 2023), LGBTIQA+ (Permezel et al., 2023) and LGBTI (Mert-Karadas et al., 2023). We are also aware that the acronym changes depending on the geographic context (Wikipedia, 2023). Queer political theory and practice is based on the critique and questioning of universalized discourses on the concept of identity, and the struggle of the LGBTQ+ movement with other collectives. These ideas have finally begun to reach the Spanish queer context, where the debate on
the rethinking of identity and the redefining of the subject has been encouraged, creating a certain rupture within the movements that previously existed (Vara Corrales, 2014). Moreover, our research aims to provide answers to the following guiding questions:

- Does the LGBTQ+ community typically find accurate information related to their information needs?
- What are the primary limitations the community faces when seeking information?
- What are the channels that the LGBTQ+ community typically uses to access information?

**Literature review**

For the following literature review, the keywords that form the basis of our article were identified – LGBTQ+ community, information barriers, Internet and specialized libraries. Next, a search was carried out in the specialized information science database Library and Information Science Abstracts, bibliographic reference databases such as Scopus and the Web of Science, and reports. It is worth mentioning that the articles had to be available in open access where they could be located by university students.

In recent years, various studies have attempted to analyse and identify the information barriers experienced by the LGBTQ+ community from different perspectives. Some studies have focused on information needs related to sexual relationships and health (Adler, 2017; Burton and Avilla, 2021), while others have examined the role of academic libraries (Stewart and Davis Kendrick, 2019; Villarroya and Boté-Vericad, 2023; Villarroya et al., 2022; Wexelbaum, 2017), as well as their collections (Chapman, 2013; Gómez-Hernández and Pérez-Iglesias, 2017; Hinton, 2022), in meeting the information needs of university students.

The existing literature on LGBTQ+ information-seeking behaviour highlights that there are significant information barriers faced by the community in discovering and understanding their sexual orientation. According to Burton and Avilla (2021), while there is a significant amount of information available about sexuality, it tends to be presented from a heteronormative perspective. As a result, LGBTQ+ individuals often struggle to obtain accurate information from traditional sources, such as school or family, and must resort to alternative sources, such as pornography, young adult fiction or the Internet, to seek information on their sexual orientation. For instance, Jia et al. (2022) report that in relation to health information resources for LGBTQ+ individuals, the Internet was a primary source of information. They identify 25 factors influencing health-information-seeking behaviours. Another study, conducted at the University of Northern British Columbia, Canada, using participatory maps and focus groups, found that the participants expressed concerns about the quality of the content when seeking information online (Hawkins, 2017).

Recent studies have shown that the Internet is the primary source of information about sexuality because it provides information quickly and grants anonymity, which is an important aspect for the LGBTQ+ community as it makes them feel safe (Burton and Avilla, 2021; Kitzie, 2017; Stewart and Davis Kendrick, 2019; Yeh, 2008). However, the Internet also has adverse effects due to the presence of negative comments, making it ‘an actor that affords and constrains information practices’ (Kitzie, 2017: 10). In contrast, other sources of information, such as libraries, are no longer perceived as safe spaces (Curry, 2005; Wexelbaum, 2017) and are considered inadequate for LGBTQ+ individuals, as they often find the collections to be sparse (Chapman, 2013), inappropriate, outdated or difficult to locate (Stewart and Davis Kendrick, 2019). In British Columbia, Canada, Curry (2005), using an unobtrusive observation method with the participation of a research assistant, found that 30% of a sample of libraries had a fictional book that could be used for the Gay-Straight Alliance Club meeting were adequate, but not exemplary. Curry found that improvements in the reference services of the libraries were not limited to gay and lesbian subjects. However, the primary emphasis of this study was on identifying inadequate reference service interactions that occurred with vulnerable youth.

With regard to LGBTQ+ care, health professionals prefer working with medical librarians they know to be LGBTQ+. The reason is because of concerns about discrimination or a lack of relevant knowledge (Morris and Roberto, 2016). According to one recent study, ‘online channels are a popular place to find health information’ (Hawkins et al., 2017: 320) without fear of stigmatization. Floegel and Costello (2019) carried out a study through semi-structured interviews with queer individuals and content analysis of entertainment media resources. They found that the participants viewed entertainment media as a salient part of their identity-related information practices. In another study, Hinton (2022) discusses the increasing number of proposed and passed laws that regulate what students can and cannot read. This results in children and adolescents growing up without any reference points, as they are not allowed access to...
materials with LGBTQ+ themes or characters (Hinton, 2022: 1).

Yeh (2008) carried out a study using qualitative interviews to explore homosexuals’ information behaviour from a constructionist viewpoint. The sample comprised 14 participants: 10 gays and 4 lesbians living in Taipei, Taiwan. Yeh found that the guidance of mentors in the participants’ initial contact with homosexual communities was useful to help them face the pressures and biases of the heterosexual society, and also follow the rules of these communities. The participants also found that the use of the Internet offered protection for their identities by affording them anonymity. Yeh concludes that homosexual communities are important for gays and lesbians because some members provide helpful information and emotional support.

In Spain, laws were passed during 2014–2016 ‘to promote and guarantee the equality of rights for all individuals, regardless of their identity, condition, or sexual practices’ (Gómez-Hernández and Pérez-Iglesias, 2017:96), in the case of autonomous communities such as Galicia, Extremadura, Madrid and Catalonia. Several studies suggest that libraries should play a more active role within the community and work towards providing a safe space (Gómez-Hernández and Pérez-Iglesias, 2017; Hinton, 2022).

Methodology

The design of this study was based on the literature review followed by a self-administered qualitative survey. First, we conducted the literature review to identify existing studies in relation to gender-identity discovery, information seeking and information behaviour, considering their results and their limitations (Garrett and Spano, 2017; Mehra et al., 2011; Villarroya and Boté-Vericad, 2023; Villarroya et al., 2022; Walker and Bates, 2016). Additionally, the study explored the role of the Internet and the use of technology in shaping information behaviour and identity discovery.

We designed a qualitative survey addressed to the LGBTQ+ community in Barcelona, Spain. We elaborated on the questions considered in previous literature and spoke with librarians specializing in LGBTQ+ collections to reach a consensus between us. Two experts in qualitative questionnaires reviewed the survey before the open-ended questionnaire was distributed. We collected the responses through Google Forms.

Using a convenience sampling method, we distributed the questionnaire by reaching out to acquaintances and through email and private communications on social networking sites – mainly Instagram, as in the work of Moraes et al. (2021). Instagram private messaging is a common way to communicate with others, especially young people (Ali et al., 2022), and it was easy for us to contact the participants for our study via this means.

The data was collected from 1–31 August 2022 and we received 20 responses. After verifying the responses, a sample of 18 participants remained. We excluded two questionnaires because they were incomplete. The participants in a qualitative survey use their own language and terminology to give their responses instead of choosing from a set of predetermined response options (see Braun et al., 2021). The questionnaire for this study was divided into two parts. The first part aimed to gather the demographic data of the participants, such as their age, highest level of education and sexual orientation. In the second part, the participants could use their own words to describe themselves while answering the survey questions. The respondents’ identities were kept anonymous and gender specification was not required.

Through the specific questions, we aimed to establish a preliminary understanding of the participants’ sexuality-discovery experiences by asking them to reflect on their first experiences when exploring their sexual orientation. The objective was to identify the resources that the participants found most helpful. We also delved deeper into the resources the participants used when discovering their sexuality, particularly online. We asked them about the benefits and drawbacks of searching for such intimate information online and how they felt about the information they found. Then, we also wanted to know if the participants were aware of specialized LGBTQ+ libraries and whether they had ever visited one. We also wanted to compare these libraries to public libraries and identify any areas where public libraries were lacking. Finally, we asked the participants to reflect on whether they would have sought information differently if they had known what they now knew.

The open-ended questions were as follows:

1. Did you start actively seeking information at a specific age, and do you believe that the resources you found were suitable for your age?
2. Explain which resources you used to learn about your sexual orientation, which ones you found most valuable, and which helped you accept your sexuality. You have a list of resources as a guide (information video, official-source video, pornography, specialized websites, information websites, social

...
networks, family environment, information leaflets, media references, talks, health workers).

3. What advantages do you think the Internet offers compared to other sources when it comes to seeking information about sexual orientation?

4. On the other hand, what disadvantages do you find with using the Internet for this purpose?

5. Do you think that the information available on the Internet about the experiences and perspectives of the LGBTQ+ community is limited?

6. Do you think that it is feasible to research your sexuality and related topics using the information resources available in a library? Why or why not? Have you considered using a library as a resource for this purpose?

7. Do you think that libraries provide their users with sufficient sources of LGBTQ+ information or, on the contrary, do you think that, due to limited resources, libraries make some groups invisible? Please explain.

8. Have you ever visited a library specializing in sexual orientation? If not, could you explain why you have not?

9. Do you think that your search criteria would be different from everything you know now? In what way?

10. What recommendations would you make to people who are investigating their sexual orientation for the first time? Please explain.

To analyse the responses, we classified them according to the group of the collective to which the participants indicated they belonged: homosexual attracted to men, homosexual attracted to women, bisexual and queer. The answers were analysed using inductive coding – allowing the topic to emerge from the content (Mayring, 2000) – with version 23 of Atlas. Inductive coding allows the researcher to read and interpret raw data in order to develop concepts, themes or a process model through interpretations based on the data (Chandra and Shang, 2019). The coding was performed by two of the authors. Each author coded similar answers separately. A third author reviewed all of the coding, and disagreements about the codes were discussed by the three authors until they reached a consensus.

Results

This study examines whether LGBTQ+ individuals can find useful and accurate information through various information resources. The study’s final sample size was 18 people. Of these 18 participants, 10 identified as bisexual (55%), 4 as gay (22%), 3 as lesbian (18%) and 1 as queer (5%). The age of the respondents ranged from 16 to 40, with the majority falling between the ages of 21 and 25 (n = 12, 67%). The entire sample had completed basic education and half of the sample had also completed university studies.

With regard to the participants’ responses to the first question about the age they first searched for information about their sexual orientation, none of the answers were over the age of 19 (Table 1). It seems that the adolescent years were crucial in terms of exposure to helpful information and when their sexual experiences began.

Half of the respondents reported that they did not find what they were looking for when searching for information about their sexuality, and only four (22%) said they did find something. The reasons for the lack of useful information varied among the participants.

Concerning the resources they used to explore their sexuality, we provided a list of possible sources as a guide in the questionnaire (Table 2). The most commonly used channels for information seeking among the LGBTQ+ survey participants were Internet-based, with social media being the preferred choice. Other sources that were frequently utilized included media references, pornography and advice from friends. The gay individuals reported using pornography more often, while the lesbians cited media references as their primary source. The less frequently used resources included psychologists, informative talks, brochures and school. The majority of the participants mentioned ‘social networks’ (n = 15, 83%) as their primary source, followed by ‘media influencers’ (n = 8, 44%) and ‘pornography’ (n = 7, 39%), which was mostly cited by the gay individuals. It is important to note that nobody mentioned ‘official educational videos’, and only two participants (11%) mentioned ‘specialized resources’.

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>10–12</td>
<td>6</td>
</tr>
<tr>
<td>13–15</td>
<td>7</td>
</tr>
<tr>
<td>16–19</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 1. Age at which the participants began searching for information about their sexuality.
Additionally, most of the participants (n = 11, 61%) perceived ‘social networks’ as the most helpful resource in discovering their sexual orientation. When asked about the resource that aided them in accepting their sexuality, most responded with ‘friends’ (n = 11, 61%), followed by ‘social networks’ (n = 9, 50%). A 22-year-old bisexual participant provided an insight into why individuals in the community tend to rely on social networks for information:

People tend to be more open to discussing the LGBTQ+ community on social networks because these platforms provide access to a wider range of information and entertainment content from the community, which is not typically found on television or in daily life.

Next, we sought to determine the advantages the respondents found in searching on the Internet. The most common responses were ‘accessibility’ (n = 7, 39%) and ‘sense of community’ (n = 6, 33%). ‘Amount of information’, ‘anonymity’ and ‘freedom of expression’ were also mentioned, but to a lesser extent than expected – particularly ‘anonymity’. The participants displayed a strong awareness of the benefits of searching on the Internet while also recognizing that the vast amount of information available could be a double-edged sword: ‘The Internet is a place where one can access information on just about everything, and where everything is public. This makes it both beneficial and dangerous at the same time’ (Gay participant, aged 24). On the other hand, the most significant drawbacks mentioned were ‘false information’ (n = 11, 61%), ‘LGBTQ+ phobia’ (n = 6, 33%) and ‘unexpected results’ (n = 4, 22%), such as inappropriate images. Regarding finding pornography when not intended, a 23-year-old gay participant stated: ‘It is challenging to set limits on how far you want your search to go’. In relation to the LGBTQ+ phobia encountered on the Internet, a 25-year-old lesbian participant commented: ‘You can find content that makes you feel worse for who you are’.

The question regarding the limits of LGBTQ+ information available on the Internet elicited diverse opinions (Table 3). Almost half of the sample responded that there are no limitations (n = 8, 44%), while the remaining respondents (n = 10, 55%) felt that limitations exist. The most frequently cited limitations were ‘insufficient information’ (n = 3, 17%), ‘false information’ (n = 3, 17%) and ‘censorship’ (n = 2, 11%).

The participants reported encountering several barriers when attempting to access information, including censorship, insufficient information and false information, such as fake news. During the initial literature review, libraries were identified as a

### Table 2. Information sources used to look for information to explore sexual orientation.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Bisexual</th>
<th>Gay</th>
<th>Lesbian</th>
<th>Queer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Informative video</td>
<td>3</td>
<td>–</td>
<td>2</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>Official educational video</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Pornography</td>
<td>3</td>
<td>4</td>
<td>–</td>
<td>–</td>
<td>7</td>
</tr>
<tr>
<td>Specialized sites</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Informative websites</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>–</td>
<td>4</td>
</tr>
<tr>
<td>Social media</td>
<td>9</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>Family</td>
<td>2</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>2</td>
</tr>
<tr>
<td>Friends</td>
<td>7</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>7</td>
</tr>
<tr>
<td>School</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Information brochures</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Literature</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Media references</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>–</td>
<td>8</td>
</tr>
<tr>
<td>Talks</td>
<td>–</td>
<td>–</td>
<td>1</td>
<td>–</td>
<td>1</td>
</tr>
<tr>
<td>Health workers</td>
<td>1</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>1</td>
</tr>
</tbody>
</table>

### Table 3. Limits of LGBTQ+ information available on the Internet.

<table>
<thead>
<tr>
<th>Participants</th>
<th>Bisexual</th>
<th>Gay</th>
<th>Lesbian</th>
<th>Queer</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>False information</td>
<td>9</td>
<td>–</td>
<td>1</td>
<td>1</td>
<td>11</td>
</tr>
<tr>
<td>LGBTQ+ phobia</td>
<td>3</td>
<td>–</td>
<td>3</td>
<td>–</td>
<td>6</td>
</tr>
<tr>
<td>Results not required</td>
<td>1</td>
<td>3</td>
<td>–</td>
<td>–</td>
<td>4</td>
</tr>
</tbody>
</table>

Additionally, most of the participants (n = 11, 61%) perceived ‘social networks’ as the most helpful resource in discovering their sexual orientation. When asked about the resource that aided them in accepting their sexuality, most responded with ‘friends’ (n = 11, 61%), followed by ‘social networks’ (n = 9, 50%). A 22-year-old bisexual participant provided an insight into why individuals in the community tend to rely on social networks for information:

People tend to be more open to discussing the LGBTQ+ community on social networks because these platforms provide access to a wider range of information and entertainment content from the community, which is not typically found on television or in daily life.

Next, we sought to determine the advantages the respondents found in searching on the Internet. The most common responses were ‘accessibility’ (n = 7, 39%) and ‘sense of community’ (n = 6, 33%). ‘Amount of information’, ‘anonymity’ and ‘freedom of expression’ were also mentioned, but to a lesser extent than expected – particularly ‘anonymity’. The participants displayed a strong awareness of the benefits of searching on the Internet while also recognizing that the vast amount of information available could be a double-edged sword: ‘The Internet is a place where one can access information on just about everything, and where everything is public. This makes it both beneficial and dangerous at the same time’ (Gay participant, aged 24). On the other hand, the most significant drawbacks mentioned were ‘false information’ (n = 11, 61%), ‘LGBTQ+ phobia’ (n = 6, 33%) and ‘unexpected results’ (n = 4, 22%), such as inappropriate images. Regarding finding pornography when not intended, a 23-year-old gay participant stated: ‘It is challenging to set limits on how far you want your search to go’. In relation to the LGBTQ+ phobia encountered on the Internet, a 25-year-old lesbian participant commented: ‘You can find content that makes you feel worse for who you are’.

The question regarding the limits of LGBTQ+ information available on the Internet elicited diverse opinions (Table 3). Almost half of the sample responded that there are no limitations (n = 8, 44%), while the remaining respondents (n = 10, 55%) felt that limitations exist. The most frequently cited limitations were ‘insufficient information’ (n = 3, 17%), ‘false information’ (n = 3, 17%) and ‘censorship’ (n = 2, 11%).

The participants reported encountering several barriers when attempting to access information, including censorship, insufficient information and false information, such as fake news. During the initial literature review, libraries were identified as a
potential source of curated information, but most of the participants did not use them due to limited information resources, lack of representation of the LGBTQ+ community, discomfort with the lack of anonymity and outdated materials. From the answers obtained, we can infer that those who claimed there are no limitations were referring to the quantity of information available, rather than its quality with regard to providing information on sexuality: ‘There is no limited information, but it is not enough to find your sexuality. A lot of it is false and that has a bad influence on the discovery of your sexuality’ (Bisexual participant, aged 21).

Furthermore, we wanted to know what the respondents thought about LGBTQ+ specialized libraries. Ninety-four percent of the respondents had never visited one, mostly due to ignorance of their existence’ (n = 8, 44%), ‘lack of interest’ (n = 2, 11%), ‘not knowing where to find one’ (n = 3, 17%) and ‘fear of judgement’ (n = 2, 11%). One participant also mentioned that the place and environment in which one lives are decisive factors, since people who live in the countryside and remote areas are less likely to be exposed to these options. On the other hand, when discussing what public libraries can offer to the LGBTQ+ community, 61% of the respondents (n = 11, 61%) stated that they would not visit one, primarily due to a ‘lack of information’ (n = 4, 22%), ‘lack of anonymity’ (n = 3, 17%) and ‘outdated information’ (n = 2, 11%). Additionally, 2 (11%) of the sample found a ‘lack of LGBTQ+ representation’ in public libraries and 12 (67%) agreed that libraries could not provide enough LGBTQ+ resources due to the ‘lack of budget’. When asked why they did not visit public libraries for this purpose, a 25-year-old lesbian participant said: ‘I don’t think it’s feasible due to the small number of resources and the time it takes to search through them’. However, the idea of utilizing libraries to learn about sexuality was not entirely rejected. Some of the participants appreciated the fact that libraries provide more reliable resources, which they considered are more difficult to find on the Internet: ‘There are regulated resources, not like on the Internet’ (Bisexual participant, aged 21).

In addition, we asked the participants if they would change their search criteria if they were searching for information about their sexuality for the first time today. Of the sample, the majority (n = 12, 67%) answered ‘yes’, mainly based on the specificity of the search term (n = 7, 39%) and looking for specialized resources (n = 2, 11%). However, they also mentioned that having come out gave them more freedom to seek information on topics they previously felt self-conscious about: ‘Well, maybe now I’d search the Internet on specialized pages and even go ask a site if they have specific books because I’ve come out of the closet, but I wouldn’t have done before’ (Gay participant, aged 24). Furthermore, most of the participants (n = 12, 67%) believed that personal experience is key to discovering one’s sexuality, followed by asking people in the community (n = 3, 17%) and looking for information on verified and safe websites (n = 5, 28%). Therefore, we can conclude that although the Internet is primary when people want to learn about certain topics and feel more confident in their sexuality, it is not enough for people in the LGBTQ+ community to determine their sexual orientation.

Discussion

This study aims to investigate the information barriers faced by the LGBTQ+ community, as half of the participants questioned reported not being able to find the information they were looking for and not having access to adequate information resources to meet their needs. Various studies have shown that the Internet is the primary source of information for this community and is considered relevant and useful (Burton and Avilla, 2021; Kitzie, 2017). In our case, the participants stated a preference for social networks over other information resources to learn about their sexual identity.

The use of social networks demonstrates that ‘a simplistic interpretation of this account would be that the LGBTQ+ community prefers interpersonal resources to the static’ (Kitzie, 2017: 153), and that social networks allow individuals to ‘follow’ or ‘recommend’ similar individuals and create a community in which they can feel safe. Studies have shown that LGBTQ+ individuals use social media as a means of seeking information or accessing relevant information that they cannot find elsewhere (Randolph, 2023), and that it also plays a significant role in providing a sense of community and social support (Jia et al., 2022). In the current study, seven participants (39%) stated that the Internet and social networks offer greater accessibility, but there is a risk of misinformation or hostile behaviour due to negative comments or LGBTQ+ phobia.

Our findings align with the study conducted by Burton and Avilla (2021) and the systematic review of Jia et al. (2022), which conclude that social networking sites are the primary source of information for people on the Internet. The participants in our study also mentioned that social networks provide a platform for finding a wide range of options, and not just collecting information but also sharing it with
others and expressing their doubts and questions. Additionally, they emphasized that social networks facilitate access to information and provide a means for users in similar situations or interested in similar topics to connect.

In contrast, the use of libraries, whether public or specialized in LGBTQ+ content, to find information about one’s sexual identity is almost non-existent. Recent studies have shown that libraries ‘never serve as the primary destination for LGBTQ+’ (Stewart and Davis Kendrick, 2019:611) and are considered unsafe spaces for the community (Wexelbaum, 2017) since they do not guarantee anonymity. The reason why the LGBTQ+ community does not use specialized libraries is primarily due to a lack of awareness of their existence and accessibility. Additionally, in the case of public libraries, their information resources are often considered insufficient or outdated, and individuals prefer the Internet since it is quicker to find information (Stewart and Davis Kendrick, 2019) and is accessible without feeling judged.

Public and specialized libraries were overlooked as potential sources of information by the participants. Most of them did not know about the existence of specialized libraries, and they did not go to public libraries because they believed that their content is outdated. However, these institutions can provide reliable sources of information, even though they may not be able to compete with the immediacy of Internet results. Despite this, the participants in this study did not believe that going to a library is efficient as they felt that the Internet provides more possibilities, and they did not mind finding less satisfactory content if it meant that they could limit their search time.

Analysing this situation, it seems that libraries are not connecting sufficiently with the LGBTQ+ community, and the relationship between society and these institutions is growing distant. The IFLA and UNESCO guidelines highlight that ‘librarians should keep up with changes in society’ (IFLA, 2001) otherwise they will not be able to meet people’s needs. This could also lead to people stopping visiting libraries. Romero et al. (2021) have already pointed out in their research that, following the worldwide social and health crisis resulting from COVID-19, fewer users are going to libraries.

Boté-Vericad and Sola-Martínez’s (2020) study discusses the lack of training among library professionals regarding new technologies, although they are part of their professional responsibilities. This directly affects the dissemination of their services, such as through social media and networks. Many librarians claim that it was not until the COVID-19 pandemic that they began to search for users through new digital spaces (Romero et al., 2021). This leads us to believe that libraries are not evolving at the same pace as their users’ needs, causing users to distance themselves from these institutions as they do not feel identified with. Our results also indicate that the information participants encounter is often imprecise and incomplete. Interestingly, ‘specialized pages’ were not mentioned as one of the participants’ primary sources when searching for information about their sexuality for the first time. Libraries could curate specialized pages and provide access to information that may not be readily available elsewhere. However, libraries must ensure that the information is accurate, up-to-date and unbiased, and aligns with collection policies. The participants in our study were hesitant to consider libraries, which are secure and professional spaces, as a resource for educating themselves.

**Limitations**

In conducting this study, we encountered several limitations that we would like to highlight. First, our sample size was limited to only 18 individuals, which may not be fully representative of the population. The sample we studied was relatively young, as most of the participants were aged between 21 and 25 (n = 12, 67%), which means that the information needs of the LGBTQ+ community over the age of 25 were not fully explored. Moreover, our sample focused on individuals living in the city of Barcelona. Notably, 10 (55%) of the participants identified as bisexual, while only one individual (5%) identified as queer.

**Conclusion**

We can infer different conclusions from our study. Although the participants believed that the Internet provided them with sufficient information to understand their sexuality, it was still inadequate in order to determine and accept it fully. Due to hurtful comments and perceiving it as an unsafe space, people in the LGBTQ+ community viewed the Internet as an unsecure platform to explore such a sensitive topic. The participants mentioned that the Internet was not their main source for accepting their sexuality. Instead, friends and family played a crucial role in this process. Therefore, while the Internet may be a valuable tool for searching for information about sexuality, it may not be sufficient for individuals to accept their sexual identity fully.

This study provides a foundation for future research and suggests some future directions. First, these findings provide a basis for further research into the information-seeking behaviours and barriers of the LGBTQ+ community. Second, further research
could involve conducting an analysis of a larger sample of the community with a broader age range, such as 15–50, to explore similarities and differences in the information barriers between different age groups. Third, another potential direction for research could be to compare individuals from different geographic locations, such as big cities versus towns or villages. Additionally, it could also be valuable to investigate specific groups such as transgender, pansexual or queer individuals. Finally, it would be useful to investigate the information barriers experienced by the LGBTQ+ community internationally, as most research on this topic has been conducted in the USA.

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The role of users in the organization of digital information: A Portuguese experience in an academic museum and archive setting

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Abstract
With the evolution of digital platforms, ordinary users have gained the opportunity to participate in the organization of digital knowledge. This has given rise to folksonomies or social indexing, and the duty of information services to integrate user participation in the organization of their digital collections, and thus incorporate folksonomies in their information organization practices. This article presents a case study of the involvement of users of an academic museum and archive in the indexing of a set of resources within a project on digital preservation. The main objective of this study was to analyse the labels or tags suggested by a group of six students from several scientific areas who participated in the experience, and explain the criteria they used to choose and assign the terms to represent the content of the documents. The responses were categorized based on content analysis. The labels assigned by the students were also compared with the indexing terms used by information professionals. Although the students were not familiar with the methods of information professionals, they gained enough sensitivity to understand the need for term validation and recognize that term selection is a subjective choice.

Keywords
Folksonomy, social indexing, information professional, museum, archive

Introduction
The digital age is characterized by rapid technological innovations that enable individuals to perform different tasks with regard to the production and organization of information. Users’ information behaviour has changed, as they have become more active and more involved in the processes of the production, description, consumption and sharing of information in digital environments. Regarding the description of information resources on digital platforms, social tagging, folksonomies, social bookmarking and social indexing have generated new ways of creating metadata content, helping users to share, store, organize and retrieve the resources they are interested in.

Information services (libraries, archives and museums) need to take advantage of the potential offered by digital technologies in order to facilitate the participation of their users in the organization of their collections’ resources. Thus, the use of tagging created by users has been incorporated in some libraries as a new and complementary approach to the indexing and knowledge organization of their information resources (Yu and Chen, 2020). Folksonomies have become a knowledge organization system similar to others used by libraries, such as thesauruses and subject heading lists.
This article presents a case study on the creation of a folksonomy by the users of the academic museum and archive of the University of Aveiro, Portugal. Through the Digital Preservation project being developed by the Library, Document Management and Museology Services (Serviços de Biblioteca, Informação Documental e Museologia or SBIDM) of the University of Aveiro within the scope of the university’s 50th anniversary, user involvement in the indexing of a set of resources is presented.

The main objective is to analyze the tags indicated by the common user (social indexing) in the context of the Digital Preservation project being developed by SBIDM. Specifically, it is intended to identify and explain the users’ criteria for choosing and attributing terms that illustrate the content of each document. At the same time, the controlled terms used by information professionals for the same set of documents are highlighted. The intention to carry out this work arose from personal and professional curiosity around the theme and because of the wish to contribute to reflection on this topic in Portuguese information services. In addition, an interest in understanding if there could be some collaboration between the information professional and the user in the identification of terms/tags representing the information content emerged. The study offers an example of the reality in Portugal regarding the application of folksonomy by the user of an academic museum and archive, and could serve as a comparative approach for other international settings.

The search terms used were folksonomy, folksonomies, social indexing, information professional and information systems. These terms were combined through the use of Boolean operators, and compound terms were fixed with quotation marks. The information search was carried out mainly in the Open Access Scientific Repositories of Portugal (Repositórios Científicos de Acesso Aberto de Portugal or RCAAP) and other specialized databases. The selected bibliography mostly comprises scientific articles and corresponds to the time period between 2007 and 2021. A focus on the Portuguese language was chosen to understand how this topic has been included in the scientific literature published in that language. However, due to the dearth of literature in Portuguese, and also due to their relevance, texts in English were included in the literature review.

**Origin of folksonomy in the Web 2.0 context and its usefulness in Web 3.0**

The progress of information and communications technologies, associated with the growth of the World Wide Web, has allowed the increasing and continuous production of information. Created by Tim Berners-Lee in the 1980s, the World Wide Web has not only allowed the publication of and access to information, but has also fostered the active role of people in these processes.

Web 2.0 emerged with the creation of new services and functionalities due to technological advances and the evolution of the sociological context. Coined in 2005 by Tim O’Reilly, Web 2.0 is defined as a ‘platform where all connected devices are shared’ (O’Reilly, 2005). According to Catarino and Baptista (2007), Web 2.0 reinforces the Internet concept of enabling its users to collaborate effectively to make virtual services and content organization available. The main characteristic of Web 2.0 is collaboration because, according to Blattmann and Silva (2007), the actions are performed by the users themselves in a collective way. Attending to their needs, each user collaborates in the implementation of the content available on the Internet.

The uncontrolled amount of information produced and available on the Internet endorsed users themselves to also participate in the organization of these contents and, consequently, to index the digital resources on the Web. Thus, tagging practices and the creation of folksonomies emerged. This was a new approach to describing resources grounded in shared metadata and social tagging, and it allows a more dialogic communicative practice where creators, readers, listeners and viewers of documents are encouraged to add tags representing their own vision of the information items (Rafferty, 2018).

Although there is no consensus on the definition of ‘folksonomy’, it is known that the term was coined by Thomas Vander Wal in 2004, and that it represents the combination of the terms ‘folk’ (from the Germanic ‘people’ or ‘group of people’) and ‘taxonomy’ (from the Greek ‘science or technique of classification’). Translated literally, we are talking about classification by people. Wal defines folksonomy as the result of personal free tagging of information and objects (anything with a URL [Uniform Resource Locator]) for one’s own retrieval. The tagging is done in a social environment (usually shared and open to others). Folksonomy is created from the act of tagging by the person consuming the information. (Wal, 2007)

Furthermore,

this external tagging is derived from people using their own vocabulary and adding explicit meaning, which may come from inferred understanding of the information/object as well... The people are not so much...
categorizing as providing a means to connect items and to provide their meaning in their own understanding. (Wal, 2005)

Other definitions stand out. For example, Mathes (2004) defines folksonomy as a representation of social indexing in which stakeholders use keywords (also called tags) to categorize different informational items in different formats, such as texts, books, articles, photographs, videos, music and links. Folksonomy is also considered to be a decentralized concept that focuses on individuals playing an active role in the creation, selection and exchange of the content available online (Blattmann and Silva, 2007). Aquino (2007: 1–18) considers folksonomy as ‘a mechanism for representation, organization and retrieval of information’ based on uncontrolled vocabulary.

From these definitions, it is important to emphasize that folksonomy derives from the need to organize the information and knowledge produced and available on the Internet. Folksonomies are a product of tagging practice, which is characterized by the assignment of tags in the classification of online documents, regardless of their format. The average user is the main actor, and the way each user organizes and classifies information depends on the level of their general culture and personal characteristics. This means that users are free to decide what to use their tags for, and tags are not necessarily informational or subject-related keywords as they might be purpose-related or even quite random (Rafferty, 2018).

Folksonomy has several characteristics that can be seen as advantages or disadvantages. In a broad sense, and according to Kato and Silva, folksonomy is characterized by flexibility, pattern identification, social collaboration and the anarchic way in which information is born (Silva, 2010: 9). Catarino and Baptista (2007) agree with this and develop these characteristics, stating that the main feature is the social collaborative approach. Furthermore, the attribution of tags by the prosumer to documents previously handled by an information professional demonstrates the possibility of collaboration between them. Folksonomy allows the formation of communities around subjects that represent common interests among different users. This can be seen by the attribution of the same tag to the same document by different individuals. Another characteristic is the absence of people in charge or any kind of control over language and tag assignment. The user has total freedom over the number of tags to assign, the criteria adopted and the writing of tags. In terms of digital information organization and retrieval, accessibility to tagged content is another characteristic. Finally, and most worrisome, is the poor precision in information retrieval caused by the user’s total freedom in the tagging process. Total freedom promotes ambiguous, synonymous, homonymous and polysemic terms that make it difficult to retrieve information that was previously classified in an controlled manner.

Guy and Tonkin (2006) refer to ‘sloppy’ tags and enumerate the main instances that reflect this: misspelt tags (e.g. museum, musum); badly encoded tags resulting from word groupings (e.g. PaulOtle); tags that do not follow the rules with regard to issues such as case and number or singular versus plural (cake, cakes); personal tags that are without meaning to the wider community (e.g. my dog); compound words consisting of a mixture of languages; and single-use tags that appear only once in the database. To be of more social value in terms of information organization and retrieval, tag creation needs to become much more proficient.

Noruzi (2006) identifies the four main problems of folksonomies as polysemy (which dilutes query results by returning related but potentially inapplicable items); synonymy (as an item can be identified by several words with the same meaning, it is difficult for users to be consistent in the terms chosen for tags); plural (with inconsistent use of singular and plural); and the depth specificity of tagging (which refers to how many tags there are relative to an item; also different users may consider terms at different levels of specificity to be most useful or appropriate to describe the same item). Because of this, as Noruzi (2006: 202) underlines, folksonomy tagging has the potential to exacerbate the problems associated with the fuzziness of linguistic and cognitive boundaries. Incorporating computational tag recommendation mechanisms can contribute to improving the process of finding good tags for a resource, also helping to consolidate the vocabulary across the users and reminding a user what a resource is about (Jaschke et al., 2007). Another alternative is to implement a human judgement that is designed to produce structured folksonomies that aggregate tags created by users as a starting point and use expert or collective decision-making to solve problems like synonymy and homographs. This is what Bullard (2018) calls a ‘curated folksonomy’, which is able to address some of the major shortcomings of folksonomies, thus providing a new option for knowledge organization and improving recall and precision in information retrieval with a high degree of success within large user-generated collections.

Web 2.0 presents as a limitation the fact that the terms read and produced solely and exclusively by the user do not have an associated context, which thus
becomes another difficulty in information retrieval. In turn, Web 3.0 (also called the Semantic Web), supported by the use of machines, has allowed information, which was previously produced and shared by users through Web 2.0, to be related and reused (Eis, 2017). It also allows for overcoming the challenge of integrating representations in a linked data web in order to achieve a global database. According to the Library of Congress (2012) ‘the ultimate goal of linked data is to provide a seamless browsing experience in a “web of trust” where users can make their own contribution’ (quoted in Cagnazzo, 2019: 12). From this input, Google, for example, will be able to distinguish and separate the different contexts of the same term (Eis, 2017). Thus, the practice of tagging and the creation of folksonomies, even if they originate from and are typical of Web 2.0, present themselves as important contributions to the construction of the Semantic Web. On the other hand, one way to improve the potential of tagging from the point of view of knowledge organization and information retrieval is by the application of Semantic Web principles to Web 2.0 sites. The main example is semantic tagging, which implies tagging content with URIs (Uniform Resource Identifiers) and thus helping to solve the issue of ambiguity, as the tags are linked to unambiguous URIs. Moreover, semantic tagging permits the reuse of tags across different applications, allowing for the exchange and sharing of data (Cagnazzo, 2019).

In addition to this broad contribution to the Semantic Web, tagging and folksonomies can improve interactivity and community participation in library services, helping information professionals to create better information representation and knowledge organization instruments. In the following, a case study is presented and these aspects are underlined.

**Research methods**

How would folksonomy be incorporated in the knowledge organization of SBIDM at the University of Aveiro? This was the question that motivated this research. The methodology adopted translates into a qualitative or interpretative paradigm represented by a criterial non-probability sample composed of two sets of stakeholders – information professionals and students.

Before preparing the experiment to identify how common users create tags to identify information items, a bibliographic search was performed to understand better critical aspects related to folksonomies. The case study was carried out within the scope of the Digital Preservation project and counted on the collaboration of the four information professionals from SBIDM who are developing this project, with the support of six University of Aveiro students who collaborate with SBIDM under a merit scholarship. In June 2022, the information professionals selected a set of five documents of varied typologies without imposing any requirements. These documents were analysed and labelled by the students. Afterwards, through an individualized interview with each student, they explained the criteria chosen to assign the tags to each document by answering the following questions:

1. Describe the steps of your tagging process.
2. What was the most difficult document to tag? Why?
3. Have you resorted to other sources of information?
4. How easy was it in the tagging process? If not, why?
5. Do you think that some characteristics of your personality are present in the way you assigned tags to documents?
6. Did you give any logical order to the tags?
7. What is your opinion on the implementation of folksonomy in the SBIDM information system platforms?
8. Do you think this process of tagging would have been easier if the documents analysed were related to your field of study?

These questions are partially aligned with a suggestion made by Guy and Tonkin (2006), who note that it is important to understand users and why they submit certain tags. Furthermore, they recommended that a useful approach will include examining users’ motivations when adding tags and seeing why they decide on particular words. From this observation, it will be possible to understand the number of tags they have added and compare how the same items are represented by different users.

The student interviews took place at the SBIDM facilities and were guided by one of the authors of this study, who recorded their responses manually. The amount of time taken to analyse and label the documents was managed by each student. From the analysis of the interviews, each student took, on average, an hour. The students had no previous knowledge of information science but have since acquired sensitivity to some of the technical issues that the information professionals have passed on to them.

The strength of a folksonomy approach is often described as its openness – the ability of any user to describe the world as they see it. Thus, the limitations
of this study are related to the diversity of cultures and cognitive abilities of the students, which influenced the perception of what was intended by this study. Equally limiting was the lack of sensitivity shown by some of the students in the document analysis, which later influenced the answers given in the interviews.

All of the students were in their twenties. They were students in the areas of Languages and Business Relations, Molecular Biomedicine, Environmental Engineering, Economics, Physical Engineering and Music. Three were male and two worked part-time. One of the students was from Mozambique and the others were from the centre-north of Portugal. All of them were diligent users of social media and the Web in general, and all experienced some difficulty in tagging the requested documents. Thus, the data collection was performed through indirect observation at the time of the document analysis by the students and, later, through individual interviews with them for a better perception of the results obtained.

The objective was to establish a comparison between the creation of folksonomies by the user and the use of controlled vocabulary by the information professional in the context of SBIDM at the University of Aveiro. More specifically, the intention was to identify and explain the criteria that the users applied in the choice and assignment of terms to represent the content of each document.

The analysis of the interviews respected the personal characteristics of each student (see Table 1) and the relationship they established among themselves by the way they analysed the documents, according to age, gender, training and professional experience. The questions were designed according to the bibliography consulted and in order not only to understand the students’ opinion about the labelling process, but also to make them aware of the relevance of information management, even if not controlled.

The analysis of the results was presented in comparative tables and the conclusions drawn were supported by the literature review.

This work is presented as further support for the study of folksonomy. It is a practical example of the collaborative relationship that can exist between information professionals and prosumers in the creation of information content and the adoption of solutions that avoid the disadvantages of folksonomy.

Findings: folksonomy in the context of the Digital Preservation project at the University of Aveiro

As part of the University of Aveiro’s 50th anniversary celebrations, SBIDM is developing (in collaboration with other departments and services at the university) a project called Digital Preservation. The project consists in defining a digital preservation plan for the digitization of collections to preserve the physical objects and provide access to them, as well as the preservation of resources created in digital format that are at risk of becoming obsolete, lost, corrupted and illegible if they are not properly organized and preserved. The technical team is made up of four information professionals. Since November 2021, this team has had the collaboration of six merit scholarship students, who perform several functions within the project – namely, the cleansing, digitization and description of the information items in the Collective Access platform.

For this particular study, a student team was asked to make the information resources description choosing their own tags. Table 2 shows the terms indicated by the technical team (indexing) and the tags suggested by the students (folksonomy) for the same set of documents.

After each student had assigned one or more tags to each of the documents, a short interview was conducted with each student in order to understand their information behaviour in the process of tag

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Note: AU = University of Aveiro; DMat = Departamento de Matemática. (The translation is mathematics department); SASUA = Social Action Services at the University of Aveiro; PBI = Portuguese Blood Institute.
assignment. The aim of the questions was to understand the information behaviour that underpinned the choice of the students’ tags.

**Students’ information behavior when assigning tags**

The answers to the question ‘Describe the steps of your tagging process’ were very similar. In general, all of the students analysed each document and tried to assign tags through the content. Student 2 answered: ‘I started by analysing the documents with textual content and through the text assigned tags’. Student 1 responded in a similar way. Student 6 commented on the importance of the format of the document: ‘I observed the documents and looked for prominent elements, such as words, the format, and assigned the tags’.

Regarding the answers to the second question – ‘What was the most difficult document to tag? Why?’ – all of the students shared the same opinion about the high degree of difficulty in tagging the photograph because, besides not having a caption, none of the students knew the people represented. All of them confirmed that it was much simpler to label textual documents where, through the text, they could understand the content and retrieve some keywords. Student 6 concluded: ‘the most difficult thing was to assign tags to the picture because I don’t know the actors. That’s why, in visual documents, every word counts, however few’.

Given some of the difficulties in labelling and in response to the third and fourth questions – ‘Have you resorted to other sources of information?’ and ‘How easy was it in the tagging process? If not, why?’ – only Students 1 and 2 made additional searches on Wikipedia and Google, respectively, stating that these searches helped in tagging the photograph.

Replying to the fifth question – ‘Do you think that some characteristics of your personality are present in the way you assigned tags to documents?’ – Student 1 said, ‘I am a detailed person and I think it is important to label everything’, and Student 2 commented, ‘I am a curious person and my ability to interconnect information in different media was reflected in the way I labelled the documents’. In turn, Students 4 and 6 mentioned their general culture as a positive characteristic for the labelling process.

In response to the sixth question – ‘Did you give any logical order to the tags?’ – Students 1 and 4 answered that they did not think it was relevant to assign any sort of organization to the labels. More specifically, Student 3 answered: ‘I labelled so spontaneously that at the moment I didn’t realize that I was organizing them according to the logic “what, when and where”’. Student 6, who typically organized information from the general to the particular, stated: ‘I assigned tags as they came up. However, I found that I identified them from the most explicit to the least explicit’.

In general, in answer to the question ‘What is your opinion on the implementation of folksonomy in the SBIDM information system platforms?’, all of the students were of the opinion that it would be helpful to apply social tagging to the SBIDM information system. We highlight two responses:

It would be a good initiative to implement folksonomy in the SBIDM because it would allow an initial screening of the information that is wanted. It would be a similar measure that exists in Scopus in the search for scientific articles, in which it allows the search to be carried out according to keywords. (Student 2)

Folksonomy should be applied in the SBIDM but with filtering/validation. It cannot be anything goes. (Student 6)

Finally, regarding the eighth question – ‘Do you think this process of tagging would have been easier if the documents analysed were related to your field of study?’ – only Student 1 disregarded this hypothesis in answering: ‘If the selected documents were from my field of study, my way of labelling would not be different’. Conversely, Student 3 replied: ‘I believe that if the documents were from my field of study, it would have been easier to identify the labels. Still, it would always depend on my degree of knowledge of the information that the document addressed’. Similarly, Student 6 commented: ‘If the documents were from my area of specialization, it would have been easier to tag them since I would be familiar with their contents’. He added: ‘When there is text, even if I don’t know the subject, the tags appear. With images, you need to pay more attention and focus on the details’.

In analysing Table 2, the controlled terms used by the information professionals based on indexing terms that are searchable in the library’s online catalogue and opac.ua.pt were identified. In SBIDM, the indexing process is carried out by consulting the Universal Decimal Classification manual and by searching the online catalogues of the Portuguese National Library and the Library of Congress. To each of the documents, the librarians assigned between two and four terms.

**Analysis of uncontrolled terms**

The tags assigned by the six students will now be analysed with deeper, based on the professional
experience of Voit (2022), the conclusions of Silva (2010) and Santos and Albuquerque (2021), and the literature review.

When looking at the tags that each of the students attributed to the documents they were asked to identify, it seems that each of the participants selected the aspects from the documents that were most relevant and according to what made sense to them. This idea is in line with Guy and Tonkin (2006), as they noted that items can be categorized with any word that defines the relationship between a document and a concept in the user’s mind. Any number of words may be chosen, some of which are obvious representations, while others make little sense to those outside the context of the tag’s author. Some relevant aspects of the documents were shared by some of the students but were not chosen to identify the content of the documents by the information professionals. The press clipping is a good example, as four students linked it with the idea of ‘radio’ (#AveiroFM, AveiroFM, radio and Aveiro FM) and the information professionals did not choose this concept in relation to the document, instead choosing only a broader representation with the term ‘social media’. Furthermore, the simultaneous use of generic and particular terms stands out, despite the fact that it is advisable to opt for generic terms that allow a greater number of results to be retrieved. The students used generic and specific terms simultaneously. It happened that at least one student simultaneously chose the terms ‘radio’ and ‘media’. If the single term ‘social communication’ had been chosen, a second term would not have been necessary.

The tags that each individual chooses to apply to each document reveal not only the cognitive representation that the individual makes about an item of information but also convey some insights about the person themselves and help us differentiate individuals from each other. This is especially evident when we check the tags from our sample. The number of tags that the students assigned to each document is quite different. Student 2 and Student 4 consistently assigned one or two tags to each document, but the other students tried to be more exhaustive, using more tags for each document. It is also noteworthy that each student did not use a variable number of tags per document, unless difficulties were faced when representing the content of the document. Students 1, 3, 5 and 6 assigned between one and nine tags per document, with the photograph being the item with the least number of tags (one to three). Some students seemed to assign a high number of tags to a document because they intended to go deeper in the level of specificity. For example, Student 5 tagged the postcard with the broad class of ‘architecture’ and then complemented it with the specifics of the context: ‘Santiago University Campus’, ‘Department of Mathematics’ and ‘outdoor space’. Student 6 chose to be more specific, leaving out the generality of the class ‘architecture’ and assigning to the same postcard the labels ‘Department of Mathematics’, ‘esplanade’ and ‘Aveiro University’. Thus, the perspective from which the context was set remained undefined. The ideas behind the representation of the postcard are quite similar from the two students, but they used different words and different levels of depth. This is in line with Noruzi’s (2006) argument that resources can be tagged to varying levels of specificity and with a different numbers of tags, and these choices are strongly influenced by the user’s behaviour and habits.

Another aspect to be underlined is that regardless of the different characteristics of each student, they identified the main concepts in the various documents, thus forming a group that shared terms. The students also demonstrated a tendency to flexibility in the attribution of tags, as is evident in the use of terms taken from the contents of the documents. It is possible to verify terms like ‘northern hemisphere’ and ‘New University’, which were selected from the contents of the documents and reused as tags. Also, the years and terms like ‘woman’, ‘esplanade’ and ‘meeting’ are good examples. Moreover, the students expressed a preference regarding the use of acronyms and abbreviations: terms such as ‘DMat’, ‘IPSS’, ‘UA’ and ‘SASUA’ show a tendency for users to use acronyms and abbreviations that are meaningful for themselves as tags.

Another interesting aspect of the results is that long words are quite common in this framework. The choice of long words is associated with students who define themselves as attentive to detail and organized. The long words presented were either devised by the students themselves or selected from the contents of the documents. Examples are ‘DrHelenaNazaré’ and ‘SocialServicesoftheUniversityofAveiro’. The longer the word, the greater entropy it will produce in information searches. These results are in line with Guy and Tonkin (2006), who also found a large number of tags using structures other than dictionary words. In these cases, the students concatenated words, formatting each word with an initial upper-case letter to improve readability (camel case). In this regard, Guy and Tonkin (2006) note: ‘The commonness of compound tags, including tags that concatenate more than two words, may suggest that users miss the richness of the sentence structure’.

The use of the singular form is predominant – all of the students mostly adopted this form. This does not confirm one of the major concerns pointed out in other studies (Guy and Tonkin, 2006; Noruzi, 2006).
The exception was student 1 who, despite indicating a set of terms in the singular, also indicated a plural term in the middle of that set. In this case, there was no coherence by the same individual in the use of singular or plural terms. This student differed in some aspects from the others, as he preferred to present information in a disorganized way and the use of plural terms. Moreover, Student 1, in addition to highlighting hashtags (#), was of the opinion that the tags did not need to follow any logical order. On the use of hashtags, it is worth underlining that this reflects a contamination by information behaviour that is typical of social media, as hashtags are used on a variety of social media platforms, such as Twitter, Instagram, and YouTube. Moreover, as Spiteri (2019) points out, hashtags have the potential to make positive contributions to library catalogues, as while they serve to describe aspects of information resources, they can extend the resources available to users via library discovery systems. The enhanced use of hashtags raises the concept of a catalogue as a social space because hashtags do not limit this social space to the boundaries of the catalogue but can extend to social networks beyond libraries.

Regarding the grammatical format of the tags, the use of nouns stands out, with no verbs or adjectives included, despite a few uses of dates. The predominance of nouns is in line with other studies (e.g. Guy and Tonkin, 2006).

Conclusion

Folksonomy is a consequence of the emergence of the World Wide Web and its subsequent evolution. The emergence of new services and the development of others in the digital domain has led to increased information production. As a result, the need to organize and retrieve information on the Web has also increased. Folksonomy has given users the freedom and ability to classify the information they produce and intend to retrieve in the future.

Although there is no consensus on the definition of folksonomy, two definitions that complement each other and represent what folksonomy is in practice stand out. First, according to Aquino (2007: 1–18), folksonomy is ‘a mechanism for representing, organizing, and retrieving information’ based on uncontrolled vocabulary. The second definition is provided by Mathes (2004), who attributes folksonomy to the representation of social indexing, where stakeholders use keywords (also called ‘tags’) to categorize different information items in different formats, such as texts, books, articles, photographs, videos, music and links. Moreover, Kato and Silva (Silva, 2010: 9) and Catarino and Baptista (2007) agree on some of the characteristics of folksonomy – namely, flexibility, pattern identification, social collaboration and the emergence of information anarchically.

This study on folksonomy was developed from the perspective of SBIDM users within the Digital Preservation project at the University of Aveiro, whose labels were compared with the controlled terms used by information professionals at the same information services. The analysis of the information behaviour of the group of students, associated with the set of tags attributed by them to various documents, proves that this was a group of individuals who produced information in a disorganized way, assigned a variety of tags and used the same terms, including singular and plural terms, acronyms and abbreviations, long words and, simultaneously, generic and particular terms.

The selected students were in the same age group and had a similar level of education and professional experience, which made a greater variety of responses more difficult. In addition, they were already reasonably familiar with the documents and the purpose of their collaboration in the Digital Preservation project, and had thus acquired certain characteristics and some technical proficiency through the monitoring of the information professionals, making it a possibility that there were some inauthentic results. However, if this study had been carried out with the collaboration of students from outside the project, it would have been equally possible for there to be inauthentic results due to a lack of perception of what was intended. These factors are limitations of the study.

The favourable opinion of the students who collaborated in this study with regard to the adoption of folksonomy in the SBIDM information systems encourages the development of a new study through which to understand what the opinion of the information professionals at SBIDM is and what the professional–user relationship could look like. Even though the students were not familiar with the methods of the professionals, they acquired enough sensitivity to realize the need for validation of the terms and to accept that the selection of terms is subject to different points of view. Since there is already this tendency on the part of users, there is a need to analyse the opinion of information professional on this possibility and evaluate the best way to move forward with such a collaboration.

According to Santos and Albuquerque (2021), there have already been studies on tools that reconcile indexing with folksonomy. To this end, it is suggested that hybrid systems of knowledge organization be explored in future research in order to evaluate the best way to move forward with this collaboration.
Future studies may also be directed towards the analysis of collective access software – free and open-source software for cataloguing and publishing museum and archive collections, such as that which has supported the Digital Preservation project being developed by SBIDM.

The analysis and labelling carried out by the group of students collaborating in this project was done manually and theoretically. In other words, the results of this study are not reflected in the practical and technological components of the project. Thus, it would be relevant to understand the level of capacity and acceptance of collective access software regarding uncontrolled information and how information is made available to users.

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Towards a STEAM model for digital fluency skills: Perceptions of students and teachers

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Abstract
Transliteration involves skills, critical thinking and practices based on digital fluency in a changing context. This concept is based on the inquiry process of scientific research, but is currently not integrated into the STEAM (science, technology, engineering, art, mathematics) approach. In the first phase of the ‘TLIT4U – Improving Transliteracy Skills through Serious Games’ project, an attempt was made to clarify the STEAM framework towards an inquiry-based training model. The authors, belonging to different universities in Bulgaria, Finland and Italy, investigated the perception of the concept of digital fluency and the research-process awareness of students with different disciplinary backgrounds at their respective universities. Subsequently, the authors organized interviews and focus groups with teachers, librarians and scholars at partner universities to investigate their perceptions of transliteracy. The main findings and open questions highlighted by the TLIT4U comparative study are presented in this article.

Keywords
STEAM, transliteracy, inquiry-based learning, digital competences, digital fluency

Introduction
The acronym STEAM represents the starting point for a new way of learning and teaching in higher education. In a STEAM approach, the ‘S’ for science is the starting point and is used to identify and study the research problem, establish the cause and show students the solutions adopted so far. The ‘T’ of technology represents the set of tools necessary to implement the initial solution to a problem. The ‘E’ of engineering is the implementation method, as the effectiveness of a research design is based on the
combination of ‘user expertise’ and ‘tool complexity’. From the ‘A’ of art, the STEAM approach takes creativity, an innovative and disruptive element in the STEAM alphabet. In fact, art serves to broaden horizons and to approach things in a completely different way. The ‘M’ of mathematics, in a STEAM activity, remembers that collecting feedback, applying it, modifying the project, returning to the original problem, searching for new questions, and trying and trying again are all important moments as they are representative of the research inquiry and experimentation process. The acronym STEM is often used because it is not considered the A of. The UNESCO International Bureau of Education affirms that:

STEM competence covers both the ‘know-what’ (the knowledge, attitudes and values associated with the disciplines) and the ‘know-how’ (the skills to apply that knowledge, taking account of ethical attitudes and values in order to act appropriately and effectively in a given context). In the information age of the 4th Industrial Revolution, the ‘know-what’ and the ‘know-how’ of STEM encompasses the traditional components of knowledge, skills, values and attitudes and the all-important expansion of information, big data and technology. (UNESCO International Bureau of Education, 2019: 11)

This definition highlights that we cannot limit ourselves to interdisciplinary content and that the research process is as important as the content. So, a different way of thinking to solve problems has to be considered. Furthermore, the UNESCO definition highlights that the STEM approach is necessary in the world of work to make nations competitive in a society that is constantly changing. The STEAM approach that the authors highlight in this article focuses on the integration with transliteracy skills, considered as a continuum of digital fluency skills. ‘Digital fluency’ is a term that updates different definitions of ‘literacies’ corresponding to different phases of the inquiry process (Fleming et al., 2021). In the context of the ‘TLIT4U – Improving Transliteracy Skills through Serious Games’ project, the authors consider that a STEAM approach, integrated with teaching and learning transliteracy and digital fluency competences, now makes it possible to improve the inquiry-based learning process, and every teacher can offer students equal learning opportunities to acquire digital fluency competences.’

A problem with the STEAM approach is that some teachers focus on technology as a new set of digital skills to be developed separately from the curriculum content, and not integrated into each subject’s research method (Livingstone, 2012). This is the reason why it is important to understand teachers’ beliefs and perceptions related to STEAM. Teachers, as important people in a student’s acquisition of skills, have prior experiences that will influence their STEAM education and learning.

The aim and objectives of the research were to explore the perceptions of students and teachers in relation to the problem, and to understand the context of the three partner universities of the TLIT4U project – the University of Library Studies and Information Technology (Bulgaria), University of Parma (Italy) and University of Lapland (Finland) – and one non-governmental organization – Fondazione Politecnico di Milano (Italy). The objectives were as follows:

- To explore students’ awareness of digital fluency terms;
- To assess students’ level of skills according to the updated European Digital Competence Framework for Citizens (DigComp 2.0);
- To study expert groups’ perceptions and attitudes in relation to the application of the STEAM approach in their teaching.

**Literature review**

Enrolment in STEAM disciplines at universities is increasing globally, which can be attributed to the greater life opportunities open to students as a result of a STEAM education. But while institutional access to STEAM programmes is widening, the retention and success of STEAM undergraduate students remains a challenge. Pedagogies that support student success are well known; what we know less about is how university teachers acquire pedagogical competence (Winberg et al., 2019). Calls to improve student learning and increase the number of STEM college and university graduates assert the need for the widespread adoption of evidence-based instructional practices in undergraduate STEAM courses. Faculty identify a variety of barriers to proposed changes in teaching practice; however, faculty also identify a variety of drivers that might help institutions change teaching and learning norms (Shadle et al., 2017).

The EU STEAM Coalition is a European network that is working to build better STEM education in Europe. The main goal of STEM methods is to activate a consistent process of inquiry-based learning with a focus not only on competences, but also on the process itself. The way in which this inquiry is realized is much more important than the result. The teacher’s role is to monitor and assist in the various stages of task performance. Wherever and whenever necessary, the teacher intervenes and supports the
inquiry process. The assessment of students is made taking into account the complex performance of the inquiry.

The inquiry process characterizes not only STEAM education but also the media and information literacy approach. From a policy point of view, UNESCO’s (2013) Media and Information Literacy: Policy and Strategy Guidelines constitutes a sort of manifesto for the UNESCO vision of media and information literacy. The text begins by explaining the relevance of media and information literacy policy and strategy in the digital age and continues by illustrating how media and information literacy is a composite concept. Designed in 2019 and launched in 2021, the ‘Global Standards for Media and Information Literacy Curricula Development Guidelines’ form a relevant basis to guide media and information literacy curricular development and implementation by stakeholders in countries around the world. Media and information literacy is a basis for enhancing access to information and knowledge, freedom of expression and quality education. It describes the skills and attitudes that are needed to value the functions of media and other information providers, including those on the Internet and in society, and to find, evaluate and produce information and media content; in other words, it covers the competences that are vital for people to be effectively engaged in all aspects of development.

Partially overlapping with media and information literacy, the concept of transliteracy highlights the many literacies that today make the inquiry process complicated (Ipri, 2010). The term ‘transliteracy’ was originally defined by Thomas et al. (2007) as ‘the ability to read, write and interact across a range of platforms, tools and media, from signature to oral through handwriting, print, TV, radio and film, to digital social networks’. Sukovic later defined transliteracy as a ‘fluidity’ of movement across a range of technologies, media and contexts:

Transliteracy is an ability to use diverse analogue and digital technologies, techniques, modes and protocols:

- to search for and work with a variety of resources
- to collaborate and participate in social networks
- to communicate meanings and new knowledge by using different tones, genres, modalities and media. (Sukovic, 2016: 21)

The concept of transliteracy has been combined with the concept of fluency. ‘Digital fluency’ is a relatively new term. Unlike ‘digital literacy’, which means understanding how to use technology and different tools, digital fluency is the ability to create something new with them (new information, a new product). Transliteracy consists of skills, knowledge, thinking and acting, which enable a ‘fluid’ movement across in a way that is defined by situational, social, cultural and technological contexts, including capabilities such as find, evaluate, select, manage, create and reflect. Bruce et al. (2012: 527) have developed similar concepts and argue that ‘experiences of informed learning’ include information awareness, sources, processes, control, knowledge construction, knowledge extension and wisdom.

The interconnection between multiple literacies and STEAM education is found in the inquiry process. The two most important frameworks for inquiry models are the Framework of Skills for Inquiry Learning (FOSIL) and Carol Kuhlthau’s Guided Inquiry Design. FOSIL is a model for the inquiry process that includes the following steps: connect to previous knowledge; develop questions; investigate; construct; express; reflect. Inquiry is an approach to learning (not limited to information skills) and the model has been developed by Barbara Stripling (2021). These tools help educators to design and resource effective inquiries – often as a collaborative team involving teachers and librarians – and to support students engaged in inquiry. FOSIL is based on a continuum of skills and strategies that includes a new focus on multiple literacies, including visual and media literacy; the use of technology for learning, including digital literacy skills pre-kindergarten; the personalization of learning; the evaluation of multiple perspectives; digital citizenship and civic responsibility; design thinking, including innovation and creation; and student voice and agency.

Guided Inquiry Design is a research-based pedagogical framework that was developed by Kuhlthau for teaching information literacy skills. The inquiry framework for designing and facilitating inquiry-based learning includes the following steps: open; immerse; explore; identify; gather; share; create; evaluate.

**Theoretical framework**

The theoretical framework guides the research of the project and determines how the project can compare the different contexts of the partners – Bulgaria, Finland and Italy. From the analysis of the literature, a general representation of the relationship between the concepts has been established. The framework focuses on existing and time-tested theories and
definitions of transliteracy, and includes the state of the art and the results of various research. In the TLIT4U project, there are three contexts – technological, pedagogical and cognitive background – and the demands of different academic disciplines, including library and information science. Trying to combine the definitions and competences in the literature, the matrix in Table 1 can be used to define the theoretical framework of the TLIT4U project. The theoretical framework lists the different elements of the concepts of information, digital literacy and digital fluency.

### Methodology

The current research examined students from three universities – the University of Library Studies and Information Technologies (Sofia, Bulgaria), the University of Parma (Parma, Italy) and the University of Lapland (Rovaniemi, Finland) – and university lecturers, teachers and library specialists (hereafter, experts) at the three partner universities and the Fondazione Politecnico di Milano.

The methodology for selecting the sample of students involved sending invitations to students from the three universities with the intention to obtain at least 80 respondents. The same method of invitation using the email lists of the three partner universities was applied to the second group of experts, with the aim of obtaining up to 20 respondents. The following research tools were used to collect the data: (1) an online questionnaire for the students translated into the three partner languages and (2) structured interviews with the experts, also in the three partner languages.

### Target group: students

To investigate the students’ perceptions, the project team organized a digital fluency workshop with the aim of introducing the concepts of transliteracy, STEAM and digital fluency to the students. Professor Miltenoff Plamen was the expert speaker who illustrated the various topics, which were divided into nine micro-questionnaires for each topic covered. The workshop in Sofia was held face-to-face in March 2022, and that with the Finnish students and Italian students was held online in April 2022.

The questionnaire (see Appendix 1) was divided into three parts. The first aimed to understand the degree of awareness of key terms such as digital fluency, media and information literacy, soft skills, technology skills and so on, and the level of expertise for the research process. The second was a self-assessment of a set of five skills according to the European Digital Competence Framework for Citizens: information and data literacy, communication and collaboration, digital content creation, security and problem solving. The third part of the questionnaire aimed to explore the attitudes and awareness of the target groups in relation to terms such as Education 4.0, Industry 4.0, the Internet of Things, big data, artificial intelligence and digital humanities; these terms are part of everyone’s daily routine and are a prerequisite for innovation in all areas of life. Many of the questions were closed-ended but the question on the level of expertise in 21st-century research skills was open-ended.

Sixty-two Bulgarian students responded to the questionnaire (although 101 participated in the workshop), of which the majority (33%) were aged 37–47, followed by 27% in the younger 26–36 age group. In Finland, 57 students completed the questionnaire, the majority (63%) of whom were 21–25-year-olds, followed by 21% in the younger 18–20 age group. In Italy, 21 students answered the questionnaire (although there were 37 participants in the workshop),

### Table 1. The digital fluency (transliteracy) continuum.

<table>
<thead>
<tr>
<th>Competency</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Access</td>
<td>Ability to identify information resources and find them</td>
</tr>
<tr>
<td>Innovation</td>
<td>Ability to communicate, collaborate and create content using technologies</td>
</tr>
<tr>
<td>Technology</td>
<td>Ability to use technologies and be aware of cyber security</td>
</tr>
<tr>
<td>Cognitive</td>
<td>Critical-thinking skills, critical analysis and active citizenship</td>
</tr>
<tr>
<td>Learn</td>
<td>Ability to learn and teach using technologies, and use reflective practice</td>
</tr>
<tr>
<td>Connect</td>
<td>Ability to understand in depth the resources identified and used, and build new knowledge by connecting concepts</td>
</tr>
</tbody>
</table>
with half in the 21–25 age range, followed by 20% between the ages of 26 and 36.

The processing of the information was carried out through statistical data processing programmes, and the open-ended questions were coded and processed manually.

**Target group: teachers, librarians and scholars**

To investigate the teachers’ perceptions, the authors organized a series of interviews and focus groups with a sample of the experts. The interviews and focus groups used the same structure of the eighth questions in the TLIT4U project (see Appendix 2). The responses collected during the focus groups were transcribed semi-automatically (using YouTube subtitles) in an attempt to report the whole discussion.

The respondents were questioned along the following lines: What do teachers and instructors think of digital literacy? What do they think of digital fluency? In particular, what do teachers, librarians and scholars in the humanities and engineering think? Finally, what do they think generally about the use of technologies for teaching and learning? The responses were transcribed and coded. To encode the responses, they were analysed using the theoretical framework developed by the literature review.

**Students’ perceptions**

All of the respondents in the three countries (see Table 2 and 3) shared a positive approach towards innovation and the use of technologies for scientific research, and wished to improve their digital fluency. There were differences in their perceptions, however, as well as in their understanding of the scientific inquiry process and the priorities of digital fluency capabilities.

**The research continuum**

In Bulgaria, the students recognized scientific research and skills in the digital world as ‘a rather important aspect in people’s lives today’. Media and information literacy in modern times was considered extremely insufficient to be adequate for and competitive in the labour market. In most of the judgments expressed, the students would have liked to have had practical training and skills in using technical tools. However, an understanding of the complexity of the investigation process was evident, as shown by the following responses: ‘collection of different data on the object of the research’; ‘facts and new knowledge or their collection and systematic analysis’; and ‘search, analysis and verification of data’. Some respondents used general formulations to express their thoughts on 21st-century research: ‘the application of scientific methods to the study of something’, ‘process’ and the like.

Since development and progress are defined and guided by the scientific approach of science and scientists, the students were asked about their vision of scientific research. Media literacy is an important topic in Finnish curricula, starting from early childhood education through to higher education. The terms used in teacher training are ‘media literacy’, ‘media education’ and ‘multiliteracy’, which may have confused the respondents, but otherwise the answers in relation to digital fluency and awareness were perfectly in line with their previous knowledge. The respondents, however, quite often forgot out-of-process research methods. Interestingly, some respondents also mentioned ‘sharing’ research results and data as part of the research process, even though this is not specifically highlighted in their curricula.

The Finnish students understood digital literacy as the ability and skills to search for, critically evaluate and analyse information, use various digital tools and work in a digital environment. Their answers included the following remarks: ‘digital reading skills are about understanding credible and non-credible information and the ability to differentiate’; ‘being able to read, perceive and analyse digital text, image, voice and sound’; ‘using digital tools, platforms and materials to create new things’; and ‘a capacity to critically interpret texts in a digital environment’.

The Finnish students understood the research process as an activity involving several stages, including: choosing a topic; formulating research questions; searching for information and its critical analysis; combining information; conducting research using certain research methods; and formulating conclusions, recommendations and/or guidelines. Interestingly, some of the respondents mentioned that sharing research results is an inevitable part of the research process: ‘I see the process as follows: extracting information, analysing information, creating new information and sharing new information’; ‘We ask research questions, determine methods for extracting information, analyse the information obtained using a certain method, formulate conclusions and evaluate the research process. Finally, we publish the results’. There were other interesting opinions expressed by the Finnish students:

the research process is about determining what we want to know and understand, how we will acquire the information we need, and what methods are best for the purpose. Also, an important aspect is how many
people/researchers work on the same problem, as they generate more ideas and opinions and allow the issue to be considered from all sides.

The process of research involves the study of a certain phenomenon in order to find new information about it. Research is a multidimensional process through which new information is created.

The majority of the Italian students perceived that mainly technological skills are needed for the 21st century. There was no agreement on soft skills but many thought they needed social skills. According to some respondents, digital literacy is the capability to evaluate information. There was a significant level of agreement on the definition of digital fluency; technological skills were especially appreciated, together with communication skills. Fluency was perceived as curiosity, communication, creativity and innovation – every element of digital fluency was appreciated. The students demonstrated an interest in STEAM education but did not know about the digital transformation of higher education. The ability to analyse data and knowing how to communicate were considered the areas of greatest importance. It is interesting that when asked about the inquiry process, most of those interviewed indicated the search for information, not the inquiry methods of academic research.

**Self-assessment**

In Bulgaria, most of the students assessed themselves in a positive way, remarking that they had a ‘good’ or ‘average’ level of fluency. However, in our opinion, caution should be exercised regarding those who answered ‘average fluency’, as this is a neutral response position where it is not possible to assess how well they were able to cope with challenges. The European Digital Competence Framework for Citizens also defines skills related to solving problems of a technical nature, as well as the use of technology to create and communicate new knowledge (Martzoukou et al., 2020).

Most of the respondents in Finland deemed that they were quite or extremely competent in browsing, searching and filtering data, information and digital content. In regard to evaluating data, information and digital content, they replied that they were only somewhat competent. Almost as many respondents replied that they were quite or somewhat competent in managing data, information and digital content, but some said they had poor data management skills. The respondents considered that they were quite good at communicating and sharing through digital technologies, but most found that, in engaging in citizenship through digital technologies, they were only somewhat competent. The self-assessment questionnaires revealed some important gaps in Finnish students’ education.

In Italy, most of the respondents were confident in knowing how to find and manage information and data, together with the ability to communicate online and create new content is widespread together with security, but they felt that they lacked programming and copyright skills. Not everyone was confident that they were capable of reusing information.

**Experts’ perceptions**

The experts from the three countries were asked about the importance of digital fluency in the field of

<table>
<thead>
<tr>
<th>Transliteration</th>
<th>Bulgaria</th>
<th>Finland</th>
<th>Italy</th>
</tr>
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<tbody>
<tr>
<td>Digital fluency</td>
<td>In the majority of the opinions expressed, digital fluency was understood as ‘computer literacy’, ‘ability to work with a computer’, ‘knowledge of the IT [information technology] sphere’, ‘being aware of the Internet of Things’, ‘ability to use ICT [information and communications technology]’</td>
<td>Digital fluency was understood as the ability and skills to search for, critically evaluate and analyse information; use various digital tools; and work in a digital environment.</td>
<td>There was substantial agreement on digital fluency being technological skills; soft skills were especially appreciated together with social communication skills.</td>
</tr>
<tr>
<td>Research inquiry</td>
<td>The respondents focused on resources and tools for discovering information and knowledge.</td>
<td>The respondents understood the research process as including several stages but often forgot out-of-process research methods.</td>
<td>Most of respondents confuse inquiry based research with looking for information, analysing it and using consistently.</td>
</tr>
</tbody>
</table>

**Table 2. The inquiry research continuum.**
education and scientific research. To collect data from the experts (teachers, librarians and scholars), a structured interview was used with eight questions (see Appendix 2) on their perceptions of their attitudes and the place of next-generation technologies in their teaching.

In Bulgaria, 18 independent in-depth interviews were conducted. This made it possible to reveal essential details and nuances related to the purpose of the research, and to search for the root of the problems recorded and possible ways to solve them. The individual interviews with the invited specialists (teachers, university professors, librarians and professionals from the Ministry of Education and Science) took place both face-to-face and online (via videoconference) in the period from March to May 2022.

In Finland, four focus groups were organized between 6 April 2022 and 26 April 2022. The participants were librarians (one group with three participants), university teachers (two groups with four participants in each group), and teachers and media education experts (one group with four participants). A total of 15 people were interviewed. The interviews used the eight-question structure of the TLIT4U project. Only the order of the questions was changed slightly. The interviews were conducted in Finnish and the results were summarized in English. Three interviews were set up online with Microsoft Teams, and one interview was a face-to-face meeting. All of the interviews were recorded and lasted between 55 and 65 minutes.

In Italy, the focus group was organized virtually on 14 June 2022 and lasted 90 minutes. The interviewees included two librarians, two engineering teachers and three humanities teachers, giving a total of seven interviewees. All of the staff belonged to the University of Parma and the Fondazione Politecnico di Milano, and had an interest in innovation in higher education. The focus group discussion was semi-automatically transcribed (using YouTube subtitles) in an attempt to record it in its entirety.

The main conclusion from the interviews in Bulgaria was the need for a comprehensive and unified policy to integrate and link information and digital skills – almost everything contained in the perception of the term ‘transliteracy’ – in the curricula studied in schools and universities, including approaches to using technology for creating and communicating new content. The experts pointed out that this need is important for all participants in the educational process (students and educators), since only people who are confident in their inquiry skills find successful professional career and strive for self-improvement.

With regard to the relationship between the concepts of ‘information and digital literacy’, education and libraries, the experts most often expressed that ‘in the library, education and both types of literacy meet’. According to them, information literacy needs to continue to be part of curricula and training because ‘it is the basis of digital literacy – the ability to master ideas, to discuss problems, to create’. In the curricula of schools and at the university level, it is necessary to invest much more seriously and comprehensively in information and digital literacy training, which will help ‘people find a path to realization and improvement with ease and confidence’. According to the respondents, libraries in educational institutions (higher education institutions and, increasingly, school libraries) conduct targeted training for students in information and digital literacy but, unfortunately, in Bulgaria this is not particularly popular, probably

### Table 3. Self-assessment.

<table>
<thead>
<tr>
<th>Self-assessment</th>
<th>Bulgaria</th>
<th>Finland</th>
<th>Italy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Information and data literacy</td>
<td>Students felt most comfortable retrieving information and recognizing the need for it but less confident in their abilities to evaluate information and to manage it.</td>
<td>Ability to search for, critically evaluate and analyse information, to use various digital tools and work in a digital environment. Students were not very confident with copyright and licencing issues, and especially coding and programming.</td>
<td>Students knew how to find and manage information and data, communicate online and create new content. They were capable of reusing information but lacked programming and copyright skills.</td>
</tr>
<tr>
<td>Communication and collaboration</td>
<td>The majority of the respondents lacked coding skills and had an 'average' level of digital fluency.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital content creation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Safety</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem solving</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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Encheva et al.: Towards a STEAM model for digital fluency skills 81
due to an insufficient understanding of its importance. The Bulgarian experts believed that training in both schools and universities is still not encouraging and extensive enough in terms of students gaining confidence in using technology and different tools to create a new product. They proposed that libraries and universities need to create an environment for the development of digital literacy and digital confidence by carrying out research on the need for training for the development of digital literacy and digital fluency, and creating individualized curricula and syllabi according to the level of development of students’ digital literacy.

This opinion was shared by the Finnish experts, who thought that students should be expected to be able to search, analyse and interpret information, as well as communicate using various digital tools. They should be able to use different digital tools and create new knowledge in their own research (Bachelor’s and Master’s theses), and have knowledge of the principles of the ethical use of information. Multiliteracies and media literacy are important terms in Finnish primary education curricula, and university lecturers are expected to be aware of them. As a problem, the experts highlighted the fact that not all trainers have the necessary skills to integrate the concepts of multiliteracies and media literacy in their teaching. The concept of digital fluency is not implemented in the Finnish education system. The term ‘multiliteracies’ is taken as the basis for curricula. In Finland, digital technologies are part of everyday life: work, teaching, learning and research. According to the Finnish experts, teachers, students and librarians should know about and be able to use the available tools. They also emphasized that digital technologies promote accessibility for people with disabilities. As a challenge, they saw not only the learning of new technologies, but also the selection of correct and appropriate new technologies and tools.

The opinions of the Bulgarian experts supported what was shared by the Finnish and Italian experts, but also touched on several other aspects. First, in education, technologies provide an opportunity to present material in an interesting and memorable way to learners. Moreover, the realization of the idea of a knowledge-based economy (and, in particular, lifelong learning) is impossible without technologies in the fields of education and scientific research, and they added that innovations in science cannot be implemented without the use of modern information and communications technologies. The Italian respondents agreed that technology changes the way of teaching and stimulates curiosity, participation and active learning, but stated also that it is important that trainers (teachers, lecturers, librarians) are aware of the appropriate tools.

Regarding the relationship between the concepts of information and digital literacy, education and librarianship, the experts from Italy shared the opinion that learners must have the skills to identify, use and evaluate information resources, as well as communicate and create new resources using appropriate technologies. Also, they should possess the capabilities of working independently and critical thinking. When asked how they viewed the role of libraries, schools and universities in the formation of digital confidence among students, the experts from Italy believed that the creation of original content is not limited to knowledge of technology. According to them, it is necessary to emphasize the purpose and subject of the study/research, and not only master the appropriate technology for creating content. In Italy, digital fluency must be understood correctly: it cannot be confused with knowing how to apply technologies. Instead, it is necessary to know and be able to apply the inquiry process, starting with clear objectives and research questions. An important element of digital fluency is curiosity, which must be stimulated by teachers. Teachers themselves must learn new skills; in particular, they must know which technologies are useful for teaching. With regard to the priority of the necessary skills, it should be recognized that Italian students arrive with a wealth of knowledge and skills derived from previous learning and the family context. The problem is that they lack critical and analytical skills.

New technologies are the driving force behind the development of innovations in all spheres of everyday and professional life. They require the continuous acquisition of new skills to be applied at the theoretical and practical levels. Active participation in lifelong learning processes is the only guarantee that people continue to be adaptable and competitive in the face of constant change.

Conclusions

The TLIT4U project aims to introduce innovative practices in the field of higher education through the application of a game-based approach for teaching transliteracy and adapting the STEAM model. University educators lack a consistent understanding of STEAM education, therefore they need to innovate in their teaching by using the framework of STEAM education. The process of integrating science, technology, engineering, art and mathematics into an academic subject can be as complex as the global challenges that require a new generation of STEAM
experts. Educational researchers have indicated that teachers struggle to make connections between the STEAM disciplines.

Based on the findings of this study, the TLIT4U team will design a draft conceptual framework on which to focus the game approach. The conceptual model will be based on an adapted STEAM model for inquiry-based learning after in-depth analysis of the different perceptions and training approaches related to transliteracy and STEAM in Bulgaria, Finland and Italy. The students and experts survey results will be used to develop an innovative game for teaching inquiry-based learning in higher education. The game will also be able to be adapted to the needs of other target groups of the project – for example, informal learning for adults.

If we want current and future students to cope confidently with new challenges in the world, it is necessary to change ways of teaching and acquiring knowledge and skills towards a focus on values and attitudes. To this end, it is necessary to move away from teaching that is limited to memorizing and reproducing information towards the use of interactive methods, engaging students in the educational process, personalization of learning content and orientation to results. The need for teachers and educators to be creative, innovative and inspiring is becoming increasingly clear.

Directly linking serious gaming with advancing digital fluency and transliteracy in various higher education curricula could encourage young people in appying an inquiry-based learning approach.

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Notes
1. ‘TLIT4U – Improving Transliteracy Skills through Serious Games’ is an Erasmus+ Project (number 2021-1-BG01-KA220-HED-000027624). The TLIT4U project has run since 2021 by three European higher education institutions. It highlights the need to improve students’ multiple literacy skills and teachers’ learning in STEAM through using serious games. The TLIT4U project aims to engage students with transliteracy, Steam education and inquiry based learning using serious games. For more information, see https://translit-eu.unibit.bg
2. See https://www.stemcoalition.eu/about
3. See https://fosil.org.uk/
4. See https://guidedinquirydesign.com/
5. The moderator of the interviews with the Bulgarian experts was Marcela Borisova, a professor at the University of Library Studies and Information Technology.
6. The interviews were facilitated by Mari Maasilta.
7. The discussion was transcribed by Lucia Coletti and facilitated by Anna Maria Tammaro and Giulia Conti.

References


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Marina Encheva is an associate professor at the University of Library Studies and Information Technology, where she lectures in electronic resources, information analysis and e-learning. She has worked as a librarian in AUBG and CAS. Dr Encheva is a member of the executive committee of the European Bureau of Library, Information and Documentation Associations and the standing committee of the IFLA Section on Education and Training. From 2017 to 2023, she has been a coordinator on three Erasmus+ projects targeting students, librarians and university teachers: ‘NAVIGATE: Information Literacy: A Game-Based Learning Approach for Avoiding Fake Content’; ‘TLIT4U: Improving Transliteracy Skills through Serious Games’; and ‘NEDLib: Digital Competence and Information Literacy for Librarians’.

Anna Maria Tammaro holds a PhD in Information Science, is the editor-in-chief of Digital Library Perspectives and the editor of the ‘Digital Heritage’ column of the International Information and Library Review. Since 2000, she has taught at the University of Parma and coordinated two international Master’s degree courses, which are conducted in English: the International Master’s in Information Science and the Erasmus Mundus Master’s in Digital Library Learning. She is a member of the team of two Erasmus+ projects: ‘NAVIGATE: Information Literacy: A Game-Based Learning Approach for Avoiding Fake Content’ and ‘TLIT4U: Improving Transliteracy Skills through Serious Games’. Her research interests include digital libraries, data curation and media information literacy.

Plamena Zlatkova was awarded a PhD in Library and Information Science in 2011. She has been an assistant professor at the University of Library Studies and Information Technology since 2008, lecturing in library computer technologies and reference and bibliographic services. Dr Zlatkova has had experience as a librarian at the national library of Bulgaria. She has worked on a number of projects, including developing a network of centres for the continuing education of librarians servicing small municipalities; the digitization of Bulgarian literature of the Revival; and ‘NAVIGATE: Information Literacy: A Game-Based Learning Approach for Avoiding Fake Content’. Dr Zlatkova was a member of the executive committee of the Bulgarian Library Association from 2012 to 2015.

Gergana Yancheva holds a PhD in Book Science, Library Science and Bibliography. She is an assistant professor in the Department of Library Science at the University of Library Studies and Information Technology. Dr Yancheva is a member of the Society for the History of Authorship, Reading and Publishing as well as the Bulgarian Library and Information Association. In recognition of her contributions, she was honoured with the Honorary PhD Candidate award in 2018 by the University Youth Knowledge Academy at the University of Library Studies and Information Technology. Dr Yancheva is a team member of two Erasmus+ projects: ‘NAVIGATE: Information Literacy: A Game-Based Learning Approach for Avoiding Fake Content’ and ‘TLIT4U: Improving Transliteracy Skills through Serious Games’.

Giulia Conti holds a PhD in Sociology of Communication and is a research fellow at the University of Modena and Reggio Emilia and a lecturer at the University of Parma. Her research focuses on urban games and social cohesion, game-based learning and media education. She is a team member of two Erasmus+ projects: ‘NAVIGATE: Information Literacy: A Game-Based Learning Approach for Avoiding Fake Content’ and ‘TLIT4U: Improving Transliteracy Skills through Serious Games’.

Mari Maasilta (Doctor Social Science) is a university lecturer in media education at the University of Lapland and an associate professor in media research at Tampere University. Her research interests are in the fields of critical media education and media and communication studies. Her research projects have dealt with disinformation and fact-checking, and the representation of refugees, migration and Islam in the media. Currently, she is participating in the ‘TLIT4U: Improving Transliteracy Skills through Serious Games’ Erasmus+ project and the ‘Global Media Education through Development of Online Teaching’ project.
## Appendix 1. Digital fluency survey

### Questions for students

1. Digital fluency includes the following skills (see the links for examples):

<table>
<thead>
<tr>
<th>Ability</th>
<th>Strongly disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to create content</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ability to evaluate information</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ability to make reasonable judgments</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ability to work with different technologies</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

2. Digital fluency includes the following skills:

<table>
<thead>
<tr>
<th>Ability</th>
<th>Strongly disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to acquire, assess and apply technological skills (digital literacy)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Teaching ability and effective communication (social competence)</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

3. Media and information literacy encompasses the following abilities:

<table>
<thead>
<tr>
<th>Ability</th>
<th>Strongly disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ability to acquire, analyse, assess and create content in various forms and formats (text, images, audio and video)</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ability to search and find, analyse and apply vetted information</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Ability to form personal opinions and embed information in one’s personal knowledge system</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>The level of media and information literacy skills is the foundation of active citizenship</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>

4. In one short paragraph, please share your understanding of ‘digital literacy’:

---

5. Soft skills are

<table>
<thead>
<tr>
<th>Skill</th>
<th>Strongly disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lower-level technical skills</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Old types of skills not used by librarians any more</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Social skills</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
6. Technical skills are

- Technical skills revolve around your professional knowledge and abilities, which are specific to your industry.
- Only the ability to programme and code perfectly.
- Proficiency in the latest technologies only.

7. Soft skills versus technical skills:

- Technical skills are more important than soft skills.
- Technical skills are sufficient to succeed in the 21st century.
- Soft skills are equally important as technical skills to become a successful information specialist.

8. Which of the following belong to soft skills (check as many boxes as you see fit):

- Good coaching
- Good communication
- Insightfulness
- Critical thinking
- Equality
- Curiosity towards the ideas of teammates
- Empathy
- Emotional intelligence

9. Which of the seven elements of digital literacy sounds most:

<table>
<thead>
<tr>
<th></th>
<th>Appealing to you</th>
<th>Challenging for you</th>
</tr>
</thead>
<tbody>
<tr>
<td>Media literacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Information literacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT literacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Digital scholarship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications and collaboration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Career and identity management</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

10. The areas of digital fluency are:

<table>
<thead>
<tr>
<th></th>
<th>Strongly disagree</th>
<th>Strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Curiosity fluency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication fluency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Creation fluency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Data fluency</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation fluency</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
11. In one short paragraph, please share your understanding of the process of ‘research’:

12. Digital humanities (DH) is an area of scholarly activity at the intersection of computing or digital technologies and the disciplines of the humanities:
   - True
   - False

13. In one short paragraph, please share your understanding of ‘Education 4.0’:

14. In one short paragraph, please share your understanding of ‘Industry 4.0’:

15. In one short paragraph, please share your understanding of artificial intelligence (AI):

16. Big data is data with greater variety of data, increasing volumes and velocity:
   - True
   - False

17. The Internet of Things (IoT) describes the network of physical objects – ‘things’ – that are embedded with sensors, software and other technologies for the purpose of connecting and exchanging data with other devices and systems over the Internet:
   - True
   - False

18. Which of the following technologies are considered part of immersive technologies:

<table>
<thead>
<tr>
<th>Technology</th>
<th>True</th>
<th>False</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual reality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mixed reality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Augmented reality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consensus reality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reality television</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hyperreality</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 1: digital competences self-evaluation

1. Information and data literacy
   Competences pertinent to this area are:
   1.1 Browsing, searching and filtering data, information and digital content:
   Your ability to articulate information needs; search for data, information and content in digital environments; access them; and navigate among them.
   Your ability to create and update personal search strategies.
1.2 Evaluating data, information and digital content:
Your ability to analyse, compare and critically evaluate the credibility and reliability of sources of data, information and digital content; and analyse, interpret and critically evaluate data, information and digital content.

1.3 Managing data, information and digital content:
Your ability to organize and store information and content in digital environments and retrieve data.
Your ability to organize and process them in a structured environment.

19. How fluent are you in information and data literacy? Choose your level of proficiency for each competence:

<table>
<thead>
<tr>
<th>Section 2: digital competences self-evaluation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Communication and collaboration</td>
</tr>
<tr>
<td>Competences pertinent to this area are:</td>
</tr>
<tr>
<td>2.1 Interacting through digital technologies:</td>
</tr>
<tr>
<td>Your ability to interact through a variety of digital technologies and to understand appropriate digital communication means for a given context.</td>
</tr>
<tr>
<td>2.2 Sharing through digital technologies:</td>
</tr>
<tr>
<td>Your ability to share data, information and digital content with others through available tools.</td>
</tr>
<tr>
<td>Your ability to act as an intermediary and to know about referencing and attribution practices.</td>
</tr>
<tr>
<td>2.3 Engaging in citizenship through digital technologies:</td>
</tr>
<tr>
<td>Your ability to participate meaningfully and responsibly in society through the use of public and private digital services.</td>
</tr>
<tr>
<td>Your ability to seek opportunities for self-empowerment and participatory citizenship through appropriate digital technologies.</td>
</tr>
<tr>
<td>2.4 Collaborating through digital technologies:</td>
</tr>
<tr>
<td>Your ability to use digital tools and technologies for collaborative processes and for the co-construction and co-creation of resources and knowledge.</td>
</tr>
<tr>
<td>2.5 Netiquette:</td>
</tr>
<tr>
<td>Your awareness of behavioural norms and know-how while using digital technologies and interacting in digital environments.</td>
</tr>
<tr>
<td>Your ability to adapt communication strategies to a specific audience and to be aware of cultural and generational diversity in digital environments.</td>
</tr>
<tr>
<td>2.6 Managing digital identity:</td>
</tr>
<tr>
<td>Your ability to create and manage one or multiple digital identities and protect your own reputation.</td>
</tr>
<tr>
<td>Your ability to handle the data generated through several digital tools, environments and services.</td>
</tr>
</tbody>
</table>
20. How well do you communicate and collaborate? Choose your level of proficiency for each competence:

<table>
<thead>
<tr>
<th></th>
<th>Not at all confident</th>
<th>Extremely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interacting through digital technologies</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
<tr>
<td>Sharing through digital technologies</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
<tr>
<td>Engaging in citizenship through digital technologies</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
<tr>
<td>Collaborating through digital technologies</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
<tr>
<td>Netiquette</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
<tr>
<td>Managing digital identity</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
</tbody>
</table>

Section 3: digital competences self-evaluation

3. Digital content creation
   Competences pertinent to this area are:
   3.1 Developing digital content:
      Your ability to create and edit digital content in different formats to express yourself through digital means.
   3.2 Integrating and re-elaborating digital content:
      Your ability to modify, refine, improve and integrate information and content into an existing body of knowledge to create new, original and relevant content and knowledge.
   3.3 Copyright and licences:
      Your ability to understand the application of copyright and licenses to data, information and digital content.
   3.4 Coding and programming:
      Your ability to plan and develop a sequence of understandable instructions for a computing system to solve a given problem or perform a specific task.

21. How fluent are you in digital content creation? Choose your level of proficiency for each competence:

<table>
<thead>
<tr>
<th></th>
<th>Not at all confident</th>
<th>Extremely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developing digital content</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
<tr>
<td>Integrating and re-elaborating digital content</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
<tr>
<td>Copyright and licences</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
<tr>
<td>Programming</td>
<td>□ □ □ □ □</td>
<td>□ □ □ □ □</td>
</tr>
</tbody>
</table>

Section 4: digital competences self-evaluation

4. Safety
   Competences pertinent to this area are:
   4.1 Protecting devices:
      Your ability to protect devices and digital content, and to understand risks and threats in digital environments.
      Your ability to know about safety and security measures and to have due regard for reliability and privacy.
   4.2 Protecting personal data and privacy:
Your ability to protect personal data and privacy in digital environments.
Your ability to understand, use and share personally identifiable information while being able to protect yourself and others from harm.
Your ability to understand that digital services use a ‘privacy policy’ to give information on how personal data is used.

4.3 Protecting health and well-being:
Your ability to avoid health risks and threats to physical and psychological well-being while using digital technologies.
Your ability to protect yourself and others from possible dangers in digital environments (e.g. cyber-bullying).
Your awareness of digital technologies for social well-being and social inclusion.

4.4 Protecting the environment:
Your awareness of the environmental impact of digital technologies and their use.

22. How well do you understand safety issues in digital environments? Choose your level of proficiency for each competence:

<table>
<thead>
<tr>
<th>Protecting devices</th>
<th>Not at all confident 1</th>
<th>Extremely confident 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protecting personal data and privacy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protecting health and well-being</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protecting the environment</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section 5: digital competences self-evaluation

5. Problem solving
Competences pertinent to this area are:

5.1 Solving technical problems:
Your ability to identify technical problems when operating devices and using digital environments, and to solve them (from troubleshooting to solving more complex problems).

5.2 Identifying needs and technological responses:
Your ability to assess needs and to identify, evaluate, select and use digital tools and possible technological responses to solve them.
Your ability to adjust and customize digital environments to personal needs (e.g. accessibility).

5.3 Creatively using digital technologies:
Your ability to use digital tools and technologies to create knowledge and to innovate with processes and products.
Your ability to engage individually and collectively in cognitive processing to understand and resolve conceptual problems and problem situations in digital environments.

5.4 Identifying digital competence gaps:
Your ability to understand where your own digital competence needs to be improved or updated.
Your ability to support others with their digital competence development.
Your ability to seek opportunities for self-development and to keep up-to-date with digital evolution.
23. How fluent are you in problem solving? Choose your level of proficiency for each competence:

<table>
<thead>
<tr>
<th>Competence</th>
<th>Not at all confident</th>
<th>Extremely confident</th>
</tr>
</thead>
<tbody>
<tr>
<td>Solving technical problems</td>
<td></td>
<td></td>
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<tr>
<td>Identifying needs and technological responses</td>
<td></td>
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<tr>
<td>Creatively using digital technologies</td>
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<tr>
<td>Identifying digital competence gaps</td>
<td></td>
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</tbody>
</table>

24. How do you rate the workshop?

<table>
<thead>
<tr>
<th>Rating</th>
<th>Very bad</th>
<th>Very good</th>
</tr>
</thead>
<tbody>
<tr>
<td>Score</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

25. Your gender:
- Male
- Female
- Prefer not to say

26. Specialty or area of study:

27. Year of study:

28. You are from:
- City
- Village

29. Your age is:
- 18–20
- 21–25
- 26–36
- 37–47
- 48+
- Prefer not to say

Appendix 2

Questions for interviews with teachers

Question 1. In your opinion, what is the relationship between the concepts of information and digital literacy, education and libraries?

Question 2. ‘Digital fluency’ is a relatively new term. Unlike digital literacy, which is understanding how to use technology and different tools, digital fluency is the ability to create something new with them (new information, a new product). How do you see the role of libraries, schools and universities in shaping digital fluency among consumers?

Question 3. The seven elements of digital literacy are media literacy, information literacy, ICT literacy, digital scholarship, learning skills, communications and collaboration, and career and identity management. How do you see the role of libraries, schools and universities, and librarians, teachers and lecturers, in the formation of each of them in users and learners?
### Appendix 2. (continued)

**Question 4.** Are the elements of digital fluency (curiosity fluency, communication fluency, creation fluency, data fluency, innovation fluency) important and, if so, why are they important to library users and students, and librarians, teachers and lecturers? Would you rank them in order of importance?

**Question 5.** What is the connection between Education 4.0, Industry 4.0, the Internet of Things, artificial intelligence, big data, and libraries, schools and universities?

**Question 6.** In the heyday of fake news, what do you think are the skills we all need to be able to successfully distinguish between reliable and unreliable information?

**Question 7.** The topic of digital security is also extremely relevant. Is there a role for the librarian, teacher or lecturer in the formation of such skills in users and learners, and what is it?

**Question 8.** Why do you think technologies are important in the fields of education and research?
Cultural heritage on the Semantic Web: The Europeana Data Model

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Abstract
The Semantic Web allows data to be linked on the Web and structures information for use by humans and machines. Furthermore, it makes relationships between data explicit, enabling the creation of Linked Data. Based on a literature review, the principles and technologies underlying Linked Data are presented – namely, the Resource Description Framework and models developed for libraries, archives and museums. Europeana aggregates European institutions’ digital cultural heritage, having developed a model that follows linked-data principles. For a deeper understanding of this model, the Europeana Data Model is presented with examples of two representation approaches and the advantages of metadata enrichment in information discovery. The experience of the University of Coimbra with Europeana is briefly explained. Finally, the authors discuss the challenges that cultural heritage institutions face in adopting these models and freeing their information from the silos it is in, taking advantage of the potential that Linked Data provides.

Keywords
Europeana Data Model, libraries, archives, museums, convergence, Linked Data, Resource Description Framework, Semantic Web

Introduction
The Semantic Web is an evolution of the World Wide Web (Web) that has as its main purpose the interconnection of data through a set of tools and techniques to structure and relate information on the Web so that it can be shared, discovered, integrated and reused efficiently by both humans and machines. To achieve this goal, information on the Web must be available in a standardized, searchable format that can be managed by Semantic Web tools. In addition to representing data in a structured way, it is essential to make the relationships between data explicit, which allows for the creation of a vast collection of interrelated data sets, called Linked Data. If the information is freely accessible, the term Linked Open Data is used. Linked Data is based on the Resource Description Framework (RDF) semantic metadata model.

The need to evolve the traditional metadata formats used in libraries, museums and archives into Linked Data models has triggered initiatives in several institutions, leading to the emergence of different conceptual models for each of these areas. One of these models – the RDF-based Europeana Data Model – was developed to support Europeana, a digital platform that aggregates all kinds of digital content from cultural heritage institutions across Europe.

This article presents the technologies associated with Linked Data and describes the models developed for libraries, museums and archives, as well as the Europeana Data Model developed for Europeana. It aims to prove the applicability of Linked Data technologies in structuring and enriching the metadata of digital objects in libraries, archives and museums, and to highlight the advantages of implementations based
on Linked Data models in the interoperability, discovery and visualization of the information of digital resources in cultural heritage institutions. Some possibilities for future work are also presented.

This work has been developed from a literature review, considering the reference documentation of the World Wide Web Consortium (W3C), the documentation on the Europeana Data Model and Europeana’s technical recommendations, and scientific articles mainly from the last five years.

**Linked Data**

Much of the information we get on the Web is provided through HTML (HyperText Markup Language) pages, and by using hyperlinks we can scroll through linked pages. However, if we perform Web searches on a particular subject and get several links in the results page, we need to open each one to understand its relevance to the search we are doing. The Semantic Web allows for the evolution of information discovery mechanisms to a semantic level through the structured representation of data and its connections, so that data can be processed by machines. Linked Data is the core of the Semantic Web and follows the principles defined by Tim Berners-Lee (2006): (1) use Uniform Resource Identifiers (URIs) as persistent data identifiers; (2) use HyperText Transfer Protocol (HTTP) URIs so that they can be accessed; (3) use standardized vocabularies, which allow machines to interpret data in the same way and ensure interoperability and the ability to interrogate multiple repositories; and (4) include links to other URIs so that data can be connected.5

Linked Data Web technologies are part of a set of W3C recommendations, enabling the creation of Web data repositories, building vocabularies and writing rules to manipulate data. The underlying technologies for Linked Data are the RDF; various serialized representations of the RDF (RDF Extensible Markup Language (RDF/XML), Notation3 for RDF (N3), Turtle, N-Triples, RDF/JSON); data query language (SPARQL); and the definition of vocabularies and ontologies (the RDF Schema, the Simple Knowledge Organization System (SKOS), Web Ontology Language (OWL)) (World Wide Web Consortium, 2015).8

**Resource Description Framework**

The RDF is a model for describing resources and the relationships between them in a flexible and domain-independent way. Its basic structure is a three-element tuple (triple), subject → predicate → object, which allows sentences about resources to be made. An example is shown in Figure 1.

![Figure 1. Example of an RDF triple.](image)

For the example in Figure 1, we can write the triple as follows: (<http://../queiros>,<http://../author>,<Os Maias>). The subject and predicate elements are Web resources, with a corresponding URI accessible via the HTTP protocol. The subject and object elements can have a literal value or a URI. The predicate element establishes a relationship or property between the subject and the object.

Multiple triples can be combined, building a network of unlimited information. For the triple shown in Figure 1, if we replace the literal value of the object with a URI, we get a labelled graph and, with multiple triples, we can represent more information (Figure 2) from a database, which is labelled ‘p’.

A similar data set corresponding to a translation of the same work, database f, is shown in Figure 3. The existence of a common URI between the two structures makes it possible to link the two graphs and automatically obtain information about the original title of the work from database f, which is not in that database. One of the great advantages of Linked Data is that these databases can exist in different places on the Web.

We can improve the merged result by adding some information considering the equivalence of the predicate naming: ‘p: author’ is the same as ‘f: auteur’. Moreover, both correspond to a resource category already defined in the community, such as ‘Person’ (‘foaf: Person’), with information about the name, date of birth and so on. The new representation of information, resulting from the addition of new phrases and existing terminology, allows the f-database user to ask questions such as ‘What is the web page of the author of the book?’, even if this information is not in their database. By connecting to an already defined data set (‘Person’), it is possible to combine this data set with other data sources, such as Wikipedia.10 The resulting graph is shown in Figure 4.
To present RDF data, several serialization formats can be used, including RDF/XML, Turtle, N-Triples, Trig, N-Quads, JSON-LD and RDFa. Figure 5 shows an example of an RDF and its serialization in RDF/XML.

RDF vocabularies, ontologies and SPARQL
To allow interoperability, the RDF representation of data must be meaningful and contextualized. The RDF Schema is an extension of the RDF that allows RDF vocabularies to be defined – that is, it provides...
the mechanisms for describing groups of related resources and the terms used to relate those resources (‘predicate’ in the RDF triple). In a simplified description, it is equivalent to a database schema, but in this case the definition is distributed across the Web, can be defined by anyone and will become common usage of Linked Data if it is used by many people on the Web (Wood et al., 2014). RDF vocabularies are sets of terms to describe resources. Each term can be a class or a property. Classes bring together resources with the same properties. Properties can be relationships (between resources) or attributes (characteristics). An example is shown in Figure 6.

Vocabularies are defined in HTTP URIs and should follow the Linked Data principles, reuse existing vocabularies, and provide useful information on how the terms they define should be used. They usually have a prefix for the conceptual area they represent (namespace), which is commonly used to simplify RDF serializations. For example, the Dublin Core namespace is defined by the URI http://purl.org/dc/elements/1.1/ and uses the prefix ‘dc’. The RDF itself is defined by the URI http://www.w3.org/1999/02/22-rdf-syntax-ns# and uses the prefix ‘rdf’. The lines in bold in Figure 5 show the URIs of the vocabularies used and their prefixes. In line 4 and line 6 of Figure 5, the formulations rdf: about and f: titre describe attributes of the resource defined by rdf: Description, whose identifier is given in rdf: about=”http://.../isbn/9782367321127” (line 4). In line 5, the attribute f: original defines the relationship between the described resource and the one with the URI identified through the attribute rdf: resource=“http://.../isbn/9781501146213”.

When different data sets use the same terms, vocabularies serve to resolve ambiguity or provide additional information that allows the discovery of new data relationships. Of great importance for the library community is the SKOS, an RDF vocabulary that aims to transform traditional knowledge organization systems (thesauruses, classification systems, subject headings or taxonomies) into Linked Data structures, and is concerned with maintaining compatibility with ISO 25964-2 (International Organization for Standardization, 2023).

Sometimes, the RDF Schema is not enough to guarantee all possible requirements, and the support of ontologies on the Semantic Web is necessary. An ontology is a knowledge organization model that defines a set of concepts and the relationships between those concepts for a given domain. It supports automated reasoning and data inference using logical rules, and allows knowledge to be shared and reused by people and machines. There are two W3C recommendations regarding ontologies: OWL and the Rule Interchange Format (Raafat, 2017).

To obtain data from the Semantic Web and use it to build applications or integrate it into web portals or web pages, it is necessary to have a language for searching and retrieving information: this is SPARQL, short for “SPARQL Protocol and RDF Query Language”. SPARQL can search local RDF (serialization) files or RDF databases anywhere on the Web, provided that these databases have a SPARQL endpoint service. The advantage of SPARQL and Linked Data is the possibility of combining local and remote queries to obtain the desired data (Wang and Yang, 2018).

Linked Data in libraries, archives and museums

Libraries, archives, museums and other cultural heritage organizations are constantly seeking to improve the visibility and scope of their collections to serve diverse audiences, from academia to the general public. To this end, data is shared on cultural heritage aggregator portals (national or international), such as...
as Europeana and the Digital Public Library of America, or presented on general platforms, such as DBpedia or Wikidata, following Semantic Web models. This requires that the information is organized in well-defined structures, following standardized and semantically rigorous publication models (Zapounidou et al., 2017).

According to Joudrey and Taylor (2018: 129), ‘metadata is structured information that describes the important attributes of information resources for the purposes of identification, discovery, selection, use, access, and management’. They further state that, for metadata to fulfill these purposes, it needs to be interoperable, as well as flexible and expandable. Interoperability allows the interconnection of information between technologically distinct systems with minimal loss and must be present at the semantic, syntactic and structural levels. Semantic interoperability refers to how different metadata schemas assign meaning to their elements and the correspondence between those elements. Syntactic interoperability refers to data encoding formats (e.g. Encoded Archival Description, XML, machine-readable cataloguing (MARC)) and the ability to exchange and use data from other systems. Structural interoperability concerns the data model used (e.g. whether it follows the RDF structure) (Joudrey and Taylor, 2018).

Detailed models and schemas for describing information resources have long existed, but they are not compatible with Web standards, let alone the Semantic Web principles. Several libraries and standards organizations have developed conceptual models and metadata standards that are suitable for the Web and particularly for Linked Data environments.

**Linked Data models in libraries**

For several years, initiatives have been developed to foster the use of Linked Data in the library field. The Library of Congress, IFLA and Online Computer Library Center (OCLC), among others, have been committed to these efforts.

The IFLA developed the IFLA Library Reference Model (IFLA LRM), a standard that resulted from the consolidation of previously developed models for bibliographic information (Functional Requirements for Bibliographic Records (FRBR), Functional Requirements for Authority Data, Functional Requirements for Subject Authority Data), which were designed to support and promote the use of bibliographic data in Linked Data environments in the library universe (Joudrey and Taylor, 2018). Addressing print materials in more detail, this standard does not apply to many existing museum resources or presents difficulties for application in archival collections. This is one of the reasons that contributed to the development of specific conceptual models for these types of resources.

Based on the FRBR, Resource Description and Access was launched in 2011. It is structured for Linked Data applications and is a user-centred set of data elements, guidelines and instructions for creating metadata for library and cultural heritage resources. Resource Description and Access replaced the second edition of the Anglo-American Cataloging Rules (Park and Kipp, 2019).

Following this new model, the Library of Congress developed the Bibliographic Framework. This is an initiative to evolve bibliographic description standards towards a Linked Data model and to enable greater use of bibliographic information within and beyond the library community (Library of Congress, 2015). The Bibliographic Framework seeks to ensure the transition of all bibliographic heritage in MARC 21 to the Semantic Web through a Linked Data model based on the RDF. In its current version (2.0), it is based on Linked Data technologies (the RDF Schema, the SKOS and OWL) and includes two main components: the Bibliographic Framework data model, which describes the structure of bibliographic resources and their potential relationship with other structures, and the Metadata Authority Description Schema in RDF, for knowledge organization. In addition to developing the Bibliographic Framework, the Library of Congress (n.d.) makes available its ontologies, controlled vocabularies and other bibliographic description lists for use in Linked Data.

OCLC is another organization that is involved in research and development projects in the field of Linked Data. Its WorldCat database aggregates millions of bibliographic records from libraries around the world. It adopted the Schema.org vocabulary, which includes entities, entity relationships and actions, and was developed by Google, Microsoft, Yahoo and Yandex. This allows WorldCat to expose its data for easier use in search systems and other applications. OCLC led the work to reconcile the Schema.org vocabulary with the Bibliographic Framework, and participated in the development of a Schema.org extension for bibliographic information. Also developed and maintained by OCLC, the Virtual International Authority File (VIAF) is an international authority file that includes authority records from national libraries around the world and has been available as Linked Data since 2009 (Wang and Yang, 2018).
Linked Data models in archives

For archival information, the Expert Group on Archival Description (2021) of the International Council on Archives is developing a conceptual model for archival description, which merges four standards for archival documentation (the General International Standard for Archival Description; the International Standard Archival Authority Records–Corporate Bodies, Persons and Families; the International Standard Description of Functions; and the International Standard Description of Institutions with Archival Holdings) and is called the Records in Contexts–Conceptual Model. Like the IFLA LRM for bibliographic description, this model identifies entities, the properties of entities and the relationships between entities. Associated with the conceptual model, a specific implementation was developed using OWL: the Records in Contexts Ontology. This enables archival description using Linked Data techniques. Both formulations are part of the Records in Contexts standard, which also includes Records in Contexts–Application Guidelines and Records in Contexts–Introduction to Archival Description. The most recent version of the Records in Contexts–Conceptual Model (0.2) is from July 2021.

Linked Data models in museums

The International Committee for Documentation (CIDOC) of the International Council of Museums has been working on a general data model – the CIDOC Conceptual Reference Model – to enable museum libraries, archives and other cultural heritage institutions to improve the sharing of information between each other (International Council of Museums, n.d.). It currently corresponds to ISO 21127:2014 – Information and documentation – A reference ontology for the interchange of cultural heritage information (International Organization for Standardization, 2020). According to Stein and Balandi (2019), there have been several attempts to provide a generally valid path for transferring data from Lightweight Information Describing Objects – CIDOC’s recommended XML schema for the delivery of museum metadata – to representations suitable for the Semantic Web. The CIDOC Conceptual Reference Model is a complex system consisting of 94 entities (classes) and 168 relationships (properties) to represent and share cultural heritage metadata, and includes the representation of events associated with an object throughout its existence. Although its base structure is different from the models previously presented, its information can be mapped to other data models, such as the Dublin Core, Encoded Archival Description and the FRBR (Joudrey and Taylor, 2018).

Other models

In trying to align the CIDOC Conceptual Reference Model and IFLA FRBR and LRM, the new IFLA FRBRoo and LRMoo (object-oriented) models were developed (Bekiari et al., 2015). These include not only bibliographic entities, but also the activities related to their intellectual creation, editing and publication over time (Zapournidou et al., 2017). The Europeana Data Model, developed by Europeana, will be discussed in detail in the following section.

Case study: Europeana

Europeana is a digital platform resulting from the European Union’s initiative to create a European virtual library to make Europe’s cultural heritage visible and digital repositories accessible. Created in 2008, managed by the Europeana Foundation, and integrating Europe’s major libraries, archives, museums, audiovisual archives and cultural institutions, it is a single access point to the digital cultural heritage of approximately 3700 European institutions in 25 languages.

As explained on its website: ‘The digital collections of Europeana provide multiple perspectives on historical, scientific and cultural developments across Europe and beyond’ (Europeana Foundation, 2008). To demonstrate the potential of this digital heritage, it offers mentoring programmes, online courses, pedagogical materials and teaching platforms. As further stated on its website:

Europeana empowers the cultural heritage sector in its digital transformation. We develop expertise, tools and policies to embrace digital change and encourage partnerships that foster innovation. We make it easier for people to use cultural heritage for education, research, creation and recreation. Our work contributes to an open, knowledgeable and creative society. (Europeana Foundation, 2008)

Europeana contains over 53 million digital objects in the public domain or with free access licenses in several languages, organized by various themes and geographical areas. It offers several services: research, thematic digital archives and collections, virtual exhibitions and a blog. To ensure the quality of its metadata, Europeana relies on a network of aggregation partners that collect data from the various institutions and verify and enrich it with additional information, such as georeferencing data or links to
other data on people, places or subjects (Petras et al., 2017). These aggregation partners can be national in scope, such as Portugal’s Registo Nacional de Objetos Digitais (National Register of Digital Objects); in the cultural sector, such as Archives Portal Europe, which aggregates information on archival objects from European countries and national archives, or MUSEU-HUB, for museums; dedicated to certain types of material, such as Manuscriptorium or Musical Instruments Museums Online (MIMO); or thematic, such as the European Fashion Heritage Association or the Technische Informationsbibliothek portal for scientific videos.

**Europeana Data Model**

Europeana aggregates digital objects, including works of art, books, photographs, letters, maps, newspapers, music and videos about art, archaeology, fashion, science, sports and more. They come from many repositories and use a wide variety of descriptive metadata standards. To provide access to digital cultural heritage and make it user-friendly, it was necessary to find a way to integrate these standards and make the metadata of all the partner institutions interoperable. For this purpose, a set of metadata that could encompass all this content with minimal loss of information had to be defined. To this end, the Europeana Semantic Elements Model was developed; this data model was used when the prototype of Europeana was launched in November 2008 (Ciocoiu, 2018).

The Europeana Semantic Elements Model is a linear structure that uses the Dublin Core Metadata Element Set with some Europeana-specific extensions. However, the weaknesses of the Europeana Semantic Elements Model were quickly identified – namely, the lack of distinction between the physical object in the institution’s collection and its digital representation; poor expandability; little flexibility to deal with the specificities of some objects; and the difficulty of creating semantic links between objects and resources. It became essential for it to evolve into a more flexible data model – the Europeana Data Model (EDM) – which is capable of overcoming the Europeana Semantic Elements Model’s problems and based on a Linked Open Data model. The Europeana Data Model is RDF-based and therefore an open and comprehensive model that allows links to other digital resources and data enrichment. Its development began in 2009 and is the result of the close collaborative work of Europeana experts in different fields with its internal team. The goal was to consider as many requirements as possible in the domains being worked on in an attempt to define a flexible model to represent data from the different sectors of Europeana. The data model was consolidated with some partners, such as the Deutsche Digitale Bibliothek and the Digital Public Library of America, which adopted the Europeana Data Model as the basis for their data models (Petras et al., 2017). The more recent infrastructure ROSSIO, a free and open-access platform for aggregating, organizing, and connecting the digital resources in the Social Sciences, Arts and Humanities provided by Portuguese higher education and cultural institutions’ (Silva et al., 2022: 1), has adopted a Europeana Data Model profile that is capable of representing digital objects from different domains defined by Portuguese academic and cultural heritage institutions.

The Europeana Data Model solves the problems of the Europeana Semantic Elements Model in various ways: it distinguishes between the objects provided and their digital representations; it distinguishes object records from metadata records; it allows the representation of complex objects and for the detailing and expanding of the metadata format; it ensures compatibility with different levels of abstraction in the description; and it allows the use of contextual resources to incorporate concepts from controlled vocabularies.

**Data representation.** The Europeana Data Model defines its own vocabulary, containing specific elements (classes and properties), and reuses elements from other vocabularies such as the Dublin Core, Open Archives Initiative Object Reuse and Exchange, SKOS and Creative Commons. It also defines a set of descriptive and contextual properties that characterize the different aspects of a resource and relate it to other entities in its context. It can incorporate content with different description models (MARC 21, Encoded Archival Description, Lightweight Information Describing Objects) and with various levels of granularity. It also allows the same (physical) object to have several descriptions from different providers and to represent information added by Europeana.

The Europeana Data Model includes 11 specific classes and 6 classes belonging to other namespaces. For each class, it defines a set of properties, some of which are mandatory. In a simplified approach, a digital object provided to Europeana can be represented by three main classes and four contextual classes. Figure 7 is a graphical representation of a digital object from Europeana. The object is available at: http://www.europeana.eu/pt/item/08711/https___www_biodiversitylibrary_org_item_65402; the original document is available at: https://www.biodiversitylibrary.org/bibliography/24162.
The class ‘Provided Cultural Heritage Objects’ (‘edm:ProvidedCHO’) refers to the original object, which can be a physical object (book, painting, photograph, map, drawing) or a digital original. All of the metadata describing the object must be part of this class. Each original object can have one or more accessible digital representations associated with it, some of which may be used as ‘thumbnails/previews’ and belong to the ‘Web Resources’ class (‘edm:WebResource’).

The class ‘ore: Aggregation’ links an original object to its digital representations described by a provider and included in Europeana, allowing the whole structure to be considered as a logical unit. Using the properties defined in the Europeana Data Model, each instance of the ‘ore: Aggregation’ class is related to a resource corresponding to the original object, ‘edm:ProvidedCHO’, through the ‘edm:aggregatedCHO’ property, and to one or more ‘edm:WebResource’ resources that are its digital representation(s). The instances of the ‘edm:WebResource’ class may have the following links (among others): ‘edm:isShownAt’, which refers to the full display of the object on the original website; ‘edm:isShownBy’, which refers to the main representation of the object that may be used to generate the thumbnail by the Europeana system; and ‘edm:object’, which also refers to the main representation of the object and normally has the same URL as ‘edm:isShownBy’. For subsequent representations, ‘edm:hasView’ should be used.

Also associated with the class ‘ore: Aggregation’ are three types of properties to identify the content providers: ‘edm:dataProvider’, which is mandatory, identifies the institution that is responsible for the original object and the information about that object; ‘edm:intermediateProvider’ is the intermediate organization that selects, collects or curates the data, and makes the information available in an aggregator; and ‘edm:provider’ is the provider from which Europeana obtains the information to load into its system.

Descriptive metadata can be attached to the original object, usually using the Dublin Core schema. Direct links are created between the described object and its characteristics, which can be expressed through simple text strings such as ‘dcterms: title’, ‘dcterms: subject’ or ‘dcterms: creator’ (see Figure 7). These links can also be made to other entities in other data sets. All of the entities have a unique identifier (URI) so that they can be referenced internally (Europeana Foundation, 2014).

**Context classes.** Some of the values of the descriptive metadata may be related to other entities, such as author, with more details associated with them. If this metadata is populated with URIs – that is, in accordance with the Linked Data principles – the system (Europeana) will create classes based on these URIs. To enable semantic enrichment, the Europeana Data Model provides context classes: ‘edm:Agent’ to represent people or organizations; ‘edm:Event’ for
events; ‘edm:Place’ for geographical or location entities; ‘edm:TimeSpan’ for time periods or dates; and ‘skos: Concept’ for all the entities that comprise knowledge organization systems (thesauruses, classification systems, authority files, etc.). Figure 8 shows a new version representing the same model using context classes.

If we consider the information regarding the author of the book, in Figure 7, additional details about the author are not provided. This description can be improved by creating an explicit link (URI) between the book described and a resource that delivers such information – the Virtual International Authority File record on Darwin (https://viaf.org/viaf/735/) – by introducing the class ‘edm:Agent’ in the link ‘dcterms: creator’ (see Figure 8). This semantic enrichment of data brings huge benefits for the information search and discovery process. The contextual information added with the class ‘skos: Concept’ in the link ‘dcterms: subject’, like the value ‘Evolution’, leverages links to other entities and allows the use of all the information available in Wikipedia about each subject, including its translation into several languages.

**Descriptive metadata: object-centric and event-centric approaches.** The Europeana Data Model allows two approaches to descriptive metadata. In the object-centric approach, there is a direct link between the object and its characteristics, using literal values or links to other resources. This approach is the one used in Figures 7 and 8. The event-centric approach emphasizes the description of the different events in which the object was involved, providing the creation of a more complete network of entities that reflect the history of the object. The CIDOC Conceptual Reference Model, mentioned above, underlies this approach, which is adopted by some of the institutions participating in Europeana, particularly in the areas of museums and archaeology.

The ‘edm:Event’ class serves this purpose with three properties that relate to the resource being described: ‘edm:wasPresentAt’ – the event in which it was involved; ‘edm:happenedAt’ – the place where it happened; and ‘edm:occurredAt’ – the time when it occurred. To maintain consistency, Figure 9 shows a representation of the same digital object in an event-centric approach. Two events have been added – the publication of the first edition of the book (1879) and the new edition present in Europeana (1900-1979).

This approach can serve as a basis for digital storytelling.

**Hierarchical objects and other relationships.** Europeana has always considered the treatment of hierarchical objects an important topic, since various types of hierarchies can be found in the cultural heritage domain. These types of hierarchies include vertical relationships (whole–part) as well as horizontal relationships (sibling). The main types of relationships that appear in Europeana are hierarchical descriptions of objects from libraries (volumes, chapters, issues and articles), hierarchical objects in audiovisual archives, hierarchies for archaeological objects, hierarchical structures found in archives (like Encoded Archival Description), and collections of objects with some relation to each other.

There are different classes in the Europeana Data Model where hierarchies can be represented:
edm:ProvidedCHO’, ‘edm:WebResource’ and context classes (represented by ‘edm:Agent’, ‘edm:Place’, ‘edm:TimeSpan’, ‘edm:Concept’ or ‘edm:Event’). Vertical relationships can be expressed with the properties ‘dcterms: isPartOf’ and ‘dcterms: hasPart’. For horizontal relationships, there is the property ‘edm:isNextInSequence’, which allows for the ordering of parts. Other relationships can be explicitly expressed by adding the property ‘edm:isRelatedTo’ or its subproperty ‘edm:isSimilarTo’, narrowed by the property ‘edm:isDerivativeOf’.

Regarding the aggregation of hierarchical objects in Europeana, the providing institution must take into account several issues, such as the granularity of the hierarchy, the detail of the description and the propagation of metadata between different levels (inheritance), as well as the search, presentation and navigation through the different levels of the objects (Bardi et al., 2014).

**Multilingualism and metadata enrichment.** According to Stiller et al. (2013), there are four levels of multilingualism: display; search and navigation; presentation and translation of results; and user engagement. At Europeana, the static content of its pages is available in 31 different languages, which can be selected by the user at first access and automatically kept on subsequent visits. The availability of search terms in several languages stems from the detail of the metadata provided by each collaborating institution. The discovery of related resources is available mainly from Europeana metadata enrichment (subject, date, place, author) with multilingual vocabularies. This process involves normalizing the data provided and automatically associating links with controlled terms in its data set or Linked Data vocabularies from the textual information provided. This process is called ‘semantic enrichment’ and corresponds to the creation of context classes according to the Europeana Data Model.

The enrichment of subject metadata, with all the translations of a concept, allows the retrieval of documents in languages other than that used to perform the search. However, and also according to Stiller et al. (2013), qualitative studies show that semantic enrichment can introduce errors if not implemented well.

In Europeana, navigation is key to enabling its users to move through its multiple collections and explore unknown content in languages often unfamiliar to them. However, language-independent navigation, available through a timeline or a map, can only be carried out in the search results. Europeana provides several facets for filtering results, including language, but sometimes it is not clear whether it corresponds to the language of the viewed object or the language in which the metadata is provided (Stiller et al., 2013).

To engage users, Europeana provides virtual exhibits on highly relevant topics in several languages. It also enables the translation of search results and objects through an automatic translation system. It creates new information for the resources it integrates, with the aim of adding value for its users (Stiller et al., 2013). Matching Europeana’s object metadata with external semantic data creates links between resources. The links created point to additional data, such as translated terms or broader terms. Europeana enriches place-related information based on GeoNames, while people’s names...
and concepts are enriched with DBpedia and many other vocabularies. As mentioned above, the Europeana Data Model has context classes so that concepts can be incorporated from vocabularies such as thesauruses, authority lists and classification systems, whether they originate from the institutions that provide content to Europeana or from other trusted external data sources.

In December 2021, Europeana launched its medium-term strategy to improve the availability of multilingualism on its platform, taking advantage of technological advances in this field (Neale, 2020). Its aim is to make Europeana’s website navigation, textual search and reading of digital objects available in multiple languages. This will require the use of reliable vocabularies with multilingual coverage of the existing metadata and the translation of the metadata and text into English, which will act as a hinge language for areas not covered by the vocabularies. Europeana will also use professional translators or simultaneous translation services to make the user interface, the website, the metadata and the full-text content available in multiple languages (Neale, 2020).

Integration of resources from libraries, museums and archives

The Europeana Data Model allows the integration of data from multiple sources received in various formats and the mapping of metadata standards – for example, the MARC 21 format used in libraries; the Metadata Encoding and Transmission Standard for digital libraries; Encoded Archival Description, which is used in archives; and Lightweight Information Describing Objects, which is used in museums. To integrate this content into Europeana, these formats are mapped and converted to the Europeana Data Model using RDF/XML serialization. The data provided is normalized and semantically enriched through links to specific vocabularies.

To share digital collections with Europeana, the scope of the institution’s collections must be aligned with the Europeana Content Strategy (Scholz et al., 2017) and meet the technical criteria defined in the Europeana Publishing Guide. To publish digital content, it is necessary to find an aggregator, this being an organization that gathers data and makes it accessible through Europeana.

At the University of Coimbra, we have a vast collection of digital cultural heritage content available in our digital library, Almamater, which is shared with Europeana through our national aggregator, the Registo Nacional de Objetos Digitais, managed by the National Library of Portugal. Briefly, for each digital object, we register links to the corresponding item in the library catalogue, which will be converted into the ‘edm:ShownBy’ and ‘edm:ShownAt’ properties of the Europeana Data Model. The metadata from our library catalogue is converted from MARC 21 to UNIMARC and imported into the Registo Nacional de Objetos Digitais platform using the ISO 2709:2008 exchange format (International Organization for Standardization, 2008). The data is checked and sent to Europeana, processed and pre-published for validation. After validation, the data is finally published. Depending on the quality of the metadata and images, there are four tiers of criteria related to the quality of the content and three tiers to the quality of the metadata (for more information, see Scholz, 2015).

The University of Coimbra has approximately 1200 digital objects in Europeana, which link to the International Image Interoperability Framework viewer in Almamater to display the images and navigate the document structure. This is due to the fact that the International Image Interoperability Framework resource mapping is not yet available on the Registo Nacional de Objetos Digitais platform, but we hope to embed this presentation mode in our Europeana objects soon.

Europeana developments

The Europeana Data Model is a flexible and interoperable model for the description of cultural heritage resources. It is the result of systematic collaborative work and has the possibility to be expanded. This collaborative work has made it possible to accommodate the particularities of resources in specific areas through the development of extensions and adjustments that can respond to these characteristics. Europeana facilitates this process by supporting the community through the provision of detailed documentation on the Europeana Data Model, the developments being made, and the definition of the Europeana Data Model profiles (changes to the base model) to support future data integration services on the platform.

Some of the profiles that have been defined are the Sound Profile, to support the characteristics of sound objects and the metadata used to describe them; the International Image Interoperability Framework for the Europeana Data Model to provide guidelines for institutions for including resource descriptions in the International Image Interoperability Framework format in the Europeana Data Model metadata; and the Annotations Profile, based on the W3C Web Annotation Data Model recommendation (World Wide Web Consortium, 2017), which provides a solution for
representing annotations so that they can be shared and used by different platforms related to Europeana. Storytelling is also an area in which Europeana is investing by developing specific methods and techniques together with its partners.

Europeana also offers a wide range of application programming interfaces (APIs), allowing the creation of applications using the rich cultural heritage available in Europeana: the Search API for simple searches; the SPARQL service to search Europeana’s structured metadata; the Record API to retrieve the metadata of a specific record; the Entity API to access information about subjects, people and places; the Annotations API to add information about existing items in Europeana; and, finally, there is also the Open Archives Initiative Protocol for Metadata Harvesting (OAI-PMH) service to retrieve larger volumes of information or aggregate Europeana’s repository (Europeana Foundation, 2008).

Conclusions and future work
Linked Data models have been developed and adopted in various areas, and their application is crucial for cultural heritage institutions. The adoption of Linked Data models makes it possible to disambiguate searches and link all kinds of relevant information, which can be updated dynamically, allowing for the creation of a wide network of resources. When data is linked in this way, it is easier to discover and share information, which in turn is more complete, and allows one to create applications based on one’s own and other people’s data. Recognizing the importance of Linked Data models, several standards organizations in the field of libraries, museums and archives have developed conceptual models and information representation formats that follow these principles. Europeana is one of the platforms that uses a Linked Data model – the Europeana Data Model. It aggregates digital cultural heritage content from various types of institutions and allows the representation of all kinds of digital objects associated with cultural heritage. Europeana includes many millions of digital objects and has developed a search portal and a set of services that enable its repository and its users to grow. The semantic enrichment of metadata, the creation of thematic collections and the provision of a set of services to the institutions participating in Europeana, in addition to an active community of partners, has contributed to the success of this platform.

However, there are some challenges in this area. The volume of the digitization of objects in cultural heritage institutions is increasing. There is growing concern about the creation of detailed metadata, high-quality digitization and reproduction rights to enable the use of assets in the cultural heritage context and in other sectors. Enhancing the educational value of digital cultural heritage through the development of specific programmes and content should be considered. The collaborative reuse of digital cultural heritage is also an area to be developed, with the implementation of partnership projects using shared platforms and innovative tools to reach users more quickly and provide better-quality experiences.

The undeniable advantage in adopting Linked Data models poses numerous challenges for cultural heritage institutions to adapt their registration systems or, at the very least, the presentation of information. In addition to taking advantage of Linked Data as a source of data created outside an institution, it can also make an invaluable contribution by exposing an institution’s thesauruses and other authority structures for use by other communities. The lack of commercial solutions and the available open-source solutions require a huge adaptation and development effort to make its implementation possible, which necessarily involves the setting up of multidisciplinary teams to put this transformation into practice. Such challenges will also require the creation of partnerships between different institutions, allowing the establishment of joint solutions and thus making up for the lack of skilled human resources, particularly in the field of information and communications technology (Paquet, 2020). We hope that, in this way, it will be possible for the millions of digital resources of cultural heritage institutions to soon emerge from the silos in which they currently reside and become freely discoverable, available and searchable on the Semantic Web.

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Notes

1. Throughout the article, the broader term Linked Data will be used.
2. Europeana is a virtual library that was developed on the initiative of the European Union. See https://www.europeana.eu
3. W3C is an international community that develops open standards for the Web. See https://www.w3.org
4. HTML is a set of Web technologies that includes HyperText Markup Language. Hyperlinks are references to data or documents on the Web that a user can access by selecting the link.
5. A URI is a unique identifier for a Web resource. HTTP is the basis for data communication through the Web.
9. foaf (friend of a friend) is a machine readable ontology describing persons, their relations with objects and other people and also their activities.
11. The Dublin Core is a vocabulary for Web document description maintained by the Dublin Core Metadata Initiative (2020).
12. SPARQL endpoint is a web service that allows querying sets of RDF triples using the SPARQL semantic query language.
15. The Metadata Authority Description Schema in RDF is a knowledge organization system for authority control, thesauruses, taxonomies, subject heading systems and others. It is a widely used RDF vocabulary and is related to the SKOS (Library of Congress, 2015).
16. For the Schema.org vocabulary, see https://schema.org/
17. For the Virtual International Authority File, see https://viaf.org/
18. Lightweight Information Describing Objects is an XML metadata format to deliver information on museums’ objects in a standardized way.
20. The Dublin Core™ Metadata Element Set, Version 1.1 (Dublin Core Metadata Initiative, 2012) was replaced by the DCMI metadata terms (Dublin Core Metadata Initiative, 2020).
21. For the Deutsche Digitale Bibliothek, see https://www.deutsche-digitale-bibliothek.de/
22. For ROSSIO, see https://rossio.pt/front/home
23. With the Europeana Data Model, Europeana can incorporate complex objects: archival holdings can be represented as a whole and with their individual components, such as letters, deeds or manuscripts. Also, for digitized books, their chapters, indexes or illustrations can be represented as a whole or individually.
24. GeoNames is a geographical database with every country that contains millions of place names (see http://geonames.org). DBpedia is the main Linked Open Data resource on the Web and contains over 228 million entities (see http://dbpedia.org).
25. For the Metadata Encoding and Transmission Standard, see https://www.loc.gov/standards/mets/
27. For Almamater, see https://am.uc.pt
28. The International Image Interoperability Framework is a framework for delivering image-based content on the Web. See https://iiif.io/
29. An application programming interface is software that has been created according to a set of rules that enables machine-to-machine communication.

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Prejudice but no pride: The Portuguese Universal Decimal Classification’s labelling of sexual orientation

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Abstract
Critical cataloguing aims to study cases of social injustice, misrepresentation, negative biases, offensive terminologies, and hegemonic and oppressive hierarchical structures in the representation of communities and identities in knowledge organization systems. The aim of this study is to provide a critical analysis of the representation of sexual orientation in the Portuguese Universal Decimal Classification, grounded in a qualitative content analysis method. The results show that the principle of exhaustiveness does not manifest itself in the representation of sexual orientation. The absence of the term ‘heterosexuality’ mirrors the heteronormative hegemony, while the minoritization of ‘lesbianism’, but not of ‘male homosexuality’, reflects the patriarchal hegemony. The representation of sexual orientation carries the historical pathologization of sexual orientations other than heterosexuality. The Portuguese Universal Decimal Classification conveys negative biases and misrepresents sexual orientation in a way that is irreconcilable with present-day reality. Critical thinking must be encouraged within the library community and the Universal Decimal Classification should be promptly revised and updated.

Keywords
Classification, subject analysis, critical cataloguing, Universal Decimal Classification, knowledge organization system, critical perspectives, library and information science, bias

Introduction
‘To classify is human’ (Bowker and Star, 2000: 1). The acts of categorizing (i.e. of creating and defining categories or classes) and classifying (i.e. of determining the class, or classes, to which objects, both in the corporeal and in the abstract realms, belong) allow chaos to be made intelligible and, consequently, us to make sense of reality. The need to categorize and classify the universe is innate to humankind, and we operationalize it both lucidly and instinctively (Bowker and Star, 2000).
and in the epistemic context of knowledge organization, the universe that matters is knowledge itself.

Mai (2013: 243) states that at the beginning of the history of library classification theory, ‘it was assumed that the universe of knowledge exists independently of human perception and specific cultures’. We assert that such a view is controversial and illogical, fallacious even, for if knowledge is a human construct arising from thought, how can we argue that it exists apart from its creator? This point of view is shared by Drabinski (2013: 103), who states that ‘we do not discover knowledge: we create knowledge’.

At present, the subjective nature of classifications is accepted by most of the academic and scientific community (Mai, 2016). Although KOSs continue to be governed by the maxims of objectivity, neutrality and universality (Thornley et al., 2022), ‘classification is one method of organising, structuring and describing the world. As such, like any method of describing, it both reflects a particular human perspective on the world and can also reinforce or undermine particular perspectives’ (Thornley et al., 2022: 1463).

Based on these assumptions, we intend to present a critical analysis of the representation of the concept of ‘sexual orientation’ in the Portuguese edition of the Universal Decimal Classification (UDC), and examine its adequacy or inadequacy, providing awareness of critical cataloguing in the Portuguese librarian community.

We will start by exploring the biased nature of KOSs, which is followed by a literature review on the representation of the queer domain within the field of knowledge organization. This section ends with a subsection on works related to this article, where we explain the need and pertinence of our work.

**The biased nature of KOSs**

The biased nature of KOSs can take many forms, both beneficial and harmful. Colombo (2020) emphasizes that the inalienable particular human and social perspectives inherent to the design of KOSs translate into cases of representation, under-representation and misrepresentation of information within systems. The author highlights that ‘by preferring a name (terms or words) to represent a concept, an identity to that concept is being established. This identity is biased, it has a way of recognising and observing that reality’ (Colombo, 2020: 99). Colombo (2020) also seeks to discuss and underline the connection between the representation and misrepresentation of information in KOSs and the phenomenon of bias. To this end, Colombo (2020) put forth a distinction between positive and negative biases. Positive biases may be assumed to exist if the representation of reality is expressed beneficially and favours a certain community or domain of knowledge. As far as negative biases (prejudices) are concerned, these occur

when a bias does not represent the ideological, cultural peculiarities and fails to represent the concepts, in some cases reaching prejudice... [A] system that has misrepresentation as a result of a void in the representation or due to the fact that the concepts are not represented in a proper way...has a negative bias. (Colombo, 2020: 101–102)

According to Perera (2022), the issue of negative biases and misrepresentation in KOSs has been studied in the light of an approach called critical cataloguing, which derives from a school of thought, primarily radical in nature, known as critical librarianship.

Critical cataloguing, which translates into the use of critical knowledge and thinking in cataloguing (Olson, 1997), has sought to study cases of social injustice, misrepresentation and negative biases, offensive terminologies, and hegemonic and oppressive hierarchical structures in the representation of communities and identities in KOSs and library catalogues (Dobreski et al., 2022; Perera, 2022; Snow and Dunbar, 2022). These issues have been discussed by authors whose studies have addressed the representation of various concepts in KOSs – for example, religion (De Miranda and Da Silva, 2019), ethnicity (Adler and Harper, 2018; Simões, 2010), gender identity (McDonald, 2020) and sexual orientation (Christensen, 2008) – with a particular focus on the Library of Congress Classification and the Library of Congress Subject Headings, and also the UDC, although to a lesser extent (e.g. Courbières, 2013; Santos et al., 1999; Simões, 2010).

Olson (2001: 4) notes that the prevalence of prejudices and negative biases in the studied KOSs results from a patriarchal, Caucasian, Christian, cis-normative, heteronormative and binary (in terms of gender identity) perspective, which ‘is labelled the mainstream and, hence, the universal from which all else is a deviation’. Guimarães et al. (2019) state that if these same biases coincide and translate the preconceived ideals of the society and culture in question, especially of the dominant societal units that marginalize and make invisible social minorities, the biases can be dangerous and harmful for the respective communities of users. In turn, Drabinski (2013: 97) highlights that the biased and inherently deviant-from-reality nature of KOSs perpetuates the maintenance of negative and pernicious biases in society, as
‘biased ideological stories continue to be “told” by the organizational systems’. According to the author, ‘as users interact with these structures to browse and retrieve materials, they inevitably learn negative stereotypes about . . . social identities’. This view is similarly advocated by Dobreski et al. (2022) and Westenberg (2022), who emphasize the perpetuation of problematic terminologies in controlled vocabularies.

Nascimento and Guimarães (2017: 357) underline the weight of language, lato sensu, in the queer domain and the empowering role of knowledge organization, advocating it as a gesture of self-empowerment. Nevertheless, Guyan (2021) questions whether categorizing, in a detailed way, concepts related to identity characteristics in KOSs might produce the opposite consequence to that first intended – that is, stimulate and strengthen the segregation of social minorities, focusing on the case of the queer community.1 In turn, Clarke and Schoonmaker (2018: 23) argue that ‘people from traditionally marginalised communities . . . need access to books and library resources about or created by people like themselves so that they can see their identities, stories, and experiences reflected in contemporary media’, which, they assert, requires that KOS vocabularies and structures accurately portray these identities and experiences.

Knowledge organization and the queer domain

The representation of the queer community and, inherently, of the concepts of ‘gender identity’ and ‘sexual orientation’ in KOSs has been studied by authors such as Adler (2015), Bullard et al. (2020), Christensen (2008), Drabinski (2013), Pinho and Milani (2021), Santos et al. (1999) and Watson (2020), whose findings have strengthened the relevance of KOSs containing terms that truly and properly represent the contemporary spectrum of gender identities and sexual orientations.

Pinho and Milani (2021: 189) deal with ethics in information representation and stress the social character of the library profession, as they state that it is a profession that cares not only about information but also about people. They argue that librarians should focus the task of information representation on the triad of critical thought, multilingual competence and ethical wish, claiming that their denial is what causes the inadequate and biased representation of information. They discuss in detail the representation of homosexuality and warn about the difficulty in representing concepts inherent to the queer domain, given the numerous metaphors and figures of speech (Pinho and Milani, 2021: 198), reinforcing the joint role of literary and user warrants. They conclude that there is a peremptory and pressing necessity to critically and ethically reflect on current KOSs and recognize the values that are intrinsic to the processes of information representation and knowledge organization, such as transculturality in mediation, linguistic diversity and cultural warrant.

Utilizing queer theory in conjunction with library classification theory and cataloguing, Drabinski (2013: 108) explores the endemic nature of negative biases in KOSs and the underlying power structures, and concludes that if one assumes identity categories or labels ‘as embedded in contingencies of space, time, and discourse, then bias is inextricable from the process of classification’. However, as McAuliffe (2021: 214) clarifies in her review of Drabinski’s work, ‘altering controlled vocabulary, especially when talking about queer identities and content, is a contradictory endeavour that merely erases relevant discourse while also continuing to fail to meet the information needs of those seeking content classified in such controlled ways’. Within this line of thought, Drabinski (2013) argued that KOSs should not get their biases erased, which would allow librarians to continue to critically look at KOSs as mutable and subjective structures. We view this to be an interesting theory whose applicability reveals potential constraints, as elucidated by McAuliffe (2021) in her review and analysis of Drabinski (2013).

Christensen (2008) seeks to trace the evolution in the Library of Congress Subject Headings since the early 1990s, continuing Greenblatt’s (1990) work, of the terms used to represent both male and female homosexuality, and, replicating the Greenblatt’s research methodology, examines the same phenomenon in the Library of Congress Classification. As far as the Library of Congress Classification is concerned, Christensen clarifies that it is natural to have a lower degree of exhaustiveness and specificity in classes that do not have so much direct contact with sexual orientation, and that the representation of the concept in library classifications should be grounded in the literary warrant. In light of the minoritization versus universalization dichotomy in KOSs, elucidated by Campbell (2000), Christensen (2008: 236) advocates that, in the representation of sexual orientation, minoritization should be favoured over universalization – that is ‘visibility at any cost’.

Adler (2015) travels through the 1970s and 1980s and explores and reports on the Herculean battle of North American librarian activists with the Library of Congress to persuade this cultural heritage institution to revise the representation of homosexuality in its
KOSs – that is, the Library of Congress Classification and Library of Congress Subject Headings. Adler emphasizes the historical pathologization of homosexuality in these two KOSs and highlights the dialectical and even symbiotic character of library classifications and classified entities – a notion she illustrates by quoting Hacking (2004: 280): ‘naming has real effects on people, and changes in people have real effects on subsequent classifications’.

Watson (2020) develops the theme of critical cataloguing, contextualizing and historicizing it by reviewing literature that focuses on the problematic of the representation of sexual orientation in KOSs. Watson uses the introduction of the term ‘asexuality’ in the Library of Congress Subject Headings as a case study for all the reflections proposed. Moreover, Watson commends the role of the librarians involved in the critical cataloguing movement in the North American context, and stresses the attention that should be given to the relationship between users and metadata, advocating that users have the right to recognize themselves in the description of information resources (i.e. in the metadata), just as they have the right to find themselves in the resources of collections. Watson illustrates the weight of metadata – namely, of controlled vocabularies – by commenting that if a user comes across terminology in a catalogue that may not be recognized or may be found offensive, the likelihood of the user actually using the information resource or, in the extreme, wanting to retrieve information from that catalogue is reduced.

Bullard et al. (2020), aware of the limitations of contemporary KOSs – specifically, library classifications and subject heading lists – when it comes to the queer domain, design and develop KOSs for a library specialized in queer information and knowledge. Concerning the design of the library classification, Bullard et al. emphasize the impracticality of the mutual exclusivity of concepts (a classic principle of library classification theory) when attempting to represent intersectional identities. They argue that decisions should be based on the cultural rather than the literary warrant, and further assert that observing KOSs in light of queer subjectivity offers new ways of approaching the related phenomena and serves to circumvent obsolescence.

Problem statement

In the European context, Santos et al. (1999) analyse the 1995 edition of the UDC, translated into Spanish, and study cases of discrimination against social minorities. Concerning the representation of sexuality, Santos et al. report a strong and undoubted religious ideological influence and an inadequate correspondence between the concepts of ‘sex assigned at birth’ and ‘sexual orientation’. They comment that when there should only be two notations, it is striking that, within the group of persons according to sex, a differentiation is made with regard to sexual preferences and, furthermore, that regarding the sexual tendencies indicated, they believe they should not be included in such a subclass since a person’s sexual preferences or behaviours do not determine a person’s sex (Santos et al., 1999: 110).

In turn, Courbières (2013: 112) studies the representation of the concept of ‘gender’ in Dewey Decimal Classification and the UDC, and begins by stating that classification systems are ‘both ideological products and producers of ideology’. When it comes to the UDC and the representation of the concept of ‘sexual orientation’, Courbières mainly concludes that the UDC promotes the idea that sexual orientation is not independent of gender identity.

Deeply rooted in the English-speaking, mainly North American, librarianship culture and community, critical cataloguing has been a driver of reflections, discussions and studies in knowledge organization dealing with the biased propensity of KOSs and the resulting repercussions. In the European context – more specifically, in the Portuguese sphere – critical cataloguing and critical librarianship are barely noted. There are therefore few works on misrepresentation and the negative biases of queer identities in library classification systems in Portuguese in Europe – namely, the Portuguese edition of the UDC.

Given the scarcity of critical and social-justice-oriented works on the UDC, studies such as those previously mentioned (Courbières, 2013; Santos et al., 1999; Simões, 2010) and the one we present here are urgently needed and pertinent. Hence, this work intends to give continuity to the works of both Courbières (2013) and Santos et al. (1999) from a more current perspective and with a focus on the Portuguese UDC in Europe. In this sense, the main aim of this study is the critical analysis, in the light of critical cataloguing, of the representation of sexual orientation in the current Portuguese edition of the UDC, published by the National Library of Portugal in 2005, and to create awareness in the Portuguese library community of critical cataloguing.

It must be clarified that, for our purposes, we will support our study with the definition of sexual orientation given by the Homosaurus (Digital Transgender Archive, n.d.), a queer linked data vocabulary, which allows us to ground our work in both literary and cultural warrants. In this sense, sexual orientation is perceived as ‘the direction of an individual’s sexual
attraction towards other individuals of the same, opposite, or multiple sexes; commonly understood to be biologically and physiologically dictated, rather than sociologically determined’ (Digital Transgender Archive, n.d.).

Objectives and methodology
As previously stated, our analysis aims to highlight and critically reflect on the representation and conceptualization of sexual orientation in the current Portuguese edition of the UDC system, and thereby contribute to the broader critical cataloguing movement. Specifically, we intend to (1) explore and expose the representative terms of sexual orientation in the UDC; (2) analyse the hierarchical relationship of the notations that codify those same terms in the UDC scheme; (3) present the results as well as any perceived biases and cases of misrepresentation; and (4) discuss and criticize the adequacy (or not) of the UDC edition analysed in the current classification of information resources.

The study is grounded in a qualitative content analysis method, which, in the words of Zhang and Wildemuth,

-goes beyond merely counting words or extracting objective content from texts . . . it allows researchers to understand social reality in a subjective but scientific manner . . . [and to] explore the underlying meanings of messages . . . [and] is mainly inductive, grounding the examination of topics and themes, as well as the inferences drawn from them, in the data. (Zhang and Wildemuth, 2017: 318–319)

The qualitative content analysis method ‘usually consists of purposively selected texts’ (Zhang and Wildemuth, 2017: 319). In this case, we used Almeida and Santos’s (2005) CDU: Classificação Decimal Universal: Tabela de autoridade. This work is an abbreviated translated edition of the 2001 Master Reference File, published by the UDC Consortium. We used the e-book version. The content analysis enabled the analysis of the controlled vocabulary in the UDC scheme, as well as the hierarchical relationship established between the notations that codify the terms representing the subjects related to the concept of ‘sexual orientation’.

Given its exhaustiveness, specificity and topicality concerning the queer domain, the coding step concerning this method was grounded in the sexual-orientation-related terms of the Homosaurus (Digital Transgender Archive, n.d.) translated into Portuguese. The terms selected were asexuality, bisexuality, demi-sexuality, heterosexuality, homosexuality, lesbianism, allosexuality, monosexuality, polysexuality, pansexuality, grey sexuality and megasexuality, as well as sexual orientation, sexual identity, sexual diversity, sexual preference, sexual minorities, sexuality and sex. This method of selection of categories of analysis allowed the retrieval of terms representative of sexual orientation in the corpus of the data – that is, the Portuguese edition of the UDC (Almeida and Santos, 2005) – and the study of the hierarchy of the UDC notations that represent those terms within the classification scheme.

The discussion of the research findings was sustained not only by the qualitative data gathered and analysed in light of the content analysis method itself, but also its contrast with the literature review previously conducted on the topic, whose scope was the innate factionalism of KOSs. In this sense, we focused on cases of negative biases in the representation of the queer domain, specifically in the representation of the concept of ‘sexual orientation’ in bibliographic classifications. The literature review simultaneously addressed the critical cataloguing movement, in the light of which the findings of the research were discussed.

Results and discussion
The following is an outline of the notations and associated terms representing the subjects related to the concept of ‘sexual orientation’ identified in the UDC, which are underlined (the original outline, in Portuguese, is presented in Appendix 1):

055.1/.3 Persons according to sex
055.3 Persons with uncertain, ambivalent, or other sexual, psychosexual, or social features (e.g., asexuals, Bisexuals, Intersexuals, Homosexuals, Transsexuals, Transvestites, Sexual Pervers. Sadists. Masochists). (Almeida and Santos, 2005: 120–121)

613.8 Health and hygiene of the nervous system. Health and ethics
613.88 Sexual hygiene. Sexual education. SexualNEUROSURGERY
**Terms representative of the concept of ‘sexual orientation’**

Regarding the first specific objective – that is, the exposure of the terms that are representative of sexual orientation in the UCD – we note the presence of the following terms (listed alphabetically): asexuals, bisexuality, bisexuals, homosexual acts of men and women, homosexuality, homosexuals, lesbianism and lesbians. This set of terms reveals, first, that the principle of exhaustiveness, on which the UDC is grounded (Simões et al., 2018), does not manifest itself in the representation of sexual orientation, as the terms are both scarce and sparse, with terms such as demisexuality, allosexuality, monosexuality, pansexuality and grey sexuality, for example, being non-existent. However, it should be noted that some of the terms used in the queer domain are quite recent, and it is therefore to be expected that some of these terms were not in use in the queer community or in the literature at the time the UCD was edited (almost two decades ago). The discussion of this point is not, however, the focus of the present study. Nevertheless, it should also be noted that the term ‘sexual orientation’ itself does not exist, so the current UCD used in Portugal makes it impossible to adequately classify information resources whose core content is sexual orientation.

In turn, heterosexuality is also not represented in this library classification. This situation was previously noted by Christensen (2008), but in the case of the Library of Congress Classification, whose introduction of the term ‘heterosexuality’ only occurred in 2007. According to Christensen (2008: 236), by analogy, such a circumstance reflects the heteronormative hegemony underlying the UDC and, with regard to the existence of prejudice, ‘if homosexuality is explicitly present… but heterosexuality is not, homosexuality becomes a deviation from the norm’, and it is the same with respect to other sexual orientations. That heterosexuality is not represented in the UDC, and homosexuality, bisexuality and asexuality are, mirrors the assumption of heterosexuality as the norm in this KOS, for ‘that which is considered normal does not have to be labeled’ (Christensen, 2008: 231).

Asexuality is made visible in the UDC through the term ‘asexuals’, a sexual orientation that, in the case of the Library of Congress Classification Outline Class H, for example, is still being neglected and made invisible (Henry et al., 2022). As for the representation of homosexuality, the patriarchal perspective of the UCD is clear, since male homosexuality is assumed to be dominant over lesbianism (female homosexuality). Despite the need for differentiation and therefore categorization of sexual orientation according to sex/gender, as argued by Greenblatt (1990) – an advocate of minoritization in KOSs – particularizing female homosexuality (through the term ‘lesbianism’) and not male homosexuality (e.g. through the term ‘gay men’) assumes the male sex/gender as the standard and, as such, not in need of categorization. The patriarchal hegemony in the UDC has also been pointed out by Santos et al. (1999).

**Hierarchical relationship of the notations within the classification scheme**

Regarding our second goal – the analysis of the hierarchical relationship of the notations that codify the subjects represented in the UDC scheme – we highlight the fact that sexual orientation is subordinated in the main UDC tables to Class 6 ‘Applied sciences. Medicine. Technology’, and specifically to Subclass 61 ‘Medical sciences’. Such evidence allows the assumption that the UDC pathologizes sexual orientation – an inference that is corroborated by the fact that, in Subclass 61, sexual orientation is subordinated to Subclass 616 ‘Pathology. Clinical medicine’. The pathologization of non-heteronormative sexual orientations is not unique to the UDC. As stated by Bullard et al. (2020: 394), ‘knowledge organization systems (KOSs), including classification systems… have historically placed and defined topics such as homosexuality… as types of mental illness’.

In turn, the representation of sexual orientation is subordinated as well to Subclass 613.8 ‘Health and hygiene of the nervous system. Health and ethics’. The presence of the terms ‘hygiene’ and ‘ethics’ indicates the imprint of religious ideology in the UDC. Santos et al. (1999), with regard to the Spanish version of the 1995 edition of the UDC, noted this as well, mentioning that the combination of concepts such as hygiene and ethics is shocking. The concept of the hygiene of the nervous system is not feasible, so the intersection of hygiene with the nervous system and, at the same time, ethics (connected to moral principles) refers to the cleaning of the ‘mental, spiritual’ system, which suggests the influence of religious morals and the consideration of non-heteronormative sexual orientations as a dirty part of human beings that can be cleaned – in this case by some type of liturgical ablution, hence the imprint of religious ideology. It should be noted that, between the 1995 edition, studied by Santos et al. (1999), and the 2005 edition, there are no differences in the representation of sexual orientation in Subclass 613.88 of the UDC.

Sexual orientation is also represented in the UDC’s auxiliary tables, in particular Table 613.88 ‘Persons
Inadequacy of the Portuguese UDC in representing the concept of ‘sexual orientation’

Firstly, it should be made clear that this version of the UDC, in use in many Portuguese libraries (Simões et al., 2018), confuses the concepts of ‘sexual orientation’, ‘gender identity’, ‘gender expression’ and ‘sex assigned at birth’. From our point of view, by representing concepts such as ‘homosexuality’ and ‘intersexuality’ through the same notation, it inadequately declares that these autonomous concepts are interrelated autonomous concepts, since homosexuality is a sexual orientation, while intersexuality refers to the biological sexual features of an individual. We have noted that a similar situation occurs with the terms ‘transsexuals’, referring to a gender identity, and ‘transvestites’, which in Portuguese translates as both a gender expression and ‘drag queens’ or ‘drag kings’ (performing artists). Courbières (2013) comes to a similar conclusion by pointing out that the UDC promotes the idea that sexual orientation is not independent of gender identity.

As Simões et al. (2018: 13) clarify, in libraries, the UDC is used to (1) represent and categorize the subjects of the documents that make up their collections and, in some cases, (2) physically arrange those same documents. In this sense, according to our findings, the current edition of the UDC used in Portuguese libraries, which adopt this library classification as a tool to classify the information resources that make up their collections, restricts and even prevents an adequate representation of the content — that is, of the core subject of the information resources that primarily address sexual orientation.

Critical cataloguing pushes librarians and knowledge organization researchers to critically observe and rethink KOSs ‘from a social justice-oriented perspective’, which in turn will make it possible to reflect ‘on the potential harm or benefit of each term on users and the library community as a whole’ (Watson, 2020: 553). So, the analysis of the Portuguese UDC in light of the critical cataloguing movement has revealed the existence of negative biases and misrepresentation, in Colombo’s (2020) conception, of sexual orientation.

The UDC notations may not be commonly observed and explored by library users, so the understanding of its meaning (and therefore of the underlying negative biases when thought through the contextualization of the UDC scheme) will usually be obscured. However, such meaning is assimilated by librarians and, as McAuliffe (2021: 217) warns, not all librarians will have the sensitivity to recognize the presence of these negative biases, which may ‘simply reinforce the traditional knowledge and power structures’.

However, users have a perception of the arrangement of information resources on the library shelves, and it follows from the UDC that resources whose core content is, for example, homosexuality or psychosexual abnormalities might be classified, for example, with the notation 616.89-008.44 and therefore arranged side by side. Such an occurrence may promote the perpetuation of hate speech; the marginalization of social minorities, especially of individuals whose sexual orientation is not heterosexuality; the maintenance of poor mental health states and feelings of not belonging, mainly in users belonging to the non-dominant communities of society; and the alienation of users from collections and libraries (Dobreski et al., 2022; Drabinski, 2013; Guimarães et al., 2019).

Conclusion

Library classifications, as is the case with the UDC, are designed and grounded in a social, political and cultural context that is intrinsic to them, and, inherently, the biases innate to such a conjuncture become imprinted in both the vocabulary and the hierarchy of these KOSs. Nevertheless, societies and knowledge evolve, and library classifications should ideally progress and adapt to societal and scientific progress at the same pace. However, such an ideal is not a
reality, as library classifications are rigid systems that are slow to change.

Montenegro (2000: 71) asks whether the UDC is the prehistoric monster of classifications? If we focus only on the findings of this study, the answer to this question might be that it is. However, it must be remembered that the edition of the UDC that we used was not considered in the context of its genesis (two decades ago). Did this current edition of the UDC, in the year of its translation, represent sexual orientation in light of the collective thinking and science of the time? Or, perhaps, does the most up-to-date Master Reference File, in English, represent sexual orientation without negative preconceptions? Whatever the answer is to these questions, this study has allowed us to conclude that the current edition of the UDC in use in Portuguese libraries, regarding all the possible repercussions discussed here, prevents an adequate representation of the concept of ‘sexual orientation’, besides expressing prejudiced inclinations that are irreconcilable with modern society and scientific knowledge in Portugal. Critical thinking must be encouraged within both the scholarly and the library communities Europe-wide, and the Portuguese UDC must be peremptorily and promptly revised and updated.

Finally, on the one hand, we would stress to the Portuguese Association of Librarians, Archivists, Information and Documentation Professionals, which holds the power to raise awareness within the Portuguese librarian community, the urgent need to accurately represent the queer community in Portuguese libraries and collections. Such an active role might be put into practice by promoting panel discussions and training sessions, and creating social media content. At the political level, the Association might establish dialogues with the National Library of Portugal, the authorized publisher of the UDC in Portugal, and active members of the editorial team and advisory board of the UDC Consortium in order to actively participate in the urgent revision process of the UDC.

On the other hand, higher education institutions that train future librarians also have the power to make students aware of social justice issues within the field of library and information science, in particular with regard to the queer community and how to accurately represent and classify information and knowledge pertaining to the very identity of human beings. As Hjørland (2008: 96) has noted, ‘[t]here is no neutral platform from which knowledge can be organised’, which means that KOSs in general and library classifications in particular will always have intrinsic negative biases imprinted in them. Nonetheless, we should try as much as possible to minimize any biased inclinations, and critical cataloguing may be the first step to be taken along this everlasting path.

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Note
1. Queer is an umbrella term that ‘refers to people who do not identify as cisgender and/or heterosexual’ (Green et al., 2022: 20).

References

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Appendix 1

Notations and terms representing the concept of ‘sexual orientation’ in the original Portuguese UDC, in European Portuguese

055.1/.3 Pessoas de acordo com o sexo
613.8 Saúde e higiene do sistema nervoso. Saúde e ética
A gender perspective in the design of a video-on-demand search engine

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Abstract
Most interaction designs unknowingly discriminate against certain groups of people, and video-on-demand platforms are often included among such designs. This study presents an introduction to the adoption of a gender perspective in the user experience design of the search engine of a video-on-demand platform. User experience design includes, in essence, user needs in order to eliminate the obstacles users may encounter on their way to having a productive, straightforward and rewarding experience. This project was carried out using established user experience methods and techniques. The final design provides a prototype for an advanced search engine within a video-on-demand platform and includes all the elements in the filtering system of the main catalogue. It eliminates the gender gap and promotes women’s empowerment, thereby providing an experience where users feel comfortable and satisfied.

Keywords
Gender-inclusive design, gender perspectives, streaming platforms, LGBTQI+, user interaction design, user experience

Introduction
Many current audiovisual products that are part of video-on-demand (VOD) streaming platforms make women feel stereotyped and invisible (Izquierdo-Castillo and Torres-Romay, 2023). How might interaction design be developed to prevent the stereotyping and invisibility of women and other marginalised groups? The answer to this question lies within the realm of information architecture – the discipline that enables users to navigate the contents of a website or, in this case, a VOD platform (Pérez-Montoro, 2010). Hence, if the aim of this study is to make women and LGBTQI+ (lesbian, gay, bisexual, transgender, queer, intersex, other) groups more visible on these platforms, the information architecture must include a gender perspective. This article presents a prototype for a VOD platform interface with an advanced search option that incorporates a broader, more inclusive gender perspective to enhance the visibility of marginalised groups. This requires the development of a new interface with an integrated search engine. While creating an entirely new platform might form a niche for like-minded individuals, potentially excluding those who could benefit from education, enhancing an existing platform has the advantage of reaching a wider audience rather than catering to a specific cohort. In this way, both content and creators can contribute to bridging the gender gap. Before diving into the details of information architecture, our research builds on a prior study, which allowed us to identify essential information needs from a gender perspective within VOD platforms. We used various methodologies to examine the current context of VOD platforms, including user profiles, descriptors, terminology and the organisation of information.

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Literature review

Newell and Gregor (2000) were the first to lay their cards on the table regarding the creation of a new paradigm in which designs are inclusive. In their article, they discuss the new movements of ‘Design for All’ and ‘Universal Design’. They specifically refer to all designs in general, not just web designs, and inclusivity for people with disabilities, although they state that ‘many of the ideas contained in it (Universal Usability) apply mutatis mutandis to other minority groups’ (Newell and Gregor, 2000: 6). It should be remembered that, in the 2000s, information and communications technologies were just beginning to emerge. However, these movements were already indicating a growing need for inclusive designs. Introducing the concept of ‘User Sensitive Inclusive Design’ would aid future researchers and engineers in developing more effective and improved equipment for all groups. Finally, Newell and Gregor (2000: 6) propose not the establishment of a new paradigm, but rather ‘that the methodologies of User Centred Design be extended to form a paradigm called User Sensitive Inclusive Design’.

Tornay-Márquez (2021: 35) discusses communication research from a gender perspective, which emerged through ‘feminist researchers who identified the sexist content of the media as an obstacle to accessing women’s rights and building more egalitarian societies’. These researchers from the 1960s and 1980s were significant, as they played a role in establishing a need that persists today. Feminists ‘have focused from the beginning on the promotion of women’s rights and progress towards more egalitarian societies’ (Tornay-Márquez, 2021: 36), which is why it is important for feminist theory to also consider communication from a gender perspective. This article underscores the work of these feminist researchers and the influence they have had on the shaping of subsequent media.

Feminism can be a guiding practice when crafting designs. Bardzell (2010: 1308) argues that integrating feminism into the process can ‘generate concrete new design directions and new approaches to studying users’, and highlights the specific qualities of feminist interaction design: critique-based contributions and generative contributions. Critique-based contributions involve analysing ‘designs and design processes in order to expose their unintended consequences’ (Bardzell, 2010: 1308); generative contributions involve using feminist approaches in decision-making. Costanza-Chock (2018) also delves into the essence of designing for collective liberation. However, designs often perpetuate inequalities, which is why Costanza-Chock (2018: 5) emphasises the importance of adhering to principles of design justice that reject oppressive concepts like ‘white supremacy, heteropatriarchy, capitalism, and settler colonialism’. Fiesler et al. (2016) conducted a study on integrating feminist values and processes into system designs, concluding that a significant community advocates for this integration and hopes that other communities will also embrace a feminist commitment.

Approaching our focus on the role of online platforms, García Leiva (2019) discusses their emergence and contemporary significance. The advent of these platforms is ‘altering the configuration of the audiovisual, digital and analog industries, redefining the role of the existing agents when competing for viewers, subscribers and advertisers’ (García Leiva, 2019: 74). While García Leiva highlights an imbalanced and segmented society in audiovisual consumption, she also confirms the recent surge in subscribers on VOD platforms. This underscores the importance of researching and designing within this context.

Studying user experience (UX) is crucial because it revolves around the emotions and sensations users feel when interacting with a product. The specific example discussed by Suthiprapa and Tuamsuk (2022: 549) involves analysing users’ experiences with reference services, specifically within Thai academic libraries, to ‘understand their behaviours and attitudes’. Since a library serves as a place for ‘providing information services to support teaching, learning and research’ (Suthiprapa and Tuamsuk, 2022: 551), they deemed it relevant to delve into UX, as ‘when a library understands user experience, it can further analyse user goals’ (Suthiprapa and Tuamsuk, 2022: 553). When creating and prototyping a product, it is essential to consider UX and utilise related research methods and techniques (Sleeswijk Visser, 2009). This underscores the importance of factoring in the element of UX when developing a product.

We have also considered the relevance of the studies by Alhajri et al. (2021) and Hwang et al. (2015) in the field of UX. Both studies examined gender disparities within different contexts – an online student information system and wearable devices, respectively. These articles piqued our interest due to their focus on UX and gender perspectives, albeit in different platform contexts.

Lastly, Sibley et al. (2022) created tools to integrate intersectionality into knowledge translation, a concept partly rooted in a gender perspective. Moreover, Costanza-Chock (2018) also promotes incorporating intersectionality within design theory and practice. Sibley et al. (2022) stress the importance of inclusivity, particularly in knowledge translation. Similar to our study’s multi-method approach for prototype platform evaluation, they conducted a comprehensive review and applied methods to develop tools.
aimed at maximising inclusiveness. These tools could serve as valuable resources for formulating guidelines to improve knowledge translation, akin to the potential impact of our platform’s advanced search engine on other platforms. However, the most compelling application lies in considering these tools during the inception of new platforms.

Research methods

Before presenting our research methods, we would like to acknowledge some limitations. This study was conducted in an academic context with limited resources for certain methodological procedures, such as interviews or card sorting. As a result, we have a relatively small sample size, which may limit the representativeness of our data. However, we were committed to include perspectives from the LGBTQI+ community to avoid excluding another marginalised group. Initially, we included a LGBTQI+ man to provide supplementary perspectives. Later in the study, we chose to focus solely on the contributions of women, which resulted in a smaller sample size, as will be seen in the following sections.

Our research began with a literature review to assess the existing studies and findings on the subject. We then used interaction design methods in the following sequence: heuristic analysis, interviews, empathy mapping, UX persona and scenario creation, journey mapping, card sorting, content-tree development, flow chart and wireframe prototyping, and user testing. These methods helped shape the final design of the VOD platform, which we developed using wireframes. In the discussion phase, we conducted a comparative analysis of our results in the context of other studies, leading to our conclusions.

Heuristic analysis

The convergence of satisfaction, efficiency and intuition yields usability (Ferran, 2021). We utilised the heuristic analysis method to understand the usability of current VOD platforms. We evaluated them to determine which exhibited an optimal interaction design in relation to Nielsen (1994) and Hassan Montero and Martín Hernández (2003) principles: that is, encompassed factors such as visibility, connection, control, consistency, error prevention, flexibility and design. The design of our platform took inspiration from those platforms that have achieved a robust interaction design.

Interviews

Interviews provide a qualitative approach for gaining direct insights from users, facilitating a deep understanding of their needs, experiences and viewpoints. This method allowed us to gain specific insights that quantitative methods may not have captured. To explore user perspectives on the gender aspect of VOD platforms, we conducted interviews with four women and one LGBTQI+ man. These interviews aimed to gather insights on audiovisual content (including creators and stereotypes), women’s roles in the professional realm, and platform usage. We conducted these interviews both in person and via video calls to observe the participants’ reactions.

Empathy mapping

Based on the interviews, we created an empathy map with four sections: what the participants SAY, what they THINK, what they FEEL and, finally, what they DO. This map allowed us to distil shared ideas and thoughts among the interviewees, helping us to understand their commonalities and differences. It played a crucial role in crafting the subsequent UX personas.

UX persona and scenario creation, and journey mapping

UX personas and scenarios are common techniques in interaction design. A UX persona represents a user archetype, sharing characteristics, motivations and goals with a user group. On the other hand, a UX scenario provides a detailed description of the actions, thoughts and emotions of the UX persona when interacting with the design. These tools helped us to understand user behaviour and thought processes. The journey map visually depicted the UX scenario, showing user thoughts, touchpoints, challenges, emotional trajectories and potential opportunities based on their interactions with the design.

Card sorting

Card sorting is a method that helps us to understand how users group and categorise information. This technique allows us to tailor the organisation and design of information in a final product to align with users’ vocabulary and preferred structure. It contributes to user-centred design and complements the other research methods discussed in this article. We used card sorting to build the information architecture for our information retrieval system, focusing on VOD platforms with a gender perspective. Our goal was to understand user interaction with the content, how they categorised information and the terminology they used. We curated a set of cards, considering gender and sexual diversity, and including technical terms like ‘genre’ and ‘document type’. Three
26-year-old women participated in the card-sorting process, helping us to determine appropriate classifications and category names for our target audience.

The content tree
A content tree visually represented the outcomes of our card-sorting exercise, which specifically focused on the platform’s advanced search engine – a central component of the project. This tree hierarchy revealed the platform’s taxonomy, including various categories, subcategories and their corresponding elements.

Prototyping and user testing
In prototyping our design, we used flow charts to visually map out user processes, emphasising technical aspects like logging in, searching for content and problem-solving. Wireframes depicted the platform’s structural appearance, excluding artistic elements. We conducted user testing by presenting wireframes to volunteers and gathering their input on specific actions. These methodologies provided indicators of the potential effectiveness of our final design.

Findings
Having employed the methods in the sequence elucidated in the preceding section, we made the following findings.

Heuristic analysis
We used heuristic analysis to evaluate Netflix, Disney+ and Pluto TV. All three platforms have made a substantial effort to create user-friendly interfaces for seamless navigation, especially Netflix and Disney+. Pluto TV stands out with its superior information structure, offering more specific subcategories for refined searches. While all three platforms cater to user needs well, there is room for improvement. Netflix excels in usability and error prevention, making it the most robust platform. Disney+ impresses with its minimalist and intuitive design, while Pluto TV distinguishes itself with its efficient content management. In conclusion, our analysis revealed that Netflix has the most exemplary interaction design and usability. Therefore, we decided to use the Netflix interface as the foundation for our own design, with the goal of delivering an optimal UX.

Interviews
The responses in the interviews indicated that content quality is more significant than the presence of female empowerment or a gender perspective on a platform. However, the participants expressed that female empowerment and a gender perspective should exist alongside content quality. The gender of the creator did not particularly interest them. All of the respondents reacted positively to the concept of enhancing the visibility of LGBTQI+ groups and women through a gender perspective – a sentiment embraced across all platforms. However, there is a noticeable absence of female characters reflecting the authentic traits of real women, as opposed to those conceived by male directors.

The interviews also provided insights into the structure and components that are essential for a platform, extending beyond the gender perspective, which remains integrated into other facets of the platform. These aspects are significant and warranted consideration as we developed the VOD platform, requiring the incorporation of fundamental elements such as:

- An intuitive search engine equipped with advanced search functionalities;
- Mobile and web applications;
- An original language version, accompanied by subtitles in multiple languages;
- Diverse content catering to all audiences, from children’s cartoons to adult viewership;
- A comprehensive data sheet for all content;
- A section dedicated to personalised recommendations based on user preferences;
- The utilisation of distinct colours for content presentation;
- The availability of filtering options;
- Provision for creating a watchlist.

Empathy map
The common attributes shared among the interviewed individuals encompassed being VOD users, feminists, gender-sensitive and experiencing a sense of invisibility. Broadly speaking, the majority SAID they lacked awareness regarding the gender of audiovisual creators, expressed motivation for a platform with a gender perspective, and perceived an inherent injustice. Their THINK perspective revolved around the absence of representation and they took pride in their thoughts. As for their actions (DO), their primary engagement with platforms was for entertainment purposes. Ultimately, their emotional state (FEEL) oscillated between feelings of helplessness and feelings of empowerment, often coupled with an underlying unawareness of existing discrimination. While certain concepts may appear contradictory, a
consensus emerges: even if gender and discrimination might not have been at the forefront of their consciousness, on reflection, they acknowledged the dearth of female representation.

**UX persona and scenario creation**

Our user profile is Laia, a 25-year-old woman who is deeply committed to feminism and staying informed (Figure 1, Appendix 1). She recently completed her university degree, and her professional career is in its early stages. Laia primarily uses her smartphone or laptop to access audiovisual content through VOD platforms and social networks, and she spends a significant portion of her day online. She is an avid consumer of audiovisual and musical content, driven by personal motivations. She values spending time with her friends and seeks entertainment with informative elements. She frequently uses diverse platforms offering advanced search functionalities.

In the UX scenario, we find Laia fatigued after work, intending to unwind with a film that offers relaxation and intellectual engagement. She spends about half an hour browsing the menu and settles on a romantic comedy, only to encounter sexist stereotypes in the female character portrayal, leaving her frustrated and disheartened. Seeking solace, she calls her friend Anna, who suggests a platform offering better gender perspectives. Laia tries it and easily finds a film that aligns with her criteria, leaving her happy with her choice.

**Journey map**

The journey map depicts Laia’s desire to unwind by watching television (Figure 2, Appendix 1). As she explores the menu, she anticipates discovering something enjoyable yet intellectually stimulating. Unfortunately, her search yields no satisfying results, marking a notable pain point. This experience provokes a shift in her emotional state, registering as ‘frustrated’. A potential remedy emerges: the platform could offer high-quality content. Opting for a romantic comedy out of weariness, Laia’s sense of frustration deepens on realising the presence of sexist content and perpetuated stereotypes. Addressing this issue by finding quality, non-sexist content stands as a potential solution. Contemplating calling Anna, Laia’s mood brightens when she heeds her friend’s suggestion to sign up for a new platform. Subsequently, using the new platform leaves her thoroughly impressed, with her emotions transitioning to a state of ‘delight’.

**Card sorting**

The classification and categorisation that was determined suitable for our target audience included:

- Type of content: ‘What do you want to watch today?’, visual content, and category;
- Genre: genres and content, genre, and genres/rating;
- Basic information: about the platform, visual content information, and settings.

Based on our analysis, we determined that the optimal arrangement would include categories on the left, genres in the middle, and platform information on the right or at the bottom. This arrangement is reflected in the content tree, which illustrates the architectural layout derived from the card-sorting process.

**Content tree**

The information expected by users when interacting with the search engine is structured as follows. At the top levels, there are broad descriptors, including content types (e.g. ‘What do you want to watch today?’), genres, direction, leading collective, moods and age groups. On this level, there are filters to fine-tune the search, including date ranges, parity seals, Bechdel test results, feminist rankings and LGBTQI+ special. The parity seal ensures that the content meets gender equality and diversity standards. On the other hand, the Bechdel test is used to assess gender representation in fiction, whether audiovisual or not. To pass the Bechdel test, a work must include at least two named female characters who interact with each other, and their conversation must not primarily revolve around a male character. As we move to the lower tiers, the information is further divided into relevant subcategories (Figure 3, Appendix 1).

**Prototyping**

**Flow chart.** The process of accessing content using the advanced search system begins with logging in to the application. Users can access the platform through an existing profile or by creating a new one. After accurate data input, the main catalogue screen becomes visible. If they make a mistake, users are redirected to the login screen with an error message. Here, users have the option to retry or reset their password.

On the platform’s home page, users can either perform a specific content search or casually browse the catalogue without a specific goal. When seeking particular content, accessing the advanced search engine allows users to specify their desired features from the content tree’s outlined characteristics. After making selections, a list of results is presented, which may or
may not meet the user’s criteria. If the desired content is found, it can be accessed for viewing. Otherwise, users can return to the advanced search filters to initiate another search (Figure 4, Appendix 1).

**Wireframe and user testing.** In this study, wireframes were created in line with our prototyping goals. We incorporated elements based on the content tree, outlining various accessible pages for user testing and eventual implementation on the live platform. Our goal was to provide users with an advanced search system that catered to their specific preferences, including a gender perspective and the inclusion of LGBTQI+ groups.

During user testing, we identified areas requiring modification and pages needing restructuring. We also noted missing elements, like the option to search by generation or activate a night mode. The feedback from our test users revealed design oversights, prompting necessary refinements. The final wireframes with the appropriate adjustments are presented in Figures 5 to 11 (Appendix 1).

The volunteers suggested improving the visibility of the advanced search button, as it was not immediately apparent. In contrast, they found the filter to be more conspicuous and accessible, leading to its more frequent use. In response to this feedback, we made a substantial change to our information retrieval system. For the advanced search function, we introduced a pop-up window immediately on entering the platform. The objective was to enhance the visibility of women and the LGBTQI+ community, ensuring easy access to their audiovisual contributions.

Including elements such as the parity seal and Bechdel test results with widespread visibility was crucial. These markers should be present across an advanced search system, filtering the interface, search results, and film data sheets. In addition to their role in content filtering, these elements serve an educational purpose, showing an explanation of the terms easily understandable.

**Discussion**

In this project, user testing was pivotal in ensuring the functionality of both the advanced search engine and the platform interface for users. The design proved highly effective, allowing for further enhancements. However, to comprehensively validate the study’s effectiveness, we conducted a review of similar research. Unfortunately, there is a lack of research on the gender perspective, especially within the realm of interaction design, highlighting a distinct need. Through discussions, we assessed the platform’s user-friendliness and its impact on other creators.

While we did not find a study directly parallel to ours, we came across insightful articles on gender perspectives and communication.

The studies by Alhajri et al. (2021) and Hwang et al. (2015) conclude that discernible gender differences are not of substantial consequence. While our study primarily involved women, one male interviewee’s perspectives closely echoed the sentiments of the female participants. Based on our findings, gender differences do not appear to significantly affect the UX. Thus, the design of our platform could be suitable for other audiences, eradicating filter bubbles formed by distinct structures and content. The implementation transforms into a universal system that is accessible for both genders.

Our research findings highlighted the lack of quality content on existing platforms, prompting us to consider creating a new platform with fresh, high-quality content – a potential flagship feminist platform. However, in this article, we advocate for an alternative approach to prevent potential filter bubbles and avoid restricting the platform’s usage solely to those already deeply interested in such topics. Our objective is to refine existing platforms, ensuring their capacity to engage diverse audiences and offer an inclusive experience with a gender perspective. Our ambition is for everyone to participate in and relish such an enriching encounter.

Furthermore, the under-representation of women in senior roles within the field of UX in high-tech industries, as highlighted by Kumar et al. (2012), contributes to the limited consideration of gender perspectives in design – a concern raised by our interviewees in the audiovisual sector. Following our study, it is imperative to establish a system that enhances visibility for women and LGBTQI+ groups. Even if the number of women in senior roles does not witness proportional growth, the visibility of their work is paramount. Such progression would foster an equilibrium within the audiovisual sector, rectifying the gender imbalance.

Finally, the studies by Sibley et al. (2022) and Costanza-Chock (2018) propose a new framework of intersectionality that incorporates an intersectional perspective when designing applications. This approach helps with the development of inclusive tools that contribute to enhancing social well-being. While our gender-focused project also considers the LGBTQI+ community, intersectionality encompasses various other aspects that must be considered when creating any tool.

**Conclusion**

In concluding the design process, we have arrived at our final considerations. Initially, our hypothesis
centred on ending the invisibility and stereotyping of women on VOD platforms. While our focus was on women, we realised that other groups could also benefit from these enhancements, prompting us to extend our design considerations to the LGBTQI+ community.

Our heuristic analysis revealed a remarkable uniformity among all VOD platforms, with a pervasive template-like approach. Except for Filmin, a platform that offers a significant content with a gender perspective, most platforms neglected to address the LGBTQI+ community or implement gender-perspective techniques to benefit women. As a result, beginning the design process centred on an information retrieval system geared towards a gender perspective, and LGBTQI+ visibility evolved from being essential to forming the cornerstone of our project.

Originally, our goal was to create an entirely new platform. However, insights from the interviews revealed a potential pitfall in developing a VOD platform from scratch focused on feminist content and a gender-perspective-based structure that prominently featured LGBTQI+ content. Such an approach risked being perceived as ‘too niche’ and the platform might not be used by the target audience.

Our aim was to avoid turning the platform into an exclusive filter bubble for women and LGBTQI+ individuals. Instead, we wanted to provide users with the freedom to select content without the limitations of the prevailing androcentrism. While the interviewees from various groups, including women and the LGBTQI+ community, expressed a positive inclination towards fostering inclusivity, they did not see a pressing need for a highly specialised platform. However, the empathy map highlighted critical areas requiring improvement within VOD applications, such as the presence of content of superior quality, authentic portrayal of female characters, and greater visibility of female creators on existing VOD platforms. Introducing an entirely new VOD platform filled solely with content aligning with a robust feminist ethos could inadvertently foster isolation within the specific target audiences.

Resolving the quandary of inclusivity led us to the decision not to create a new platform but to enhance existing ones. This choice does not imply that improving VOD platforms is a straightforward task. Designers and, in our case, information specialists must make rigorous efforts to achieve optimal UX design. Thus, our UX persona was modelled on a discerning young woman with profound intellectual curiosity and a keen interest in gender-perspective matters. The input of three volunteers who matched the attributes of our UX persona helped us develop the information architecture through card sorting, allowing the participants to organise cards as they saw fit. Although hybrid models presented intriguing possibilities, they did not yield results as optimal as those afforded by a fully open model. The participants unanimously supported the inclusion of an LGBTQI+ collection, both as a genre and as a theme. While the nomenclature could have posed challenges, the participants considered genre as encompassing categories like humour, horror or science fiction, while theme pertained to aspects like female creators, forming distinct collections. Thus, our proposed enhancements extended beyond the mere repositioning of information; they encompassed the advanced search engine, parity seal, feminist ranking and Bechdel test.

As the project neared its conclusion, we embarked on the prototyping process and conducted user testing. Our prototyping derived from insights gleaned through the user journey, spanning from the platform entry point to content discovery (Figure 4, Appendix 1). Wireframes aligned with this foundational structure, shaping our final prototype. User testing unveiled a fresh perspective, provided by the women previously interviewed, thereby influencing a revised viewpoint. Crafting an advanced search engine within platforms holds value only if users can readily locate and navigate it. Yet, this is not always the case. Furthermore, user preferences indicated a penchant for multiple layers of filtering, all with a seamless, effortless experience. It is uncommon for users to extensively utilise advanced search functionalities, especially if these features remain inconspicuous. Consequently, our final design merges all of the elements of advanced search within a user-friendly pop-up window, which users can dismiss at will, ensuring that both filtering options and the main catalogue remain visible. The advanced search refines and streamlines the search process, catering to users seeking precise content tailored to their requirements. Preset filters assist the user in refining their search, steering clear of open-ended searches. The inclusion of the feminist ranking and Bechdel test is crucial, aligning with our overarching goal of fostering awareness and education.

Consequently, our final design seamlessly integrates all facets of the advanced search system into the main catalogue’s filtering mechanism. This holistic approach not only bridges gender disparities and empowers women, but also culminates in a UX marked by ease, satisfaction and delight.

In view of our findings, we deem that, while a dedicated application for women or LGBTQI+ individuals might not be required, their visibility on
mainstream platforms is undeniably crucial. As women researchers, the imperative of visibility and the advancement of feminism and education resonates with us. Consequently, we assert that enhancements related to creators and content are vital. Despite the relatively modest size of the examined sample, we obtain certain pivotal notions for these enhancements that are helpful to extrapolate to other designs. This study might be used as a starting point for prospective investigations into VOD platforms and information retrieval and search mechanisms.

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**Davinia Pérez López** is in the final year of her joint degree in Audiovisual Communication and Information Science at the University of Barcelona. Her research interests focus on gender perspectives in literature, media and information architecture. She studied Marketing during two higher level vocational training courses and she did a year of English Philology. The courses would lead her to access her currently studies at the University of Barcelona. She has worked as an intern supporting the scientific production of researchers at the Pompeu Fabra University and as a content creator and communication assistant in a publishing house.
Appendix 1

Figure 1. UX persona.

Laia, 25 years

UX PERSONA

I would love to see gender-sensitive and more feminist platforms to ensure fairness and equality.

♀ Female

Occupation: University degree holder

Work Experience

Education

Technical characteristics

Devices used to access our service  
Applications and websites used  
Devices used to access the web  
Time spent 6 — 8 hours

Personal motivations

Hobbies

Looks for

Devices used to access to our service
Figure 2. Journey map.
Figure 3. Content tree.
Figure 4. Flow chart.
Figure 5. Wireframe: login page.
Figure 6. Wireframe: registration page.
Figure 7. Wireframe: home page with pop-up window.
Figure 8. Wireframe: home page.
Figure 9. Wireframe: advanced search engine page.
Figure 10. Wireframe: results list page.
Figure 11. Wireframe: data sheet page.
Open educational resources on preservation: An overview

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Abstract
In the last decade there have been many initiatives and projects that have dealt with open educational resources with the goal of making education more available and also of improving formal educational practices. The Erasmus+ project Digital Education for Crisis Situations: Times When There Is No Alternative is such an initiative and one of its planned intellectual outputs is to produce a new open educational resource on the preservation of analogue and digital materials. Planning and creating an open educational resource on preservation needs to be based on an understanding of the content that comprises the complex field of preservation. This also provides the basis for conducting research on the available open educational resources in this field. This article aims to provide an overview of the available open educational resources on preservation through an investigation of open educational resource platforms, finding open educational resources on preservation, and analyzing them according to the theoretical background on preservation. This provides an understanding of what kinds of open educational resources exist in the field of preservation and also informs the way a new open educational resource should be created.

Keywords
Preservation, preservation education, open educational resources, open education

Introduction
The rapid development of information and communications technology has caused numerous changes in the way students and teachers experience education and learning. This was especially evident during the COVID-19 pandemic, when schools, universities and other educational institutions, as well as libraries, archives and museums, had to change the way they taught and presented their educational materials, organized exhibits, and so on. Online learning and teaching became the ‘new normal’, and many institutions and individuals were suddenly and unexpectedly faced with it. Open educational resources (OERs) enable this kind of education and have become a common and popular way of disseminating and transferring knowledge to interested users, as well as an effective way of learning (Essmiller, 2021; Huang et al., 2020; Ossiannilsson, 2021; Rimmer, 2020). They first appeared during the 1990s when the Multimedia Educational Resource for Learning and Online Teaching (MERLOT) was created at California State University for the purpose of higher education. This platform provided online curriculum materials, which were mostly available for free. This new way of knowledge dissemination gained momentum and popularity when the Massachusetts Institute
of Technology decided to open its courses to students, professors and the public completely free of charge. Since then, numerous OERs and platforms have been made available to interested users. They cover an extensive range of topics and are designed for various educational purposes, from informal learning to formal education (Bliss and Smith, 2017; Boczar and Jordan, 2021; Pawlowski and Bick, 2012; Van Allen and Katz, 2020).

The increasing occurrence of OERs in the modern information society raises the question of their quality as well as applicability to certain areas. It is important that an OER contains information or metadata that defines the authors of the educational materials and their institutions if they are affiliated with one; licenses that clearly state in what way the content can be used; trustworthy references; and technical dimensions that allow the end user to understand what is needed for the use of the educational materials. OER quality assessment is necessary because a certain set of parameters – for example, metadata, author information or content presentation – can be used to determine why some OERs are used more than others, or provide a basis for determining why some OERs are more successful than others. Also, quality assessment can establish which OERs are trustworthy and useful not only as educational materials but also as a product that is used by the end user to learn something. It is possible to develop a framework that allows researchers to analyse OERs according to their content, ways of content presentation (methodology), technical dimensions and design to further enable quality assessment (Almendro and Silveira, 2018; Krajšco, 2016). Nowadays, there are numerous projects that investigate the phenomenon of OERs and their production, categorization and optimization with the goal of making educational materials more available and providing better education. The Department of Information Sciences of the Faculty of Humanities and Social Sciences at the University of Osijek is the main coordinator of such a project. The Digital Education for Crisis Situations: Times When There Is No Alternative (DECriS) Erasmus+ project aims to advance digital education and as one of its six intellectual outputs plans to optimize existing OERs in the field of information science and design a completely new OER on the preservation of analogue and digital materials (Faculty of Humanities and Social Sciences, 2022). The design of a new OER will require extensive preparation and planning, including not only a digital but also a pedagogical dimension. Both dimensions will be considered in a comprehensive approach and will look at not only the specificities of OERs as educational materials but also the specificities of the area that is the topic of the OER (Butcher et al., 2011).

Based on the research already carried out by the DECriS team and numerous literature sources on the topic of OERs, this article considers the topic of preservation as the main theme of the OER that will be developed – that is, the research explores OERs that focus on the topic of preservation in general. At the initial stage of the development of such an OER, it is necessary to understand what kind of OERs are already available on this topic; how are they designed; their granularity; what kind of content they present; and what, if anything, is missing from them. Furthermore, it is important to define the main purpose of such a new OER and precisely select the content that will fulfil its purpose.

Open educational resources
Numerous definitions of the OER concept can be found in the literature on the topic:

Open Educational Resources (OER) are learning, teaching and research materials in any format and medium that reside in the public domain or are under copyright that have been released under an open license, that permit no-cost access, re-use, re-purpose, adaptation and redistribution by others. (UNESCO, 2019)

In its simplest form, the concept of Open Educational Resources (OER) describes any educational resources (including curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts, and any other materials that have been designed for use in teaching and learning) that are openly available for use by educators and students, without an accompanying need to pay royalties or licence fees. (Butcher et al., 2011: 24)

[Open educational resources are] teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. (Bliss and Smith, 2017: 12)

Creative Commons (2020) has recognized various definitions of OERs and on its wiki page has a table that encompasses all the characteristics of OERs from the different definitions (Table 1). In its comparison of definitions, Creative Commons has used the definitions of the Hewlett Foundation, the Organisation for Economic Co-operation and Development (OECD), UNESCO, the Cape Town Declaration, the Wikieducator OER Handbook and the OER Commons. Table 1 shows the similarities and differences between these definitions. The similarities are marked
In summary, OERs can be, for the purpose of this article, simply defined as educational resources that are freely available for users/students and/or educators to use openly, adapt or reuse the educational content for non-commercial purposes. OERs can also be viewed as tools that support and enable distance education not only in online/digital learning in real time but also as a way of asynchronous learning during which the end user can learn at their own pace independently of a certain time frame (Butcher et al., 2011; Moist, 2017). Another characteristic that differentiates OERs from other educational materials is their openness. By definition, they are intended to be free of charge, which means that the end users of the content should not have to pay a fee to access them. This refers not only to the licenses under which OERs are accessible but also to their already mentioned openness, which can be defined by the so-called ‘5 Rs’ – retain, reuse, revise, remix and redistribute – which enable the free use of OERs. This means that users can freely manipulate the content in a way that is allowed by the OER license and have the possibility to integrate the OER into other material they wish to create (Butcher et al., 2011; Moist, 2017; Wiley, 2014).

Remixing or reusing an OER can be connected to the granularity of the OER, and refers to the way in which a certain OER can be prepared. OERs can consist of various forms of educational resources and, as such, be conceptualized as ‘big’ or ‘small’ in size. The granularity of a certain OER can impact not only its content presentation or the intention with which it was created, but also the way in which the content or parts of the OER can be used or reused. OERs that are big (OpenCourseWare (OCW) or full courses) are usually created by an institution or have passed certain quality assessments, and they offer more comprehensive content to the potential user. This means that they have a specific objective when it comes to teaching. OERs that are small include simple objects such as different texts, images or scientific articles, and have more potential to be reused since they are conceptualized as individual content (Almendro and Silveira, 2018; Centre for Educational Research and Innovation, 2007; Hylen, 2006).

Bearing in mind the openness of OERs, which allows for their reuse and adaptation, granularity and main attribute – being freely available – the question of their quality arises. As has been previously stated, OERs are widely available; it is possible for a variety of individuals or institutions to create their own OERs; and it is necessary to be able to assure a certain level of quality of the presented content as well as the OER in general. Quality assurance is an important question when it comes to the concept of OERs, and in the literature it is possible to find many efforts to create frameworks that can be used for OER evaluation. The quality of OERs is assessed by the ways in which the content is created, presented and technically realized. The criteria to be applied in quality assessment need to include an assessment of the authors that created the OER; the comprehensiveness of the content presented; the way in which the content is presented; the accessibility and discoverability of the OER; and the technological characteristics (design, availability, use) (Camilleri et al., 2014; Kawachi, 2014; Zawacki-Richter et al., 2022). All the above-mentioned criteria can be used to assess the quality of OERs in the field of the preservation of analogue and digital materials, but first it is necessary

### Table 1. Definitions of an OER.

<table>
<thead>
<tr>
<th></th>
<th>Open copyright licence required</th>
<th>Right of access, adaptation, and republication</th>
<th>Non-discriminatory (rights given to everyone, everywhere)</th>
<th>Does not limit use or form (does not include NonCommercial limitations)</th>
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<td>Hewlett Foundation</td>
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<td>Cape Town Declaration</td>
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<td>Wikieducator OER Handbook</td>
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<tr>
<td>OER Commons</td>
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Source: Creative Commons (2020).
to determine what kinds of OERs on the subject are available to users. Therefore, an overview of the OERs on the preservation of analogue and digital materials is the central topic of this article. It is also important to understand the complexity of the field of the preservation of analogue and digital materials in order to, in turn, be able to develop a way to approach the basis for searching for OERs on OER platforms.

**Preservation of analogue and digital materials**

Preservation in general can sometimes be understood as a particular and overly technical process that is the domain of experts, who engage in the material aspect of what is considered to be preservation. This leads to the false perception that preservation is a technical area that includes only conservation and the restoration of materials. The term ‘preservation’ can also be understood as an area that is distanced from the everyday work of information professionals and deals with economic resources and legal frameworks that enable the process of preservation. This illustrates the complexity of the term and the field of preservation. It is a process that involves many different aspects, which needs to be approached comprehensively. Planning and conducting a successful and efficient preservation process includes taking all the above-mentioned issues, as well as sociocultural and educational aspects, into account. Efficient preservation can be achieved through successful preservation management.

Preservation management has its roots in (general) management as an economic concept and serves essentially the same purpose as the management of any other process. By definition, management is the most efficient use of resources to achieve goals and improve quality. This suggests that preservation management can be defined as an organized and systematic approach to ensure the permanence, availability and interpretation of materials in accordance with the mission of a particular information institution through the systematic and planned organization of staff and financial resources. According to the comprehensive preservation management model, preservation must be synchronized with an institution’s economic and legal environment; it needs to consider the human resources that will implement concrete solutions to achieve the effective preservation of the objects/collections in its care. The material with which the objects of preservation are composed (analogue or digital) is the foundation for all preservation activities and its handling presents the core of preservation. It can be concluded that preservation includes numerous activities that enable the preservation of not only the carrier of information (material), but also its content, whether analogue or digital. Directing preservation activities and achieving preservation management, at both the institutional and national levels, can be made possible by a comprehensive approach to the issue of preservation, which includes five key aspects:

1. The **strategic and theoretical** aspect refers to the design and creation of programmes, strategies and preservation policies that are based not only on scientific and professional knowledge, but also on examples of good practice implemented at the national and international levels.

2. The **economic and legal** aspect includes planning the financial resources that will be available to heritage institutions and finding additional resources to carry out preservation activities. This aspect also includes the legislative framework within which preservation activities are carried out.

3. The **cultural and social** aspect refers not only to evaluation and the selection of materials for preservation, but also to the creation of value-added services that contribute to society as a whole. This aspect is extremely important in the presentation of heritage and for targeting designated user groups.

4. The **technical and operational** aspect deals with the application of preservation methods and techniques, assessment of the storage conditions of materials in heritage institutions, and examination of the conditions of the collection, the results of which can serve as an excellent starting point for the creation of national programmes, projects and strategies for the preservation of analogue and digital materials.

5. The **educational** aspect includes considerations about not only the preservation knowledge that information experts should have and its inclusion in educational programmes, but also the training and teaching of the staff of heritage institutions to carry out regular preservation activities (Krtalić and Hasenay, 2013b).

This comprehensive preservation management model also presents an effective way of planning the preservation process with a certain starting point in mind. For the purposes of this article, the educational aspect will be the starting point. It will be more thoroughly inspected as a possible first step in preservation planning because it provides a way to shape the knowledge base for preservation professionals, as well as a
basis for the creation of effective, target-oriented OERs in the field of preservation. Some of the possible research issues in this educational aspect are the issues connected with designing and developing educational materials in the field of preservation. These issues can include the ways in which the content is presented to an audience in a formal or informal setting, as well as an online environment. This content can be divided into different parts, which correspond to the five aspects, because each aspect represents potential for education in the field of preservation. In order to create or assess OERs in the field of preservation, it is necessary to understand which content will be included and how it will be presented (Hasenay et al., 2011; Krtalić and Hasenay, 2013a, 2013b).

Methodology
As stated previously, there are many OERs on multiple topics available to end users, and the basic idea for this article was to create an overview of the OERs that offer methods, approaches, guides, literature, video materials and open textbooks, for example, in the field of the preservation of analogue and digital materials. The first step in this process was to identify the OER platforms that could be used to search for OERs on the preservation of analogue and digital materials. There is an abundance of platforms that list websites and platforms with OERs and, during the preliminary research, it was identified that many of them contain the same repositories and OER platforms. It was concluded that many of them list almost the same open educational websites, such as MERLOT, OER Commons, Coursera, edX and the Khan Academy, among others. It was decided to use the list of Stony Brook University Libraries because it is extensive and lists the well-known (previously mentioned) open educational websites and many more that could otherwise be overlooked. It is also important to consider a limitation of this research. The abundance of available OERs and OER platforms poses a challenge to a completely comprehensive approach to the research because it is almost impossible to be able to encompass them all. Also, an OER platform intended specifically for the field of the preservation of analogue and digital materials or preservation in general does not exist. Therefore, the research needed to adapt to the existing OER platforms, which enable access to OERs on a variety of topics. The classification of OERs on the preservation of analogue and digital materials was carried out according to the OER’s granularity (big or small) and the comprehensive preservation management model (aspects of the model).

The OER granularity classification refers to the design and technical dimensions of the OERs that were classified and analysed since it clearly states the types of available OERs and the way they are designed for the end user. For example, the big OERs such as massive open online courses (MOOCs) or OCW will be enriched with interactive content and have an overview of a certain topic presented in a user-centred way, while small OERs will be designed as simple resources in accordance with their function – that is, textbooks for reading, pictures for viewing, and so on. The classification of OERs by the aspects of the comprehensive preservation management model allows for a thematic overview of the available OERs and mostly delves into the way the content is or can be presented. It would be possible to further develop the criteria for the quality assessment and assurance of OERs on the preservation of analogue and digital materials, but this article centres on an overview of the available OERs according to their granularity and a thematic framework following the comprehensive preservation management model. It is important to emphasize that during the research there were additional criteria added. This allowed for a more in-depth analysis of the available OERs on the preservation of analogue and digital materials.

In the beginning stages of the research, it was crucial to create a list of keywords to be used for the search of OER platforms. The list of chosen keywords represented the complexity of the area of the preservation of analogue and digital materials, as it was assumed that this would achieve results that would represent the multiple areas found in the field of preservation. These keywords were chosen in such a way that the general term ‘preservation’ was expanded with other, more specific keywords, such as restoration, conservation, preservation of analogue materials, preservation of digital materials, preservation of cultural heritage, preservation of written heritage, cultural heritage, cultural heritage management, written heritage, restoration, book restoration, paper restoration, digital preservation, digital curation and digital stewardship. Based on these keywords, the search on various platforms was conducted and the data for each OER was noted on a Microsoft Excel spreadsheet. The data that was collected enabled the acquisition of data for OER identification – for example, title, author, description, year, field of study, level of study, intended audience, topic and publisher. There were certain challenges during the phase of data collection because some data – such as author, year, level and field of study, as well as the publisher – depended on the available description of the OER, and sometimes...
the description was missing or not immediately obvious.

The collected data was used to classify OERs on the preservation of analogue and digital materials according to their granularity – that is, whether they were big or small OERs. For the second part of the research, a typology table was created, consisting of criteria representing the type of resource. These OERs were then further classified according to the typology of big or small. For example, the typology of small OERs consisted of courses, curricular programmes and didactic modules, student guides and teaching plans, assessment tools, exercises and examinations, textbooks and research articles, videos, podcasts, images, maps and presentations, multimedia, interactive materials, simulations and games, software, computer and mobile applications (apps), while the big resources included OCW, MOOCs and open textbooks. This typology was based on a literature review and the typology adapted during the DECriS project team’s research. Additional criteria were devised to better analyse the resources and comprised incorporating resources according to the abovementioned comprehensive preservation management model (strategic and theoretical, economic and legal, educational, technical and operational, cultural and social); determining a specific topic (e.g. restoration, conservation or cultural heritage management); and noting the resource type, publisher (university or other institution), language, level of education (formal or informal), approach to preservation (general or specific), year of publication or year when the OER was updated, and the duration of the course and its availability. It is important to mention that availability in this case refers to the cost of the resource – that is, if it was completely or partially free.

The whole process was carried out over a period of one month, starting on 26 September and ending on 27 October 2022, and resulted in 277 OERs that centred on the various topics of preservation. Following this, a further analysis was conducted. It included grouping and categorizing the main themes of the available OERs on preservation according to the five aspects of the comprehensive preservation management model.

Results and discussion

As mentioned above, the total number of OERs on the preservation of analogue and digital materials was 277 and, of these, 60 (22%) were big OERs and 217 (78%) small OERs. These results were further analysed according to the typology of big and small OERs. Big OERs on the preservation of analogue and digital materials mostly consisted of MOOCs, OCW and open textbooks on different topics of preservation. Small OERs were more diverse but there was a prevalent type – textbooks and research articles, and videos, podcasts, images, maps and presentations on various topics of preservation. Small OERs were available in the form of different courses, curricular programmes and didactic models; student guides and teaching plans; and assessment tools, exercises and examinations (see Figure 1). It is important to mention that there were no small OERs in the form of multimedia, interactive materials, simulations and games, and software and computer or mobile apps.
The typology based on the granularity of the OERs was not complicated, but it resulted in some difficulties when it came to assigning a particular OER to the subdivision of small OERs. Some could best be defined as simple web pages that consisted of text accompanied by material that was or was not completely connected to the text. It is possible that this was remixed or reused educational material that served as a combination of various small OERs intended for a certain purpose, which was not always explained. A more detailed analysis of the OERs was conducted and included the additional criteria characteristic of preservation aspects in the comprehensive preservation management model. Combining the results according to the granularity of the OERs and the aspect of preservation, the new set of results provided insight into their content. These results showed that most of the OERs (94, 34%) were based on the educational aspect. Based on the number of resources, the following aspects were technical and operational, with 86 (31%); strategic and theoretical, with 45 (16%); cultural and social, with 29 (10%); and economic and legal, with 5 (2%). It is important to state that for 7 resources (3%), the aspect could not be determined because of the lack of a description of the OER. There were 11 resources (4%) that included various aspects in terms of concerning two or more aspects – for example 3 of these 11 resources included both the strategic and theoretical aspect and one other aspect, while there was only one resource concerning the economic and legal, technical and operational, and strategic and theoretical aspects (Figure 2).

To present a more detailed overview of OERs on the preservation of analogue and digital materials, it was necessary to analyse them even further, according to their thematic frameworks, which were depicted in the individual ‘preservation aspect’ category. All of the thematic frameworks of the OERs were divided into specific and general themes in the field of the preservation of analogue and digital materials. The OERs with a specific thematic framework considered and presented a certain topic that is particular to an element of the complex field of preservation. These OERs contained texts, videos, quizzes, guidelines and lectures, among other things, on only one part of the area of preservation in theory and practice – for example, digital preservation, metadata or acid-free materials. OERs with a general thematic framework were those that encompassed multiple concepts and provided basic knowledge in the field of the preservation of analogue and digital materials. As previously stated and presented in Figure 2, the most represented aspects were educational and cultural and social aspects, followed by technical and operational aspect. The OERs with these aspects had mostly specific thematic frameworks, and the themes they covered were categorized in four groups: preservation, cultural heritage, digital preservation and other topics. This allowed for a more in-depth overview of the specific themes that were covered and presented in the OERs.

OERs concerned with the educational aspect of preservation covered the topics in all four categories (Figure 3). The subtopics concerning the specific theme of preservation were digital preservation in general and the preservation of various materials that...
comprise library collections, as well as collections in other information institutions, such as paper and textiles. They also included a general overview of preservation, as well as the restoration and preservation of photographs. These OERs specifically targeted areas in the field of preservation that provided a basis for education users on how to apply skills in planning projects and how to identify what it is necessary to preserve, as well as ways of preserving items in both analogue and digital environments. The subtopics of restoration dealt mainly with projects and OERs that presented work carried out during such projects.

Under the specific theme of cultural heritage, OERs aimed to present and provide a basis for education professionals and other interested users on the importance of cultural heritage in general and its importance in preserving cultural identity. There were OERs that presented cultural tourism and the way in which cultural heritage can be used sustainably. The category of cultural heritage was dominant in the educational aspect, although the subtopics it covered were not as extensive as those under the specific theme of preservation. The specific theme of digital preservation in the OERs that were found during the research covered areas such as data management, metadata and digital archives. Users were given the tools that could enable them to improve their technical skills in dealing with digital archives, manage personal information, and learn more about metadata and its importance in digital preservation.

The thematic framework for the cultural and social aspect is shown in Figure 4. The OERs in this aspect also covered the four main categories. There are some similarities with the subtopics of the educational aspect. Those that are the same can be found mostly in the category of cultural heritage, and it is important to emphasize that although these are the same topics, they do not have the same end results or learning outcomes. The subtopics in the category of cultural heritage in the cultural and social aspect cover material that refers to the preservation of cultural heritage through its importance for the local community or the world in general. There were multiple projects that presented the way in which cultural heritage can be restored and preserved to serve future generations. The subtopics in the other categories – preservation, digital preservation and other topics (Figure 4) – were presented in a way that emphasized the importance of the cultural and social impact that cultural heritage has. Preservation activities were
recognized as an important link in achieving access to cultural heritage and the information it contains and/or conveys.

The technical and operational aspect is specific since it encompasses all of the aspects of the comprehensive preservation management model. The subtopics covered in the four categories (Figure 5) clearly reflect that all of them can be linked to the subtopics covered in both the educational and the cultural and social aspects. The presentation of the material included in the various OERs was different. It was mostly concerned with the technical side of the preservation process – for example, the processes of restoration and conservation. There were multiple OERs that showcased the way in which certain material can be preserved, and which methods and techniques can be applied. These OERs were mostly concerned with paper as the material for preservation. The operational activities concerned the proper way of handling the materials in libraries, archives and museums, as well as day-to-day preservation activities that can be performed by information professionals. All the subtopics were included in the main category of preservation. Other categories were also represented, and they also covered a more practical approach to preserving cultural heritage, as well as practical digital preservation. The category ‘other topics’ had only one subtopic – computer science – and this may reflect the specificity of the technical and operational aspect, as mentioned above.

The economic and legal aspect and strategic and theoretical aspect were represented by a large number of OERs, so these OERs covered only a few topics. They covered all of the above-mentioned categories and the following themes: preservation in general, cultural heritage, copyright, digital preservation, legislation, and restoration and conservation. The subtopics in these two aspects were not that prominent since the specific approach to one of the themes depended on the outcomes of a certain OER and the aspect. The purpose of these OERs was to present the way in which a preservation plan could be developed; the ways in which an information institution could distribute financial resources for preservation; and an understanding of the legislation concerning preservation activities, among other things. Resources that covered the content concerning preservation in general were not
that numerous. There was only 10 of them and they included 9 small OERs and only one big OER could be found – an open textbook that dealt with general knowledge about preservation.

It is possible to identify a gap in this area and draw the conclusion that there is a need for an OER that presents the main concepts and definitions of preservation in general. This gap is noticeable not only in the thematic criteria but also in the OER granularity. A comprehensive, big OER could be a way in which a comprehensive approach to teaching preservation is achieved. In the context of a specific thematic framework, some of the topics that were mentioned numerous times were digital preservation and different topics in relation to the preservation of digital materials, preservation of cultural heritage, and both restoration and conservation, which were often introduced together in the resources. This could signify that the more practical aspects of the field of preservation are more popular or more suitable for presenting content through OERs. This can be particularly noted for conservation and restoration, and the increasingly popular cultural heritage management. A by-product of this research is determining trends or simply noticing trends in preservation education. Many OER platforms, as well as various institutions, provide courses and other materials that present their work on a certain project, and also courses in areas that are popular with the end user.

**Additional criteria for OER analysis**

In the context of the sources that oversaw the production and ensured the availability of the OERs, there were different organizations, institutions and societies, including archives, museums, libraries, galleries, schools and conservation centres. Also, the sources of the OERs and their production were individuals – that is, the authors of the resources themselves and universities. In most cases, the purpose of the resources was aimed at informal ways of teaching and learning, and the resources were often intended for all users who were interested in the topics covered, while formal sources were planned for use in higher education – especially, in most cases, for graduate students. This also reflects a particular way of perceiving preservation as a field connected to libraries, archives and
museums, and the material aspect, which was showcased through the OERs of conservation centres.

The analysis of the language in which the OERs were written shows that 270 (97%) were written or available in English. This finding is not surprising and was influenced by the keywords that were determined in the first step of the research. The remaining 7 (3%) resources were in other languages – French (1), German (1), Croatian (3), Spanish (1) and Italian (1) – which provides a good practical example of how to find resources in other languages using English-language keyword tagging. This brings the aspect of availability to the fore. The vast majority of OERs are available to a greater number of users if they are written in English, but the factor of inclusivity needs to be considered. If the content is available in other languages, it can reach an even greater number of users and allow them to learn in their own language. This can be achieved by simply providing a translation of the OER.

Determining the year of publication was presumed to be simple but proved to be a challenge. The descriptions of the OERs were not complete and this limitation presented itself in the ways in which different repositories and resources stated information about the year of publication – for example, if the resource was a course, the closest information to the year of publication was the duration of the course or when the current course had started. The analysis by year of publication revealed that only 16 resources had been published in the 20th century, while the others (besides those mentioned with problematic information about the year) were all published in the 21st century, emphasizing that the resources had been published or updated since 2019. Moreover, it is interesting to point out that only 50 resources had been revised or updated in the last few years. This also contributes to the fact that a large part of the resources were in a text format and, apart from hyperlinks, did not contain interactive elements.

The final criterion that was analysed was the availability of the resources. Given that OERs should be widely available, the goal was to examine whether they were truly available to everyone. The research found that 207 (75%) were available in their entirety, while 70 (25%) were available with a login to a system, had an option of a free trial or were available but the user needed to pay for a certificate of completion. The login to a system was justified for courses with multiple topics because, in that way, the user could see what they had studied previously, but some of the OERs were only available to members of the institutions that provided the resource.

The additional criteria for OER analysis provide an insight into the ways in which OERs are made available to end users in accordance with their availability, openness and updating of content, as well as the authors of such educational materials. The thematic frameworks of the OERs on the preservation of analogue and digital materials also provide a basis for further analysis of the available OERs, which could not only focus on their quality but also open new avenues of research on the trends in the field of preservation education in general.

**Conclusion**

OERs are an extremely powerful and helpful educational tool that can be easily available to a large majority of interested users for a certain topic. Their characteristics are intended to enable a quality learning environment that is suitable for presenting various topics. The quality assurance of OERs is an important part of evaluating OERs in general because it allows their creators to follow a certain set of guidelines while producing OERs. Quality assurance enables OER creators to design educational materials that will present quality content with a certain set of pedagogical and technical attributes, which will, in turn, enable a quality educational experience. When creating an OER on a certain topic, the granularity of the OER – whether it will be big or small – needs to be considered, as well as other criteria, such as its availability, language, openness, licensing and content quality.

This article has focused on OERs concerning the specific topic of preservation. The research explored OER platforms that provided access to various OERs on different topics, and they were searched with a set of specific keywords that reflected concepts in the field of preservation. The research resulted in a sample of 277 OERs, which were analysed according to their granularity, thematic framework and general criteria, such as year of creation, author and topic. The results show that the OERs lacked a comprehensive approach to the field of preservation and that there was a large number of small and specific OERs that covered only a particular area in the field of preservation. The need for an OER in the field of preservation that adopts a general approach has been recognized.

It can be concluded that efforts to create a new OER on the topic of the preservation of analogue and digital materials can be justified, especially since there is an identified gap in the content that the already available OERs present. The new OER should encompass the major concepts of preservation and allow for an overview of the topic. The content should be accompanied by other educational materials – mainly other small OERs that allow reuse to add interactivity to the content as well as feedback for end users.
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Integrating print reference materials, curated digital collections, and information needs

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Abstract
The aim of this article is to explore the current research landscape of changing information needs and the need for digital access to library materials. Print reference sources—bibliographies in particular—are discussed and possible solutions for increasing their relevance and appeal as a stable reference point are presented. Several digital curated collections created with bibliographic reference materials are highlighted as a way of reintroducing these materials as a reliable and accessible source of information. The article concludes with future directions for the study of the use of print consultative sources and the main takeaways for adjusting reference and research assistance in an academic library.

Keywords
Bibliography, reference services, academic libraries, research, digital curation

Introduction
The changes in information-seeking needs and behavior that were amplified by the COVID-19 pandemic made it clear that some of the traditional library materials need to be reevaluated and recontextualized in order to continue to be useful points of reference, especially with the younger generation of researchers. One of the questions that arises is: How do we reimagine bibliographies for the modern user? With more and more sources available digitally, are librarians and information specialists able to provide efficient user-oriented reference assistance?

Librarians are constantly looking for best practices and ways to assist and empower their patrons. This article details the design and curation of digital collections created by the Slavic Reference Service (SRS) at the University of Illinois Urbana-Champaign as a solution to bridge the gap between researchers and print library collections in an academic library. The collections are intended to facilitate the discovery of reliable research materials and contribute to the paramount goal of librarians to build their patrons’ information literacy skills, which will assist them in finding, identifying, evaluating, and critically utilizing a wide range of sources of information. By contributing to this skill set, curated collections meaningfully increase scholars’ research capacity. Moreover, these projects aim to build on the work of past generations of librarians by using print bibliographic materials to curate collections that are more readily accessible to researchers in the Internet age.

Bibliography in the digital age
The Association of College and Research Librarians (2016) has identified “the rapidly changing higher education environment, along with the dynamic and often uncertain information ecosystem in which all of us work and live” (7), as a complicated environment in which librarians assist library users to navigate a protean information landscape. The Association’s
“Framework for Information Literacy for Higher Education” presents a set of guidelines that are meant to guide American research libraries in promoting metaliteracy, “which offers a renewed vision of information literacy as an overarching set of abilities in which students are consumers and creators of information who can participate successfully in collaborative spaces” (8). Although bibliographies remain an important reference source for many librarians, the topic is often not emphasized in university research instruction. Frank-Wilson (2004: 99) notes that, “with few exceptions, bibliography classes are not usually offered in the students’ main disciplines and generally students are not familiar with systematic bibliographic research.” One of the exceptions to this observation is Slavic studies, a field that enjoys a long-standing bibliographic tradition, including materials published in the countries of Russia, eastern Europe, Central Asia, and the Caucasus, among others. Furthermore, Frank-Wilson describes a semester-long bibliography course that aims to increase students’ ability to conduct systematic research in African studies—a task that has evolved from providing students with a list of materials to exploring print, digital, and oral materials in order to build students’ research competencies. Frank-Wilson’s observation that students often initially struggle to differentiate between materials from the open web, library catalogs, and subscription databases is consistent with Bawden and Robinson’s (2009: 181) conceptualization of the Web 2.0 as a place where information has become further “homogenized” due to digital formats blurring the distinctions between types of information technologies.

A search of the course catalogs of the US News and World Report’s (2021) top-ranked library schools for the 2022–2023 academic year reveals that only two institutions list courses with “bibliography” explicitly in the title or description of the course. Of these two institutions, one has a bibliography course listed in the catalog without any indication of the academic year that the course was taught this year. The remaining courses from the search relate to subject-area bibliography of African American librarianship (Illinois, 2022), the Middle East, Africa, and Russia; eastern Europe and Eurasia (Illinois, 2023); and historical research methods (Texas). In contrast, multiple courses on digital libraries, digital curation, and data processing were offered by each institution. The emphasis on digital literacy skills (Wilkes 2016) makes sense, given the changing information needs of users. However, bibliographies may remain an important source for systematic research because not all materials have been digitized, made available online, or comprehensively indexed by contemporary sources, including databases. Although the prevalence of the word “bibliography” in course names and descriptions cannot fully elucidate whether these materials are being introduced in library science coursework, the emphasis on digital aspects of librarianship does signal a shift in instructional priorities. Without instruction in both bibliography and digital librarianship, future librarians may overlook print bibliographies when creating new databases, indexing sources, and digital collections.

Students are also affected when bibliographies become invisible, as they often overestimate their ability to find relevant research resources, overlooking library collections in the process. A study of university students in Turkey conducted by Fry (2016: 128) reveals that an overwhelming majority of students relied more on the open web to conduct academic research compared to library resources. Students who had participated in library instruction were more likely to rely on academic journals in their discipline and use library resources. Students’ reliance on the open web may be especially problematic in light of the results of a study by Wilson et al. (2007), which reveals that Google Scholar had significantly different coverage for certain disciplines, with some coverage being as low as 6% of the indexed sources in major databases, and favored English-language publications. These studies also do not consider primary and secondary sources, which students may overlook when relying solely on open-web indexing sources or subscription databases. The integration of existing bibliographies with open-web platforms may increase the likelihood that researchers examine and include materials cited in bibliographies in their research.

The digital shift affecting research habits has been further accelerated by the COVID-19 pandemic. Facing physical closure, many institutions found an increased demand for digital services and materials. As libraries have reopened their spaces, librarians are entering a “new normal” (Dobreva and Anghelescu, 2022). A survey conducted by Hinchcliffe and Wolff-Eisenberg (2020) revealed that by October 2020, nearly three-quarters of libraries continued to have restricted or limited access for public users. The conditions created by the pandemic have led universities to expand digital services and materials with the intention of continuing these initiatives beyond the length of emergency library closures (Murphy et al., 2022). Students are now encountering a new environment in which the physical library is not presented as a necessity for research. Materials that exist solely in physical form are inconvenient for the growing
number of students who take advantage of distance learning and digital library resources.

The ongoing digital shift has changed not only the nature of library instruction but also how patrons interact with information in and outside of the library setting. This phenomenon may be described as “information-seeking behaviors,” which Case and Given (2016: 92–93) define as an underexplored concept that operates as “a catchall phrase that encompasses a variety of behaviors seemingly motivated by the recognition of ‘missing’ information.” Information seekers are influenced by social and individual factors. Each user makes decisions about when to stop seeking information based on an appraisal of these factors in relation to the utility of a continued search (Prabha et al., 2007). These decisions are complicated by the vastness of the available information. Information science professionals must now address the problem of “information overload.” This term evokes many definitions (Stanley 2021). At a basic level, information overload refers to the fundamental challenges of finding sufficient and relevant information in an environment where information is plentiful.

Information overload presents a paradox in which mass information becomes more available but the process of searching and locating useful information remains problematic and even stressful for users (Bawden and Robinson, 2009). Frank-Wilson’s (2004) review of the changes to the African studies bibliography course curriculum at Indiana University provides an example of how the evolving information landscape has created an abundance of types of information and modes to seek it within a matter of decades. Given the availability of a wide range of convenient sources, one can understand why a user would prefer readily available materials online over a bibliography, even if the bibliography may provide titles that are unavailable on the Web or in published secondary material. A general lack of instruction in bibliographic research for students, and information science students in particular, may compound this issue, as researchers and librarians alike may not fully understand that they are overlooking print sources indexed by bibliographies only materials.

In this congested environment, the stress of retrieving the intended information may outweigh the benefits of continuing to search for many users. Information seekers may forgo their search by “satisficing,” or settling for unsatisfactory results in lieu of continued research (Prabha et al., 2007: 77). In other cases, users may entirely abstain from retrieving information, especially that which may be undesirable, in a behavior labeled “information avoidance” (Manheim, 2014). Manheim (2014) synthesizes the body of work on information-non-seeking behavior to categorize the three “pathologies” of overload, satisficing, and information avoidance as strategies of escape, omission, and reduction throughout the information-seeking process. For students who often rely on the open web or course assignments to obtain research information, unfamiliar resources such as reference bibliographies may provide an additional barrier, overwhelming them rather than providing the necessary information. Researchers making use of a bibliography need to take additional steps to locate the materials in the bibliography (holdings information may not be included) and then obtain that material. Depending on the research topic, this could take weeks, months, or years. Considering these information-escapist behaviors, offering patron-oriented services and collections enables students and researchers to be efficient and engaged library users.

**Bridging print bibliography with modern expectations: digital curation as a potential solution**

If we consider the modern user to be someone who values convenience and speed in the research process, the general reluctance to use and recommend bibliographies is a foreseeable development. Mooers’ law states that “an information retrieval system will tend not to be used whenever it is more painful and troublesome for a customer to have information than for him not to have it” (Moore, 1996: 22). This is to say that library users have always prioritized ease in information seeking. Information science professionals are incentivized to facilitate less restricted access to information in the interest of preventing information-non-seeking behavior, which is summarized by Ranganathan’s (1931) fourth rule of library science: save the user’s time. Simpson and Prusak (1995) advise librarians to provide the highest-quality information in the most convenient format to address these concerns of information overload. Librarians may reexamine collection practices in reestablishing the relevance of these entities in the digital age. Roberts (2016) notes the renewed relevance of collections in the chaotic environment of Web 2.0, where many documents exist without an organizing logic. The open availability of these digitized collections also provides a higher level of access to materials than print collections or document-sharing services alone (Gorman, 2003).

These findings illuminate the value of curation in the digital environment. According to Beagrie (2006), the term “digital curation” was first used at the Digital Curation: Digital Archives, Libraries and E-Science Seminar on 19 October 2001. The seminar was
organized by the Digital Preservation Coalition and the British National Space Centre, and brought together archivists, librarians, data managers, and other information specialists. It became a platform for a cross-sectoral dialogue that considered the many aspects of digital curation, including the entire lifecycle maintenance, preservation, and added value of a curated collection. Two decades later, digital curation is considered to be a mature discipline; it is part of the higher education curriculum and "addresses the technical, administrative and financial ecology required to maintain access to digital material through organisational and technical changes over the long term" (Higgins, 2018: 1318). The significance of digital curation goes beyond collecting materials and making them accessible to include conscious design and development, and the contextualization of the collected materials, as well as ethical considerations (Mindel 2022). Disseminating cultural heritage through curated special collections allows information specialists to reflect on the integrity, equity, cultural representation, and accessibility of information and make balanced choices.

To summarize, digital curation taken in its full cycle—from identifying, locating, collecting, and digitizing to grouping, supplying description and metadata, maintaining, preserving, and promoting materials and collections—is a powerful tool for supporting the academic library's mission in promoting information literacy and user-oriented services. Curated collections present a way to engage with patrons by introducing reliable sources that are readily available. These collections eliminate the struggle of searching and locating separate items and being overwhelmed by search results. Additionally, digital curation represents a sustainable approach to the preservation and usability of library materials as it liberates users from the challenges associated with using mass digital repositories where materials are supplied by different institutions and hence present inconsistency with regard to titles and transliteration, metadata description, and overall findability. While information has become available at a scale previously unimaginable, digital materials will benefit from logical organization that assists the user in identifying the materials most relevant to their needs. Print bibliographic materials can offer an existing guideline for this curation process by providing thematic or other focuses around which to organize collections. These bibliographies may also offer a more comprehensive approach to creating digital collections by providing a larger list of materials beyond those cited in the secondary materials used by researchers.

Digital collections of the Slavic Reference Service

The SRS, founded in 1976 at the University of Illinois Urbana-Champaign and funded by the Title VIII grant program administered by the US Department of State, provides assistance in the areas related to Slavic, eastern European, and Eurasian studies through reference work, programming, and digitization initiatives. The work of the SRS is made possible through a large collection of reference materials, including national bibliographies, subject bibliographies, and other reference materials published in and about the countries covered by the service. A long-standing print reference collection underpins much of the work of the SRS. Recent programming has sought to make these materials more accessible and attractive to researchers, and has included regular personalized bibliographic sessions for researchers, workshops for undergraduate and graduate students on using reference materials, and the three-part "Introduction to National Bibliographies" discussion series. The series was open to librarians, researchers, and the general public, and covered such topics as searching and locating bibliographies, as well as incorporating them into research. The online discussions were well attended and revealed general interest in the topic and a demand for more conversations about this type of source. Many of the participants were not entirely familiar with national bibliographies or aware of their value for research. Library instruction and consultations that include bibliographies as a recommended source might foster an appreciation of reference materials.

The limitations caused by the COVID-19 pandemic illuminated a need for the reference materials to remain accessible and user-friendly. Physical building closures, as well as the suspension of interinstitutional document delivery services, rendered many of the bibliographies in the SRS reference collection inaccessible to users for a year. One of the SRS team’s responses to the challenges of working with bibliographies—during as well as before the pandemic—was the creation of several digital collections, designed, curated, and maintained by subject specialists. These collections are based on print reference materials held at the University of Illinois and represent a variety of approaches and visions to facilitate patron interactions with bibliographic sources. The collections, which are currently hosted through the Internet Archive, are Central Asian Memoirs of the Soviet Era, The Blondheim Judaica Digital Library, and Memoirs of Russian, East European, and Eurasian Women.
The first collection—Central Asian Memoirs of the Soviet Era—is unique among these digital collections as the only example that was not originally created based on the contents of a bibliography. This collection features 154 digitized memoirs of Central Asian politicians, intellectuals, and workers from the Soviet era that were not comprehensively captured in bibliographic reference materials before. Many of the showcased materials were self-published or published in limited print runs during tumultuous times; the digital collection aims to create as comprehensive a collection as possible. Even though this collection is not based on one bibliographic source, as the collection expands, biographic reference materials are being utilized to further identify potential authors and memoirs. This collection is an example of a collaboration across institutions and disciplines. Started by a group of historians as a joint project of the Russian Perspectives on Islam initiative and George Washington University’s Central Asian Project, it was further expanded and reinforced by subject librarians and information specialists at the SRS. In its original form, the collection was accumulated by the project coordinators during their research trips in Tajikistan: some of the memoirs were found at local libraries, others at bookstores or in the homes of the coordinators’ local acquaintances. They were scanned (the quality and resolution of the scans varies), Optical character recognition was applied, and they were then uploaded as PDF files to an Omeka website. Later, the initial project coordinators realized that it was beyond their capacity to maintain and update the website. This is when the SRS team took over. The team mirrored the Omeka website to an Illinois.edu web hosting platform, simultaneously uploading the files to the Internet Archive, checking the scans’ quality, and adding necessary metadata, including the name of the memoir, a publisher summary, translations of the title and summary, and content tags reflecting the subject, chronological, and geographic content of the memoirs. The next step was to locate memoirs from other Central Asian countries to expand the collection. Future steps will include establishing institutional partnerships with the national libraries of Uzbekistan, Turkmenistan, and Kyrgyzstan to facilitate access to the bibliographic sources as well as memoirs held there, and exploring the potential of the collection for research and teaching. The overall significance of the collection is multifaceted. Aside from its content offering diverse voices and perspectives until now labeled as peripheral, the curated collection fills in the gaps of the inconsistent bibliographic description on the subject and offers access to primary sources that are unique, rare, and hard to find or locate outside the region. This anomalous project demonstrates how bibliographies, despite being incomplete regarding a particular topic, may nevertheless be used as one systematic approach to the development of research sources.

The second collection—The Blondheim Judaica Digital Library—contains 282 digitized (pre-copyright) works related to international Judaica that were published in books, reference materials, pamphlets, and other print formats, and listed in Blondheim’s (1913) “Books of Jewish interest in the library of the University of Illinois.” Blondheim’s collection was a response to deliberate efforts by the university’s administration to build its library collection at the beginning of the 20th century. One of the ambitious steps was to ask “ethnic and religious elements in America to contribute materials relating to their own history and culture” (Solberg, 2004: 56). For Jewish materials, the call was answered by Isaac Kuhn of Champaign, who sent $25, followed by $500 on behalf of District Grand Lodge No. 6 of the Independent Order of B’nai B’rith to purchase “books of Jewish interest” (57). Romance languages professor David S Blondheim was commissioned to choose and purchase books for the collection and keep track of the books that were gifted. For this project, the team created a spreadsheet with titles, location information, and journal information, when applicable, as well as sections to keep track of the locating, retrieving, scanning, and uploading of titles. Once the items were scanned (at 300–600 dots per inch preservation quality), they were reviewed and then uploaded to the Internet Archive collection page and supplied with core metadata. Built with a single bibliographic source, this collection provides instant access to otherwise scattered materials and sheds light on the history of collection development techniques and strategies, as well Jewish studies in the USA.

The third collection—Memoirs of Russian, East European, and Eurasian Women—is based on subject-specific bibliographies and will be discussed in further detail and examined as a case study in this article.

**Memoirs of Russian, East European, and Eurasian Women: curating a digital collection based on Iukina’s bibliography**

Currently, Memoirs of Russian, East European, and Eurasian Women is a curated digital collection featuring the stories of women in their own words. There are more than 100 women’s memoirs covering the period from the second half of the 19th century to the beginning of the 20th century, which are manifested
in different forms: notes, diaries, recollections, family chronicles, and letters by a wide array of women in terms of professional affiliations and educational backgrounds. The memoirs were published before 1927 in journals and stand-alone publications that are held by the University of Illinois Library and available in print, microfilm, and microfiche. Currently, all materials in the collection are in the Russian language. The first phase of the project is primarily based on the following bibliographic resource: I. Iukina’s *Istoriia zhenshchin Rossii: Zhenskoe dvizhenie i feminizm (1850-e–1920-e gody): Materialy k bibliografii* (History of women of Russia: Women’s movement and feminism (1850s–1920s): Materials for a bibliography). This bibliography, which was published in 2003, aimed to fill the gap in the history of women’s studies from the end of the 19th to the beginning of the 20th century by providing an overview of the development of the field of gender studies and collecting scholarly publications about political, social, historical, and cultural aspects of the so-called “woman question.” It was important for the compiler to highlight the voices of women from that period—hence the list of women’s memoirs holds a separate special place in the bibliography and is made into a separate section. This section was used as a basis for the digital collection.

When planning and designing the collection, the project team identified the following four aims: (1) to facilitate scholarly interaction with bibliographic and reference resources that may be overlooked or physically inaccessible; (2) to locate materials to create a thematic primary-source collection for Russian, east European, and Eurasian women’s studies; (3) to highlight the lived experiences and contributions of women in the region; and (4) to create a collaborative platform for digitizing, preserving, and elevating these women’s works.

This collection was compiled at the height of the COVID-19 pandemic, when the University of Illinois Library was closed to the public and many of its employees. The SRS staff continued working on-site during this time of crisis to facilitate access to library materials, especially non-circulating reference materials. The project team used the memoirs section of the bibliography to create a list of pre-copyright titles. These titles were transliterated using the American Library Association and Library of Congress transliteration scheme and searched located in the University of Illinois Library Catalog and WorldCat Union Catalog. The titles were also searched in the original in the Russian State Library Catalog and Russian National Library Catalog to verify spellings, date and place of first publication, and other bibliographic information. The workflow for this collection was used in creating and designing other SRS digital collections. A spreadsheet with the following information was created: author, title, publication information, pages, location, if the item was located, and whether it was a pre-copyright publication. The materials that were available at the University of Illinois were retrieved, scanned, reviewed, and uploaded to the collection space in the Internet Archive. The items were scanned at 300–600 dots per inch and the title pages and indexes for journals were included. The PDF names comprised the author, title of the memoir, year, and volume. Once 50 items had been scanned and reviewed, and were ready for upload, a collection space was created in the Internet Archive and the items were uploaded. The following metadata was provided:

- **Page title:** title of book or article
- **URL:** details/surname, first and middle initials, publication year, first four characters of transliterated title, multiple volume numbers at the end if applicable
- **Description:** “memoirs of [author’s first and last name]”
- **Subject (metadata):** memoirs, [geographic location], women
- **Creator:** surname, first name, date of birth and death
- **Date:** year of publication
- **Collection:** name of collection
- **Language:** language of the text
- **License:** public domain

More items were added. Some memoirs had been digitized through the HathiTrust Digital Library. The project team decided to include these materials in the curated collection. A detailed comparison of the items in the collection that were fully, partially, or not available through the HathiTrust Digital Library may be seen in Figure 1. The majority of the items that were not duplicated in the HathiTrust Digital Library were monographs. Most periodicals were either fully or partially duplicated by HathiTrust.

This effort was not seen as duplication because by digitizing memoirs that appeared in periodical publications, the project team could be consistent with Ranganathan’s (1931) fourth law and save users time in locating the correct journal and searching the issues for the intended article. The result of this process was a curated digital collection of Russian women’s memoirs that saves users the effort involved in searching and locating a large collection of materials and navigating member-only access. The collection presents both challenges and opportunities, as discussed below. The simplified retrieval process is illustrated in Figure 2.
The circulation statistics for the items in the collection may not be accurately compared to views of the curated digital collection as users may check out periodicals without the intention of accessing the memoirs written by women. View statistics provided by the Internet Archive indicate that the majority of users accessing the collection are likely not to be affiliated with the University of Illinois and would otherwise not have access to these materials from the university’s collections. Users who have visited the collection between 2 and 30 times are located in Moscow and Nizhny Novgorod, Russia; the United Kingdom; Armenia; and Texas, USA. The viewer statistics demonstrate that the digital collection has expanded the accessibility of materials in the University of Illinois Library collection. While these statistics are encouraging, they also demonstrate a need for continued outreach related to the collection.

**Expansion of the collection: future and limitations**

Although the highlighted digital collection demonstrates the potential for digital curation to maintain the role of bibliographies in the research process, the approach presents challenges and limitations in its possible applications. One obvious problem is that of copyright; the scope of materials in this collection, for example, was intentionally created so as to only digitize items with expired copyright. Because the project mostly took place during the COVID-19 pandemic when resource-sharing and library-building access was limited, the collection could not reflect the full bibliography of women’s memoirs when items were held at other institutions. Finally, while this approach may make visible materials that would otherwise be overlooked by users, the digitization of materials using bibliographies may contribute to the homogenization of materials in a digital format. Although scholars may be using a bibliography in their research, they may not realize this fact and continue to regard print bibliographies as an unhelpful or obsolete artifact in the research process.

Using print bibliographies as the basis for digital curation also presents a number of possibilities that may extend the boundaries of the traditional library. Bibliographies often list resources held in a number of institutions. This strategy provides libraries with a natural opportunity for multi-institutional and even transnational collaboration, with the aim of providing as full a coverage as possible. The Memoirs of Russian, East European, and Eurasian Women digital collection will also continue to be expanded by the University of Illinois team in two ways: first, by continuing to add materials as their copyright expires and, second, by using other bibliographies of women’s studies to diversify and identify new materials for the collection. The project team has begun to form partnerships with libraries in the USA and eastern Europe to expand coverage of the materials in the bibliographies that were initially utilized.
Conclusion

Digital curation provides one avenue for keeping bibliographies relevant and attractive for library users. Libraries may make decisions about what collections to curate based on their existing reference materials, library holdings of items listed in a bibliography, and user demand for particular materials or topics. Institutional partnerships are a promising possibility for providing expanded coverage of materials listed in bibliographies. With the overwhelming amount of information available to researchers, bibliographies offer a powerful entry point to ascertain which existing primary and secondary materials may provide new insights within a field. However, while these materials provide a valuable research approach, the process of using bibliographies is often incompatible with the expectations of the modern information seeker. The process of using a bibliography in its traditional format may compound the problem of information overload for these researchers. Using existing bibliographies as a basis for digital curation is a solution that may connect users more directly to materials curated in an otherwise overlooked bibliography. Bridging print reference titles and curated digital collections serves as a way of developing information literacy and lifelong learning skills.

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Figure 2. Outline of the comparative processes of identifying and retrieving Russian women’s memoirs from a curated digital collection and an institutional repository.


**Author biographies**

**Olga Makarova** is a research specialist and reference librarian in the Slavic Reference Service at the University of Illinois Urbana-Champaign. She has experience in library referencing, acquisitions, and technical services. She holds degrees in Philology and Russian as a Foreign Language from St Petersburg State University, as well as a Master of Science in Library and Information Sciences from the University of Illinois. Her research interests are gender studies and digital curation. She is also interested in the history of international library interactions.

**Katherine Ashcraft** holds Master’s degrees in Library Sciences and History from the University of Illinois Urbana-Champaign. She prior to graduation, she worked as a graduate assistant in the Slavic Reference Service. Her research interests include the history of publishing and information-seeking behaviors of academic library patrons.
Guidelines on assigning the subjects of theses and dissertations in repositories

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Abstract
This study aims to investigate how Brazilian institutional repositories guide subject representation in the self-archiving of their information resources. As a method, an exploratory and qualitative study was carried out with the application of an electronic exploratory analysis of repositories and an analysis of transcripts of thesis and dissertation authors’ Individual Verbal Protocols during self-archiving. The analysis of the results in the Brazilian university repository sample shows that 10 have a self-archiving policy and five include guidance to the author on subject representation and metadata quality. The transcription analysis of the authors’ Individual Verbal Protocols reveals that all authors consider keywords important for content representation. The investigation concludes that the self-archiving process is fundamental for the dissemination of scientific information and wide access to the community.

Keywords
Self-archiving, subject representation, institutional repositories

Introduction
Institutional repositories are directly responsible for disseminating academic production, together with knowledge transfer technologies. The producers of scientific knowledge are the supplying agents of the material that should be made available digitally by institutional repositories. As these changes intensify, universities’ responsibilities increase, in the continuous formation of the academic community so that it becomes familiar with the electronic/digital environment and with the self-archiving process.

Self-archiving is the depositing of an academic paper by an author-researcher in an institutional repository. For Swan (2008), researchers themselves, after publishing their scientific research, will self-archive a copy in a repository. It has been noted that self-archiving is not being widely adopted by authors for several reasons. Thus, we can understand that reducing barriers, creating incentives and establishing policies is essential (Veiga and Macena, 2015), and the establishment of policies for repositories serve to both enhance and guarantee their formation and maintenance.

Few studies have been dedicated to self-archiving in institutional repositories in the Brazilian information science literature, specifically dealing with the quality of subject representation and retrieval. Furthermore, even if a system allows self-archiving, this does not ensure its active use. To change this scenario, mandatory policies that cooperate in increasing the rate of self-archiving use should be created.

Self-archiving has a sociopolitical impact. It is the biggest challenge of open access and the solution that can generate the greatest impacts towards the universalization of access to information and scientific
knowledge. The idea of self-archiving occurred for the first time in physics in 1991 through ArXiv, originally developed by Paul Ginsparg (Wikipedia, 2023a), and in computing and information science through the CiteSeer\textsuperscript{X} Library in 1997, created by the researchers Lee Giles, Kurt Bollacker and Steven Laurence (Wikipedia, 2023b). The ArXiv and CiteSeer\textsuperscript{X} initiatives became structurally possible in 1999 with the open access movement and the Open Archives Initiative (Van de Sompel and Lagoze, 2000).

For Van de Sompel and Lagoze (2000), self-archiving is greatly enhanced by the Open Archives Initiative protocol – an initiative that makes scientific publications available free of charge via the Internet and allows an author to gain visibility and access to papers through its search and retrieval, leading authors to be increasingly cited and known in their field of work. Furthermore, it reduces the barriers imposed by traditional publishing systems.

Self-archiving through open access repositories allows authors to make their papers accessible to the public and increase the visibility of their research. This context provided a favourable environment for the proposal for a global scientific communication, mentioned in 1994 in an online post by Stevan Harnad (1995) entitled ‘Subversive proposal’, ‘originated from a June 28 1994 Internet posting (Harnard, 1995, see Subversive Proposal (google.com)) and first presented at Network Services Conference (NSC) London, England, 28–30 November 1994 Address: Washington DC’ (University of Southampton Institutional Repository, 2017). Rodrigues (2006: 29–40) considers that such a proposal, which was deemed subversive at the time it was mentioned, might today seem both ‘fruitfully visionary and naively inadequate’. However, at a meeting in Budapest in December 2001, the utopia of free access to literature published in scientific journals was discussed. Today, this has become a reality thanks to the combination of tradition and new technologies (Rodrigues, 2006: 29–40).

Despite the obstacles, many countries have adopted self-archiving by researchers or someone from their team. In the case of Brazilian repositories, their insertion has occurred in an incipient way, as such repositories keep theses and dissertations in institutions’ information systems – generally the library, which acts as the main responsible for populating the repositories (Kuramoto, 2014).

According to Triska and Café (2001), self-archiving refers to the right an author has to send their text for publication without the mediation of third parties. Much more than just depositing a scientific paper in a repository, an author needs to know everything that involves their rights regarding the paper they have written because of the consequences of editorial control.

Some of the advantages of the self-archiving process include the rapid online availability of papers, the verification of entered metadata, enhancements in workflow efficiency, and more effective use of the human resources available in libraries. In this view, policies should encourage faculty, researchers, students and institutional staff to self-archive scientific production following the submission criteria.

For the implementation of a successful self-archiving policy, institutions must provide support and training materials so that researchers feel comfortable with the system. In addition to making deposits, institutions should be concerned with passing on to their researchers the philosophy and relevance of the open access movement to scientific information, making their researchers aware of the importance of self-archiving (Assis, 2013).

According to Leite (2009), the benefits for researchers who self-archive their production in repositories are the information and knowledge organization of the network they participate in; increasing their research visibility and impact; accountability to society; and the expansion of possibilities for dialogue among researchers who are part of the network and with society in general.

Brazil has adhered poorly to the important practice of self-archiving in institutional repositories and is still resistant to letting its authors make deposits, even when the institution has a pre-established policy in place. Thus, the mere existence of a policy is not enough to ensure full adherence to self-archiving. More effort is needed from the managers responsible for the repositories, as well as new studies that identify the difficulties with regard to adherence (Baggio and Blattmann, 2017; Veiga and Macena, 2015).

This study aims to investigate how Brazilian institutional repositories guide subject representation in the self-archiving of their information resources. It is justified by the importance of subject representation in building products where the netizen will access the information expected.

Subject representation in repositories

This section discusses information representation by keywords assigned by authors, contrasting the perspectives of natural language versus controlled language to guide its application in the context of self-archiving in repositories.

Digital repositories can be used in public and private institutions to disseminate the research
produced, providing self-archiving that grants better research dissemination. Lynch (2003: 328) states that repositories is ‘a set of services the university offers to members of its community, aimed at managing and disseminating digital resources created by the institution and its members’. Furthermore, it contains an information retrieval system by document and metadata access points, which enables access to the digital document contained in the repository.

More than part of the movement of access to scientific information, self-archiving belongs to the new configuration of the Web environment as an interaction network in which netizens themselves interact and collaborate in the description of the available contents, producing, classifying and reformulating what is already available. Thus, it is understood that subject indexing is an activity with a social impact on digital environments. Even if it favours the development of more democratic institutional repositories, resulting in more representative and inclusive information representation, it is understood that internal and external policies must establish guidelines for users on how to proceed with subject representation at the time of self-archiving.

Information representation is built by people and is part of a social action – that is, ‘representations are based on social actions, reflect historical moments, theories, ideologies and cultures and, although they are close to reality, they can bring diverse “readings”’ (Moraes and Arcello, 2000: 9). The chosen concepts are synthesized in keywords, which configure as concise representations of the documentary content.

A keyword can be defined as a word or group of words chosen in the title or text of a document, or even in documentary research, to characterize its content. In addition to indicating the theme, through the reading and analysis of the document, keywords facilitate the identification and retrieval process (Menezes et al., 2004). The keyword’s function is mainly to characterize documents to improve the location of documents, and it is one of the indexing languages. When used in a search, it begins to be applied in indexing, information retrieval, and the development of thesauri and other knowledge organization systems (Lu et al., 2019: 415).

Representation by automatic indexing allows a keyword search in which the search strategies used by the netizen at the time of the search must match the words of the catalogue so that the expected documents are found. The origin of the concept of a ‘keyword’ is unknown, but we do know that it has been linked to the interests of information retrieval since the first manual indexing initiatives (Foskett, 1973: 24), referring to keyword indexing with the aid of a computer – a concept that was established by Hans Peter Luhn and known as ‘KWIC Key-Word In Context’ (Foskett, 1973: 25). Its origin can also be explained by the proposal of ‘uniterms’, which, in the words of Chu (2010), can be seen as keywords because they are derived from original documents without any kind of vocabulary control. The unterm index created by Mortimer Taube in 1953 comprises terms that can be post-coordinated (Foskett, 1973: 310).

A keyword is a word or expression that is ‘key’ in the representation of a text or information resource for the purposes of access and retrieval. The concept is related to the representation of the meaning of verbal or non-verbal content, and is used to identify important ideas and themes. In addition, it has a range of diverse purposes that include bibliometric studies, indexing and retrieval. Therefore, it can be considered as ‘the documentary representation with a higher degree of condensation than the title and abstract’ (Fujita and Tartarotti, 2020: 337).

The product of documentary representation, whether a keyword or a descriptor, is housed in metadata to be retrieved. Metadata is descriptions that are specifically created to represent digital information accessible on the Internet (Chu, 2010: 41). Keyword searching, on the other hand, is one of the main information retrieval techniques. Through natural language, people can describe the same thing in different ways, making the words used in the query different from those used in the documents and thereby preventing word matching and, consequently, the retrieval of relevant documents. There are other limitations, such as when a term has more than one meaning; different terms have the same meaning; or the query has a high recall, retrieving a long list of documents. Netizens with little knowledge of what they are looking for find it more difficult to formulate a query that recalls relevant documents.

Natural language is used in writing and speech; it is words that, in an organized way, convey a message from the sender to the receiver. The indexing carried out with this type of language leads to information retrieval through expressions used by the user. The reading carried out by the information professional can be performed superficially – focusing on the title, abstract or initial and final paragraphs of the text – or in a detailed manner – removing blocks of information from the text, which will also result in the selection of keywords.

Artificial, documentary or controlled language is constructed by a specialized professional; it is elaborated according to the established rules of a specific controlled vocabulary with the purpose of describing
the content of a document in a simple way and the aim of storage uniformity, as well as the easy retrieval of the information. It is the information professional’s responsibility to build representation languages that best meet user demands and also adapt to the needs of different organizations in different social sectors (Tonello et al., 2012).

In the case of subject as well as other databases, it is possible to verify whether vocabulary control was used for representation in the indexing or the search. Information, to be retrieved properly, must be organized and represented in the most faithful way possible to comply with the information content of the document and the needs of the user. This process takes place through the elaboration of information products, such as summaries, classification numbers, keywords and descriptors.

**Methodological procedures**

In order to fulfil the objective of investigating how university repositories guide subject representation in the self-archiving of their information resources, the methodology adopted to carry out this study had a descriptive exploratory character of a qualitative nature and applied two methods: (1) an electronic exploratory analysis to survey and identify self-archiving and subject representation guidelines in Brazilian repositories and (2) an analysis of transcripts from an introspective technique called *Individual Verbal Protocol* applied at the moment the authors performed the self-archiving of their theses and dissertations.

**Electronic exploratory analysis**

For universities to give visibility to their scientific production, their institutional repositories need their operating policies or tutorials to consider the quality of subject representation. Thus, for access to be effective and netizens’ needs to be met, the process of subject representation should be clearly delimited in tutorials that guide authors during self-archiving.

The data collection, which was carried out between 13 April and 9 May 2022, involved an electronic exploratory analysis of 82 repository sites from the list of Instituto Brasileiro de Informação em Ciência e Tecnologia (IBICT) repositories previously analysed by Fujita and Tolare (2019). The selection criteria were that the repositories enabled the self-archiving of theses and dissertations and provided self-archiving tutorials. Self-archiving and guidelines for subject representation by keywords were explored on the websites of selected Brazilian repositories.

**Analysis of Individual Verbal Protocol transcripts**

We have carried out an analysis of the results obtained in the introspective data collection of the investigation by Fujita et al. (forthcoming), which identified how authors assigned their own keywords for their papers during the self-archiving process. For this analysis, five student participants from the graduate programmes in Information Science and Education at the Universidade Estadual Paulista Júlio de Mesquita Filho (UNESP), Marília, Brazil were interviewed on the Google Meet platform. They had recently defended their Master’s theses or doctoral dissertations, and had self-archived their work in the UNESP institutional repository through the Individual Verbal Protocol.

The Individual Verbal Protocol is an introspective technique in which authors report on everything they are thinking about the stages of the process and verbalize their questions. It was agreed that the researcher carrying out the interviews would remain silent so as not to interfere in the process, and, at the end of the procedure, three retrospective questions were asked on the observed data.

To begin the introspective data collection, the librarian responsible for the repository at the institution authorized the research. The participants submitted their papers again to contribute to the study and were informed that only their first submission would be stored in the repository, and those responsible would exclude the extra submission.

The procedures were divided into ‘before’, ‘during’ and ‘after’ the self-archiving process. In the ‘before’ stage, the scope of the research was established by outlining the context in which the repositories function, aiming to gain a deeper understanding of the self-archiving process; in addition, their policies, resolutions and tutorials were read through. First, the research theme was introduced, explaining its proposals and clarifying the participants’ questions, and before starting the submissions themselves, the participants briefly described the theme of their scientific investigation and their study, carried out an introduction, shared their screen and started the self-archiving procedures. The participants entered the repository’s electronic address and started the process. The student-author entered the repository link, set up a personal login and, during the process, went through all the necessary steps to carry out the submission of their paper.

During the recording of the interviews, the way the participants assigned their keywords for their theses or dissertations was analysed. In the subsequent procedures, an analysis of the participants’ verbalization
at the time of recording and reading of the literal transcripts of their interviews was carried out.

**Results**

The results of the exploratory study on Brazilian repositories are presented in the following two sections: (1) an electronic exploratory analysis of self-archiving and guidelines on subject representation for authors and (2) an analysis of the Individual Verbal Protocols of the authors of theses and dissertations during self-archiving.

**Electronic exploratory analysis**

The electronic exploratory analysis was carried out on 82 Brazilian repository sites and identified that 10 repositories allow the self-archiving of theses and dissertations by observing the existence of an interface for authors. By exploring these interfaces, the objective was to identify the existence of tutorials with specific guidelines on subject representation for assigning keywords with or without the use of controlled vocabularies. In the following, we describe the characteristic aspects of the self-archiving or self-depositing modality in each selected repository.

**Fundação Getúlio Vargas.** The digital repository of the Fundação Getúlio Vargas aims to preserve and share the institution’s academic production, and to be its memory and identity. It has tutorials, videos and presentations by the institution, in addition to Ordinance No. 40/2018, entitled ‘Document Deposit Policy’. Its ordinance follows the international self-archiving standard that establishes the deposit of academic productions directly by authors. Deposits are carried out by students, professors and researchers on the repository’s website or, when necessary, by the Fundação Getúlio Vargas team, which standardizes and publishes the deposited papers. The repository uses the controlled language from the subject terminology of the National Library of Brazil and Bibliodata. Guidance to authors on self-archiving is not offered on the repository’s website.

**Universidade Federal do Goiás.** The institutional repository of the Universidade Federal do Goiás is populated in a decentralized way. Various entities are involved: course coordination, final paper coordination, and the heads of departments or academic units. The repository allows authors to submit their own papers as long as they are in accordance with the rules established by the management committee, which are published on the institutional website. Guidance to authors on self-archiving is not accessible on the repository’s website.

**Universidade Federal do Ceará.** The institutional repository of the Universidade Federal do Ceará enables the self-deposit of technical scientific work by the university community in accordance with the university’s institutional policy for technical scientific information. Guidance to authors on self-archiving is not accessible on the repository’s website.

**LUME, Universidade Federal do Rio Grande do Sul.** LUME, the repository of the Universidade Federal do Rio Grande do Sul, offers access to digital collections (text, image, video, audio) produced at the university and other documents of interest. Its access is free but, in some cases, is restricted to community members. It uses DSpace, is compatible with the Open Archives Initiative protocol, and follows the Dublin Core metadata standard and the Corporation for National Research Initiatives’ Handle system to define permanent identifiers for each document available in the repository. Metadata registration is carried out by the author or the person responsible for the community with the final guidance of LUME’s
technical team. This is a mediated self-deposit system whose guidelines for authors on self-archiving are not accessible on the repository’s website.

**UNESP – Universidade Estadual Paulista Júlio de Mesquita Filho.** The UNESP institutional repository has tutorials on the self-archiving of theses, dissertations, final papers, book chapters and other materials. There is a tutorial for each type of scientific production, containing an indication of keyword assignment with specific guidelines on subject representation and the use of the UNESP thesaurus for vocabulary control.

**Universidade Federal de São Paulo.** In the institutional repository of the Universidade Federal de São Paulo, the submission made by an author, co-author or mediator comprises the metadata registration; the students use natural language and the librarians then carry out the validation. It has accessible tutorials on the self-archiving site for undergraduate final papers, theses, dissertations and scientific articles, with an indication of keyword assignment but no guidelines on the subject representation process and use of controlled vocabulary.

**Universidade Federal de Uberlândia.** The institutional repository of the Universidade Federal de Uberlândia has tutorials for each stage of the self-archiving process of theses and dissertations, covering bibliographic references; the preparation of catalogue sheets; converting documents into PDFs; registration on the repository’s website; ORCID registration; the submission of professors’ descriptive memorials; and the submission of other types of materials such as journal articles, book chapters, electronic books, research reports and conference papers. It has an accessible tutorial on the academic-paper self-archiving website, with an indication of keyword assignment but no guidance on the subject representation process or the use of controlled vocabulary.

**Universidade Federal da Bahia.** In the institutional repository of the Universidade Federal da Bahia, a deposit can be carried out in two ways: (1) self-archiving and a mediated deposit after registration on the system or (2) authorization by the repository’s administration and validation by the University System of Libraries before it is made available. The repository has a submission tutorial and registration guidelines, in addition to two operating ordinances (No. 024/2010 and No. 159/2021) and a resolution (No. 159/2021). It has an access tutorial on the academic-paper self-archiving website, with an indication of keyword assignment but no guidance on the subject representation process or the use of controlled vocabulary.

Table 1 shows that 5 of the 10 repositories contain self-archiving tutorials – namely, those of the

<table>
<thead>
<tr>
<th>Repository</th>
<th>Self-archiving tutorial</th>
<th>Guidelines for subject representation</th>
<th>Controlled vocabulary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fundação Getúlio Vargas <a href="https://bibliotecadigital.fgv.br/">https://bibliotecadigital.fgv.br/</a></td>
<td>No</td>
<td>No</td>
<td>Subject terminology of the National Library of Brazil and Bibliodata</td>
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<tr>
<td>Universidade Federal Rural da Amazônia <a href="http://repositorio.ufra.edu.br/jspui/">http://repositorio.ufra.edu.br/jspui/</a></td>
<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<tr>
<td>ARCA, Fundação Oswaldo Cruz <a href="https://www.arca.fiocruz.br/">https://www.arca.fiocruz.br/</a></td>
<td>No</td>
<td>No</td>
<td>DeCS – Health Sciences Descriptors</td>
</tr>
<tr>
<td>Universidade Federal de Goiás <a href="https://repositorio.bc.ufg.br/">https://repositorio.bc.ufg.br/</a></td>
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<tr>
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<tr>
<td>UNESP <a href="https://repositorio.unesp.br/">https://repositorio.unesp.br/</a></td>
<td>Yes</td>
<td>Yes</td>
<td>UNESP thesaurus</td>
</tr>
<tr>
<td>Universidade Federal de São Paulo <a href="https://repositorio.unifesp.br/">https://repositorio.unifesp.br/</a></td>
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<td>Yes</td>
<td>No</td>
<td>No</td>
</tr>
</tbody>
</table>
### Table 2. Analysis of Individual Verbal Protocols.

| Category | Participant 1                                                                                                                                                                                                 | Participant 2                                                                                                                                                                                                 | Participant 3                                                                                                                                                                                                 | Participant 4                                                                                                                                                                                                 | Participant 5                                                                                                                                                                                                 |
|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Research | Didactic experiment with the creation of argumentative statements; a genre opinion paper raising awareness of high school students from public of self-archiving schools in Rondônia in the city of Vilhena. | Analysis of the interdomain of social media and libraries in the context of Brazil, Spain and the USA.                                                                                                                                                                      | Domain analysis of the Brazilian Journal of Information Science: Research Trends.                                                                                                                                                                                                 | Discussion of the historical and educational context of women in Porto Velho.                                                                                                                                                                                                 |
| Assigned keywords | Writing, genre opinion article, subject, social awareness                                                                                                                                                                                                                 | Social media, Web 2.0 technologies, social networks, libraries, bibliometric analysis                                                                                                                                                                                      | Domain analysis, scientific production, scientific journals                                                                                                                                                                                                                         | Indexing language, indexing policy, libraries (after consulting the thesaurus)                                                                                                                                                                                                     | Afro-Antilland woman, Rondônia, education, bibliographic and documentary analysis, cultural studies                                                                                                                                                                           |
| Choice criteria | The authors viewed their selection of keywords as a sequential outcome of their work process. This process began with composing an opinion paper focused on the subject matter and reflected the process of increasing social awareness. Their keyword choices were considered during the construction of their research. In the interview, they expressed a preference for one term in particular, citing its consistency and relevance to the text. | Their choice of keywords was based on thinking about the potential readers of their thesis — on what possible terms they would choose to retrieve the material directly — so they chose terms that rigorously identified the subject matter. | They chose these keywords due to their coherence with the subject they were addressing. Inconsistencies in retrieval could be caused and the paper risked never being found. Regarding the repository system, they pointed out the need for control of vocabulary as critical, so that an author feels more confident in the representation. | During the process, they reported that they had tried to search for some of the terms in the repository, but could not find them because the research focused on older themes.                                                                                       |                                                                                                                                                                                                                     |
| Relevance of keywords | Keywords are important because they guide the supervisor and other potential readers, who read the keywords to understand the research topic.                                                                                                                                   | They consider keywords to be an essential summary of a paper that direct the subject, and they therefore need to be defined well.                                                                                                                                      | They consider keywords to be an essential summary of a paper that direct the subject, and they therefore need to be defined well.                                                                                      | Their position regarding keywords is that they can be considered as a 'map' of an academic paper or even its own 'identity', since they identify the main subjects addressed.                                                                                     |                                                                                                                                                                                                                     |
| Suggestions | Concerning the repository, the author deemed it satisfactory and highlighted the system's efficiency and speed.                                                                                                                                                             | The author exposed the controlled vocabulary in the guidelines on the repository's home page.                                                                                                                                                                              | Regarding the repository, they pointed out the critical need for vocabulary control, so that an author feels more confident in the representation.                                                                    |                                                                                                                                                                                                                     |                                                                                                                                                                                                                     |
Universidade Federal Rural da Amazônia, Universidade Federal de São Paulo, Universidade Federal da Bahia, Universidade Federal de Uberlândia and UNESP.

The analysis of the tutorials revealed that the first four of the Universidade Federal Rural da Amazônia Repository, UNIFESP Repository, Universidade Federal da Bahia Repository, Universidade Federal de Uberlândia - Institutional Repository, and UNESP Institutional Repository present an indication of keyword assignment without guidelines on how to represent subjects or how to use controlled vocabulary, and only the UNESP institutional repository provides guidelines on subject representation in keyword assignment and use of controlled vocabulary. The Universidade Federal Rural da Amazônia is the only university that approaches metadata quality as essential for metadata standardization and information retrieval. However, it does not have guidelines for users on how to represent a subject when self-archiving.

For De Freitas (2019: 52) and De Freitas et al. (2021: 173), self-archiving is an alternative way to share information, but they observed some resistance from authors to adhere to self-archiving practices. It was also noted, from the survey, that most university institutional repositories do not have a formalized self-archiving policy that prioritizes subject representation. Golub et al. (2014) note that, in most repositories, authors are not trained in indexing and do not receive any indexing guidelines. They caution that if suggestions are derived from an appropriate controlled vocabulary, the retrievability of articles will likely contribute to ideal precision and recall. The results of a study conducted by Tartarotti et al. (2018), which examined the presence of indexing policies in collaborative environments through a survey of those responsible for digital libraries of theses and dissertations in Brazil, revealed the absence of an indexing policy to guide and safeguard its practice of self-archiving in collaborative settings.

In general, Brazilian institutional repositories do not have a self-archiving policy that includes subject representation, which deals with the quality of the metadata in question. In this context, implementing self-archiving for treating information resources contributes to the systematic development of guidelines for indexing policies that satisfy the current requirements of information representation in digital environments and, at the same time, achieve high standards in the quality of subject indexing conducted in institutional repositories.

**Analysis of Individual Verbal Protocol transcripts**

The analysis of the authors' Individual Verbal Protocol transcripts (see Table 2) reveals that all of the authors considered keywords to be important for their theses' and dissertations' content representation in view of the wish for them to be retrieved. One can observe the authors' concern regarding the meaning that keywords carry when assigned, and that they need to reflect the domain of the investigated topic so that domain-specialist readers can retrieve and recognize them within the area of knowledge in which they work. Considering that the author is a domain expert, when they assign keywords, their objective is to ensure that the content of their text is retrieved and read by others, who are likewise domain specialists. Similarly, Holstrom (2019: 123) assesses the differences between the domain-expert indexer (author) and the professional indexer as follows: ‘Unlike professional indexers, who broadly consider the needs of many users, domain experts are more likely to consider the information needs and priorities of other scholars and practitioners in their field’. There are different objectives for author indexing, but vocabulary control can be added to the guidelines for subject representation. If there are no compatible descriptors, an author can decide whether a keyword is more important and specific for representing the content of their thesis or dissertation.

On the other hand, some authors realized the need for control and a range of specialized vocabulary to be indicated for use during keyword assignment. These results suggest that repositories need to elaborate and include guidelines on subject representation by keywords indicating the use of controlled vocabularies, as the authors of theses and dissertations highlighted the importance of representation and its effects on retrieval.

**Conclusion**

The investigation regarding the guidelines provided to authors for subject representation using keywords available in university repositories for the self-archiving of their information resources carried out two analyses from different yet complementary perspectives: (1) an electronic exploratory analysis to identify guidelines on subject representation in the self-archiving procedures of Brazilian repositories and (2) an analysis of authors’ introspection during subject representation in the self-archiving of their theses and dissertations in the UNESP institutional repository, which provides guidelines on subject representation using keywords.

For the authors participating in this analysis, the study concludes that keyword assignment is a relevant representation procedure when their selections are determined by considering potential readers. These
keywords must be correct and coherent with the content of their theses and dissertations and, above all, function as a ‘map’ or the ‘identity’ of the academic work, capable of characterizing it and making it accessible upon retrieval. The primary concern of the authors was the accuracy, coherence and correctness of the keywords, so that they could reach other readers and researchers in their domain of expertise. This is evidenced by the fact that one of the participants even cited their own supervisor as one of their potential readers. Hence, the authors participating in the study recommended the inclusion of controlled vocabulary along with guidelines on subject representation using keywords.

This study recognizes that the authors reported extensive procedures in the process of subject representation using keywords, making them expert indexers in their area of expertise. The fact that the UNESP institutional repository has guidelines available to authors for assigning keywords to theses and dissertations highlights the importance of self-archiving and subject representation.

Self-archiving works through its authors and helps them understand the objectives of creating repositories and the importance of access to research in scientific communication. Therefore, it is essential to involve the scientific community in the development of their repositories through self-archiving. The self-archiving process encourages authors to consider the information needs of the users of institutional repositories when depositing their publications and submitting subject metadata with keywords that facilitate access to the content.

However, the analysis of self-archiving policies across the set of repositories reveals that, in relation to subject metadata, few self-archiving policies concern this aspect, even though this operation enables the development of more democratic institutional repositories, resulting in an information system oriented to the interests of the scientific visibility of their authors in favour of satisfying the more global information needs of users.

Therefore, if users incorporate vocabulary control into their self-archiving routines when entering subject metadata, and if their keywords subsequently serve for the continuous updating of controlled vocabularies, this will bridge the domain-knowledge expertise of both authors and professional indexers during the storage of information resources and their representation in metadata. This bridge will allow the organization of teams that can share decisions aimed at continuously updating controlled vocabularies in a hybrid context between natural language and controlled language. At the same time, it will make a significant contribution to the process of determining keywords with exhaustiveness, specificity, correctness and consistency in the representation of the contents of information resources, which will encourage repositories to incorporate the advances provided by vocabulary control in self-archiving routines through indexing-policy tutorials. This will be particularly valuable due to the contribution of new terms brought about by the constant scientific and technological evolution required in the development of research, which, in turn, will generate new knowledge. The compatibility of specialized languages, authors and controlled vocabularies will contribute to the scientific visibility and impact factor of publications.

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Fujita MSL, Tartarotti RCD’E, Dal’Evedove PR, et al. (forthcoming) How do authors choose keywords for their theses and dissertations in repositories of university...


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Expanding information behaviour boundaries: A study with religious leaders

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Abstract
Information behaviour is a very productive research area in information science, although some study contexts are still little explored, such as religious and spiritual practices, particularly related to minority religions. Thus, this study investigated the information behaviour of religious leaders of Santo Daime, a religion originating in the Brazilian Amazon. Exploratory research with a qualitative approach and semi-structured interviews with four leaders of the doctrine were carried out. The most used sources of information were documents about the Daime religion, personal experience, contact with other leaders and the institution. Information was sought to guide the participants in their rituals, solve administrative problems, improve their knowledge and strengthen their faith. Used in a critical, reflective and creative way, it seeks coherence with the Daimist principles. The findings may contribute to the understanding of the information behaviour of this little-studied social group and the appreciation of cultural and religious diversity in society.

Keywords
Information behaviour, religious context, Santo Daime, information practices, spiritual practices, ayahuasca

Introduction
Research in information science has, among its objectives, to research the information behaviour of those who seek and use information to solve problems in the most diverse situations and contexts. Users’ information needs are at the origin of studies related to information behaviour (Valero Rivero et al., 2014).

With the evolution of the Internet and the greater participation of the population in this global network, a new social phenomenon has been observed, which has been perceived as an ‘information explosion’ (De Lacerda and Da Silva Llarena, 2019). The excess of information in various contexts does not always have applicability or contribute to a subject. For De Lacerda and Da Silva Llarena, in this sense, it is up to users themselves to identify what their real information needs are and how they can be met. It is this gap that will give rise to an information need, which, in turn, causes an information behaviour. Thus, given the cognitive dissonance generated by the information explosion, the individual must have access not only to the identification of his/her information needs but also to how to satisfy them autonomously. To this end, the individual’s construction of knowledge, skills and attitudes in the information domain can help him/her to use the right and necessary resources to deal effectively with his/her needs, thus solving his/her information problems. This construction is characterized as information competence. (De Lacerda and Da Silva Llarena, 2019: 249)

According to Wilson (1994), people seek information to meet different types of needs: physiological, affective and cognitive. Wilson conceptualizes information needs as the perception of the difference between
what a person knows and what they would like to know, which can be resolved by utilizing information.

Borlund and Pharo (2019) point to information need as the feeling of a difference between a person’s present state of knowledge and a desirable state of knowledge, which can be filled by information. They state that information needs are related to three distinct domains – work, study and personal interest – and serve different purposes. Thus, they conclude that the nuances and complexities of information needs are best understood in light of domain and purpose, as they provide insight into the context and motivation of the search.

However, whatever the context, information is a strategic resource for the development of the interrelationship between subjects, whether people or organizations, if we consider the perspective pointed out by De Cássia Machado and Rodrigues Barbosa (2018: 10) that ‘information is the basis of the dynamics of productive and organizational processes’. According to De Cássia Machado and Rodrigues Barbosa, the search for information is how an individual tries to obtain information to achieve an established purpose and change their level of knowledge. Furthermore, the need, search for and use of information is defined by the demands of work and the social environment, and by the individual’s knowledge gap and emotional experience. Thus, De Cássia Machado and Rodrigues Barbosa consider information as an indispensable tool for organizations, as it assumes a prominent position due to its transformative action, influencing organizational performance and acting as an auxiliary for managers in their decision-making and elaboration of strategic, tactical and operational measures. It can be conceded that, also for religious organizations, the search for and use of information is essential in their dynamics.

Human behaviour is influenced by several social factors, including religion, which is recognized for its importance to most individuals. And although religious organizations have significant differences compared to other types of organizations, religious systems also need to be based on foundations that allow their operation, especially since the organizational structure of churches is essential for the exercising of their activities. Thus, one of the challenges for religious organizations is to manage information efficiently and effectively – considering the different means and forms available and the perception of information as a strategic resource for the development of religions – by enabling communication among the faithful, the dissemination of principles and values, guidance for worship activities and the resolution of daily problems (De Cássia Machado and Rodrigues Barbosa, 2018).

De Cássia Machado and Rodrigues Barbosa (2018) agree with Passos (2006), who defines a religious organization as a system composed of a particular social group that shares common beliefs, values and meanings, and whose purpose is to maintain tradition, propagate the sacred word, and offer its religious structure, rites, symbols and hierarchy, among other things, to those who do not know anything about it. In this way, religious organizations constitute religious systems in an institutionalized way. Religious organizations should seek ways to obtain, organize, store, disseminate and use information according to their needs and objectives, respecting the diversity and plurality of their members. This situation can be witnessed in the Santo Daime doctrine, a Christian and ecumenical religious practice that uses, in its rituals, the ingestion of Santo Daime in the religious context, also known as ayahuasca, an entheogenic sacrament that induces a spiritual feeling of self-knowledge, constituting a prophylactic and therapeutic agent at the service of the elevation of human consciousness (Araújo and Vieiralves-Castro, 2009).1

Although information behaviour is an area of information science, research in this field in religious contexts, especially with regard to members in developing countries (Dutta, 2009; Saleh and Bakar, 2013) and particularly minority religious beliefs, as is the case of Santo Daime, is still scarce. This research gap is significant and deserves attention since information behaviours play a crucial role in the religious and spiritual lives of countless people. In general, these studies have addressed topics that lead to an understanding of how individuals obtain, share and use information within these contexts, seeking to expand knowledge in this area.

From this perspective, the central focus of this study was defined. The objective of the analysis was to describe and understand the information behaviour of the leaders of the Santo Daime religion, who are responsible for guiding the followers and managing the administrative and ritual issues of the religion. In this sense, we investigated how these leaders seek and use information to support the development of their functions and the performance of religious ceremonies.

In this article, based on the impressions of leaders, we seek to reflect on how they act in relation to what type of information they seek; where, how and for what they seek information; and how they use, share and mediate this information. To this end, qualitative research was carried out based on the information behaviour approach, which involved semi-structured
In this sense, Berti and Ávila Araújo (2017) identify the concept of information behaviour as related to the perception of the subject’s need for information to solve their information problems. Thus, the study of information behaviour comprises three basic components: the need for, the search for and the use of information (Wilson, 1999).

For Koh et al. (2015: 1), although people engage in a range of information behaviours, most previous models and empirical research on these behaviours has tended to focus on information seeking and use. They discuss ‘the need to expand the territories of information behavior research beyond search and use’. In exploring different forms of information behaviour, they introduce new models, including serendipitous (accidental or intuitive) discovery and organizational and information creation behaviour. They also discuss theoretical and methodological issues related to modelling new modes of information behaviour, instigating researchers to identify sub-fields in the investigation of this topic, and consider the impacts of studying various forms of information behaviour on individuals, society, organizations, technology systems and culture.

Gasque (2022) traces an evolutionary timeline of studies on ‘human information behaviour’ from when the term was first employed in the 1990s by Wilson when referring to the evolution of user studies. From the 1980s, there was a shift towards the individual as the focus of studies, rather than a system-centred approach. This shift was accompanied by new methodological perspectives and a diversity of research groups and authors. Between the 1940s and 1980s, these studies were called ‘user studies’ or ‘needs studies’ and had a behaviourist approach. Then, between 1980 and 1990, cognitivist studies emerged, which motivated researchers to use the term ‘human information behaviour’. Cognitivism also included a more sociocultural view. Since 2000, research has emerged with more integrated approaches, an emphasis on the various aspects of the human being, and the use of methods and efforts focused on understanding the individual more globally (Gasque, 2022: 10–11). Gasque warns that, in recent years, researchers have used the terms ‘human information behaviour’ and ‘information practices’ interchangeably, although these concepts have not referred to the same phenomenon. She also considers that despite the emergence of a more integrative and multifaceted perspective at the beginning of the 21st century, there is a need to develop more integrative models of information behaviour.

Argawal (2018) proposes to explore the understanding of information behaviour, arguing that it cannot be understood in isolation but must be understood within the context in which it occurs, and identifies four key elements that affect it: the user, the situation, the environment and shared identities. The user refers to the individual seeking information and their characteristics, such as their personality, interests and previous experiences. The situation refers to the purpose of the information search, the tasks involved, and the constraints of time and resources. The environment includes the physical and social aspects of the place where the information search occurs, such as the availability of technology and the presence of other people. Finally, shared identities refer to the social connections between the seeker and other people or groups, such as friends, family, coworkers or members of a community. Argawal further argues that it is essential to consider these contextual elements in order to understand how people seek and use information in their everyday lives, suggesting that researchers should pay attention to these aspects in their studies to gain a more comprehensive understanding of information behaviour.

However, it should be noted that organizations are responsible for developing their own culture of information seeking and use, and from this establish their values and norms. Thus, according to Choo (2006), understanding information behaviour in organizations necessarily requires also understanding how they are simultaneously systems of information seeking and belief creation, in which information is shaped by
epistemic practices and beliefs are the result of information seeking and use. Also according to Choo, information is conditioned by its situational dimensions, being constructed dynamically and harmonically from the interaction between the environment and the subject, especially considering that seeking information is part of the process whereby a person tries not only to obtain information, but also to achieve an established objective and change their level of knowledge.

**Information behaviour in the religious context**

Research on information behaviour in the religious context has attracted the attention of information professionals over the years, resulting in studies to understand why people seek information, how they seek it, and the problems they encounter. Some of these studies have investigated how religious leaders seek information to perform their professional roles, what information resources are used, what role the Internet plays in their information behaviour, and how this varies between different religions (Dankasa, 2015).

According to Choo (2006), information behaviour is oriented towards the user, who has specific needs and, to meet these needs, seeks information and acquires it using different sources, whether formal or informal. Thus, when defining the most relevant information, its use will be subject to the user’s professional, organizational and social context. Choo indicates that there has also been interest in search behaviour and the motivation around need, highlighting that the quality of an information source and access to it are predominant factors in selecting the most appropriate information for the objectives to be achieved, both by an individual and by an organization.

More specifically, religious information behaviour is the set of actions and attitudes that people adopt to seek, use and share information related to their faith and beliefs. This behaviour can vary according to the context, motivation and need of each individual or group to make decisions in their daily lives and to interact with others (Brusse et al., 2022). The study of religious information behaviour can contribute to a better understanding of the practices and values of different religious groups in society.

Religion can be understood as ‘a social phenomenon related to other constitutive elements of society and, because of this, presents dimensions such as discourse and cultural practice to be thought of from a historical and political point of view’ (Martino, 2016: 144). It is an important aspect in many spaces and moments of everyday life; in the discussion and making of political decisions, having an influence on international relations; in everyday practices; and in proposing ‘codes of social conduct in the public space and regulating the uses of the body and affective relationships in the private sphere’ (Martino, 2016: 145). According to Weiss (2012), religion, in addition to ordering the world and giving meaning to life, has in its centrality to lead the human being to act, strengthening and bringing to it an energy of life. In contemporary times, the discussion is around how this energy is channelled, since religion is a social phenomenon that exists because people, in a society, relate to each other and are therefore influenced to act by something greater than themselves but also within themselves.

Most of the research carried out in the field of information behaviour in religious contexts conceptualizes its participants as professionals who engage with information resources to fulfil their functions as preachers, administrators and counsellors (e.g. Allen, 1987; Dankasa, 2015, 2016; De Cássia Machado and Rodrigues Barbosa, 2018; Lambert, 2010; Michels, 2014; Phillips, 1992; Porcella, 1973; Roland, 2012; Saleh and Bakar, 2013; Wicks, 1999). According to Passos (2006), religious leaders are largely responsible for building faith communities since they animate and encourage the members of these communities, and are therefore, based on their actions and motivations, the examples that sustain community life. For Passos, leaders are responsible for the organization and distribution of tasks, as well as for providing advice to the faithful and/or their followers.

Corroborating Passos (2006), De Cássia Machado and Rodrigues Barbosa (2018) state that it is the support of the religious leader that helps in the edification of religion in its spiritual and social aspects and, thus, in addition to having the primary function of preserving and transmitting religious principles, the leader is responsible for transmitting the sacred word that must be preserved and disseminated, without betraying it in its originalities.

De Cássia Machado (2019) states that churches have strength and credibility, in addition to being rooted in communities. Furthermore,

> ...as respected and trusted members of society, religious leaders are listened to and their actions set a role model for many people. Moreover, religious leaders are in a privileged position, which allows them to make a difference when it comes to the information disseminated to their followers. (De Cássia Machado, 2019: 24)

From this same perspective, according to Dankasa (2015), spiritual religious practices, which follow a traditional hierarchy, depend on religious leadership
to maintain group unity. For Dankasa, religious leadership is responsible for guiding the beliefs and actions of the faithful. Leaders have different attitudes towards information sources depending on their doctrinal orientation and their role in the church.

Older research on the information behaviour of religious leaders reports several difficulties faced by leaders in seeking and accessing information (see Allen, 1987; Porcella, 1973). These difficulties can be due to a lack of resources or the technology available at the time. Historically, studies in this area indicate an evolution of the theme, especially in the use of information and communications technologies by religious organizations.

The studies by Wicks (1999) and Roland (2012), in which the information-seeking behaviour of pastoral clergy was evaluated concerning various types of information sources in the performance of different functions within the religious context, find that there is often a relationship between the environment and pastoral functions, and it can influence information-seeking behaviour. These studies report the influence of the theological and denominational environments of clergy members on their preaching – that is, the congregational context significantly affects the information behaviour of pastoral clergy.

Lambert (2010) studied the information behaviour of Baptist church leaders in relation to information seeking. According to the results, the leaders varied their information-seeking processes based on the roles they played – mainly administrator and preacher – which corroborates the works of Wicks (1999) and Roland (2012) regarding the influence of the environment and functions on information behaviour. A similar result was obtained by Dankasa (2015), who analysed the literature on the information behaviour of leaders in different professional and religious contexts, and identified the factors that influenced the choice of information sources, such as doctrinal position and job function.

Michels (2014) investigated how the leaders of three churches in Nova Scotia, Canada, experienced information seeking and observed aspects such as the use of new technologies, prayer as a source of information, and the theology of information seeking. According to Michels, church leaders combine different types of information – such as empirical data, personal experiences, biblical guidance and divine revelations – to make decisions that meet the demands of their specific situation. Moreover, Saleh and Bakar (2013) analysed the information needs and behaviour of Muslim preachers in Nigeria. They indicate that the ulama seek information to fulfil their religious and social roles, and make use of various sources and channels of information – both traditional and modern – to meet their needs.

De Cássia Machado and Rodrigues Barbosa (2018) conducted research on how the process of searching for and using information by religious leaders in Belo Horizonte featured in the decision-making processes in their daily lives, seeking to identify their information needs. The study found that the information needs of religious leaders are mainly based on religious issues, to help in exercising their priesthood. According to De Cássia Machado and Rodrigues Barbosa, the concern of these leaders is with the meaning of information, the conditions, standards and rules of use, to spiritually guide to bring diverse information, providing the faithful with knowledge and learning.

Although information behaviour is a diverse field of research with a significant number of theories, methods and populations, Chabot (2019) notes that research on the information behaviour of spiritual leaders has been largely dominated by studies related to the Christian clergy – a perception that is corroborated by the survey carried out for this literature review, where the studies were mostly carried out with the Christian clergy and there is an absence of more robust and comprehensive research on information behaviour related to other religious doctrines, especially those with a small number of adherents. Thus, it is observed that few studies on the information behaviour of leaders belonging to minority religions have been conducted. Considering the absence of studies that seek information on other religious organizations, the relevance of this study is reaffirmed. It seeks to understand the information behaviour, with regard to the search for and use of information, of members who perform the function of leadership in the Santo Daime religion, thus contributing to the expansion of knowledge in the area of information behaviour in the religious context.

**Study context: the Santo Daime doctrine**

The Santo Daime religion, which originated in the interior of the Amazon rainforest in the first decades of the 20th century, has expanded beyond the borders of Brazil, broadening eclecticism and dialogue with other traditions and incorporating influences from other religions. From the 1980s onwards, there was a significant flow of Brazilian and foreign visitors – ‘spiritual seekers’ attracted by the Amazon and indigenous shamanism, and Peruvian ayahuasca practitioners, many of whom later strengthened their ties with the religion either by settling in the community.
or taking Santo Daime knowledge elsewhere (Santo Daime, 2022).

According to Araújo and Vieiralves-Castro (2009), Santo Daime is a new Christian religious movement that places great value on altered states of consciousness, which Daimists usually call *mirações* – a way of seeking spiritual enlightenment through the ingestion of a tea known as Daimê or ayahuasca, among other denominations, and the repetitive singing of hymns, which are dictated directly from the ‘Astral World’ and contain teachings, healing power and revelations. As revealed by the founder of the doctrine, Irineu Serra, Mestre Irineu, tea has great power and can, in some cases, cause profound changes in people about themselves and the world, bringing new perspectives and psychosocial conceptions. Thus,

Santo Daime is a religion that is not only based on discourse but largely on experience, which occurs through ritual ingestion combined with hymns. *Daimê* hymns also present fragments of collective memory and social representations of the doctrine and can be considered quite complex psychosocial phenomena. (Araújo and Vieiralves-Castro, 2009: 527)

Also characterizing the Santo Daime doctrine is the fact that it is a social practice that aims to elevate perceptual, creative, cognitive and discernment capacity, which helps its practitioners to assume social, individual and collective responsibilities (Vieiralves-Castro, 2009).

With the growth and organization of the Santo Daime religion, new groups began to form outside the Amazon rainforest. According to Gouveia and Martino (2008), the process of the expansion of Santo Daime to large urban centres is directly related to changes in the processes of sociability, including the mediation of cyberspace. This change is paradigmatic, considering that the Internet is one of the main instruments for the dissemination of Santo Daime today on a large scale. With the advent of social networks, the interaction between members of the doctrine has become greater, as the virtual approach has allowed network users to create communities to share experiences, strengthen ties and establish personal relationships, uniting followers in their common interests. In these spaces of digital interaction, the ‘religious internet user can flaunt his religious belonging, seek out his peers, express his opinions and display his knowledge’ (Silva, 2014: 2).

In their study on the Candomblé religion, Corteze and Juvêncio (2022) point out that the transposition of spaces and places of religious learning can be analysed in an emblematic way when a traditional religion is associated with orality and face-to-face practices. They emphasize that, after the approximation of religion with urban areas, ethnographies were present and the structuring of religion changed completely since the religious educational processes in these environments began to be transmitted through writing and, with the passage of time and technological advances, cybernetics was also introduced.

In addition to the dissemination of the doctrine, cyberspace was essential in the mediation of ceremonies during the COVID-19 pandemic, especially between 2020 and 2022, because of the suspension of face-to-face work, which was carried out by digital means, enabling the participation of members from different parts of the world (Hartogsohn, 2022). According to Gouveia and Martino (2008) and Hartogsohn (2022), the Internet was essential in the mediation of the Santo Daime religion both in the process of its expansion and during the pandemic, but could not replace face-to-face ceremonies.

### Methodology

This study is a work in progress and part of a PhD thesis to be defended at the University of Coimbra, Portugal. The research developed for the elaboration of this article was conceived as an introduction to the context of Santo Daime from the perspective of an information behaviour analysis. Thus, this work served to assess the possibility of developing a more comprehensive study, as well as the methodological approach and conceptual reflection that would be required to support, in a more robust way, the doctoral project. The empirical data from the interviews will therefore not be used in the final PhD and stands on its own.

To achieve the proposed objectives, exploratory research with a qualitative approach was developed based on the collection of information through semi-structured interviews. According to Luo and Wilde-muth (2017: 259), ‘semi-structured interviews are a data collection technique that allows the interviewer to follow a general script of questions while allowing the interviewee to provide additional information or clarify answers’. They are also a qualitative data collection technique that can be used in exploratory, descriptive and explanatory studies, and are considered one of the most flexible and adaptable techniques for qualitative data collection. According to Guazi (2021), the credibility and validity of research depends on the quality of the data collection. Thus, semi-structured interviews are a technique that can be used to collect reliable and valid qualitative data. It is important that the interviewer is trained and
experienced in the semi-structured interview technique and, above all, establishes a relationship of trust with the interviewee. Moreover, the interview questions should be clear and objective.

The sample comprised four Santo Daime leaders – two male and two female – known within the doctrine as Padrinhos (‘Godfathers’) and Madrinhas (‘Godmothers’). The interviewees were identified by pseudonyms to maintain their confidentiality. The interviews were conducted individually with each religious leader in May and June 2022. The questions were open-ended, allowing the interviewees to share their experiences, perceptions and practices related to obtaining, using and disseminating information in their role as religious leaders (see Appendix 1). As an orientation for collecting the information, a brief introduction was made to the participants, in which the purpose of the research was explained. Their verbal consent was requested for the recording of the interviews. Two of the interviews were conducted in person and two were conducted electronically via WhatsApp. The interviews were then transcribed and translated when the interviewee was not a Portuguese speaker. One of the authors transcribed the four interviews and translated three of them into English. One of the finish interviewed used the Portuguese language. The other author reviewed the transcriptions and translations for quality control. The interviews were then subjected to content analysis to identify aspects related to the information search and use process, as presented in the ‘Results’ section below.

For this study, qualitative content analysis was employed as the data analysis method. Qualitative content analysis consists of identifying, categorizing and analysing the patterns and themes that emerge from the data, using techniques such as coding, comparison and synthesis. Thus, qualitative content analysis helps the researcher to answer their research question and better understand the phenomenon under study (Schreier, 2012). The objective of the analysis was to describe and understand the information behaviour of the leaders of the Santo Daime religion, who are responsible for guiding their followers and managing the administrative and ritual issues of the religion. To this end, we investigated how these leaders seek and use information to support the development of their functions and the performance of religious ceremonies. Thus, the categories of analysis created to interpret the data from the interviews were: (1) characteristics of the interviewees; (2) involvement in the Santo Daime religion; (3) roles and responsibilities; and (4) information behaviour (identification of information needs, search for information, and devices, means and sources used in the search, use and sharing of information).

This article presents the results of the interviews, highlighting the main characteristics, needs and challenges of the religious leaders concerning information. It also discusses the implications of these findings for the development of information services and resources aimed at this audience. Finally, it suggests some recommendations and directions for future research on the topic. The main limitation of the study is that only four religious leaders were interviewed, which did not allow for the capturing of data representing the cultural specifics of all of the countries in which Santo Daime has religious communities.

**Results**

**Characteristics of interviewees**

The Padrinhos and Madrinhas serve as symbolic figures for the Santo Daime religion and are responsible for guiding and supporting members on their faith journey. They fulfil organizational, administrative and ritual duties within the church (Labate and Pacheco, 2011). For this study, the four leaders interviewed are identified by the names Padrinho Basílio, Padrinho João, Madrinha Maria and Madrinha Salomé; they have been members of the doctrine for between 10 and 40 years. The first Godfather, Padrinho Basílio, is Brazilian and in his late sixties; the second Godfather, Padrinho João, is Finnish and in his thirties; the third interviewee, identified as Madrinhia Maria, is Brazilian and in her late forties; and the fourth interviewee, Madrinha Salomé, is almost 60 years old and Finnish. All four interviewees self-declared as white.

**Involvement in the Santo Daime religion**

Padrinho Basílio recalled that the first time he encountered Santo Daime was through a video recorded by friends in 1983, and that when he heard an excerpt from a hymn which said that the Daimé ‘is the Divine Eternal Father and all are divine beings’, the message aroused a lot of interest in him. However, it was only in November 1984, with the first trip of Padrinho Alfredo through Brazil,² that he effectively got to know the Daimé, becoming a member two months later when he participated in a ceremony on the date that celebrates the day of São Sebastião.

Padrinho João emphasized that it was in the context of his first visit to Brazil, in the practice of capoeira and the use of cannabis, that spirituality was revealed to him and pushed him on in his search. On his second trip to Brazil, he had an experience with ayahuasca
(in a shamanic context) and then participated in a Santo Daime ceremony: ‘That’s when I felt the call and decided that was my path’.

Madrinha Maria informed us that, at the age of 14, she watched a television report and read an article about Santo Daime in a magazine. However, she got to know Santo Daime only when she turned 18. Madrinha Salomé reported that she was informed about Santo Daime through a co-worker and attended a healing ceremony in a church in Amsterdam, the Netherlands.

Roles and responsibilities

Padrinho Basílio reported that he is the one who directs the ritual, together with his wife (the Madrinha of the church). However, he commented that the ritual is collective and everyone in the group plays a role as they acquire and improve their knowledge of the doctrine. Padrinho Basílio is also responsible for the administrative and organizational structure of the church, together with other members.

Padrinho João and Madrinha Salomé are the leaders of the Finnish church, being responsible for all the activities in the functioning of the church, such as organizing ceremonies, ensuring that the church follows the spiritual calendar of Santo Daime Brazil, and dealing with financial matters and the consumption of the sacrament, among other duties. Madrinha Salomé pointed out that the administration comprises three people – the president, the secretary and the treasurer. Padrinho João also serves as the main musician.

Madrinha Maria has administrative and financial duties and is a member of the Doctrinal Council of Santo Daime. She is one of those who are responsible for administrative activities, including, for example, the purchase of articles necessary for the work and general functioning of the church; janitorial tasks; the decoration of spaces; and the organization of rehearsals, ceremonies, feitos and mutirões.

Information behaviour

Regarding the information search behaviour and the use of information by these leaders, Padrinho Basílio pointed out that, at the beginning of the practice of religion, the most used sources of information were oral. According to him, information was accessed in rituals through the songs of the hymnals and lectures, which were used to guide people about the teachings of the doctrine. In this period, the use of handwritten hymn booklets and cassette tapes was common; there was no ciphered hymnal and tablature. According to Padrinho Basílio, since the 1980s, the sources of information have multiplied and communication between members has also occurred through printed materials. However, the transmission of the hinários occurred mainly orally because many of the followers of Padrinho Sebastião (one of the founders of the doctrine) had difficulty reading or were completely illiterate, and there was the added difficulty of access in the interior of the Amazon rainforest where the religion was practised.

Padrinho Basílio reported that there are currently several sources of information, such as books, hymn recordings, hymn notebooks, social networks and websites (such as the online documentation centre where all the historical memory of the people who have been relevant to the doctrine is kept). He added that, recently, with the COVID-19 pandemic, when people could not attend church in person, ceremonies, meetings and other gatherings were held online via Zoom, YouTube and Facebook, with oral communication between members during breaks in the ceremonies. He commented that he uses WhatsApp because it is a quick way to send messages about the church, courses and activities. This leader pointed out that each church has its own WhatsApp group and profile on social networks such as Instagram and Facebook. According to Padrinho Basílio, over the last three years, the Executive Secretariat of the ICEFLU has been carrying out a structural redesign, seeking an orientation that unites the churches located in different cities and countries, and, in this sense, the introduction of more efficient forms of communication and obtaining information is important.

Padrinho João reported that he uses the computer, the telephone, books and various sources of information on the Internet. When he needs information, he consults these sources to find, for example, details about the fundamentals of the doctrine, such as the rites of baptism, marriage and other ceremonies. Due to the distance from the main Daimist headquarters, the transmission of information via mobile phone applications, such as WhatsApp, is important in the exchange process.

Madrinha Maria stated that she uses all the available tools and technologies to obtain information, as well as consulting with people directly. For internal decisions, she speaks first with the church’s Doctrinal Council via WhatsApp, in face-to-face meetings or virtually, as was the case during the pandemic. To seek information, she accesses WhatsApp or makes phone calls. For the dissemination and disclosure of information of interest to the church and the community, Madrinha Maria reported that the means used depend on the objectives, type of information and groups of people to whom the information is directed. The most used communication channels are
WhatsApp, the ICEFLU website (santodaime.org), Instagram and Facebook. Most of the information, including information received from the ICEFLU, is posted on the church's general WhatsApp group.

Regarding information behaviour dealing with aspects related to rituals, Madrinha Salomé reported that she keeps a manual that records the norms of the church's rituals. She also informed us that, for decision-making, general assemblies are held to review and update the decisions established in the documents available from the secretariat and kept in the archives. Regarding communication in general, Madrinha Salomé pointed out that there are the web pages of the brotherhood (santodaime.org), which are important sources for the dissemination of and access to information about the doctrine. According to Madrinha Salomé, the annual calendar of the church's ceremonies is distributed to members once a year by forwarding emails. She also uses the telephone, Messenger and WhatsApp to distribute information about the ceremonies. She reported that, at the end of each ceremony, the next ceremony to be held is announced orally. She explained the importance of official information channels (such as the santodaime.org website) for people to access information about the doctrine. According to Madrinha Salomé, the availability of accurate and well-explained information allows members and visitors to resolve their doubts and avoids questions for the leaders: ‘The transmission of clear and concise information helps to save time and energy in administration’.

Padrinho João stated that he most frequently uses the sources that contain the norms of the rituals, such as the santodaime.org website and the ICEFLU communication networks. He reported using various means of communication, such as Messenger, WhatsApp and emails, which are also used to disseminate information to the adepts. The official Santo Daime website (santodaime.org) is a source of information with regard to accessing recordings of hymns and checking pronunciations – ‘something very important because we are outside Brazil’. Padrinho João emphasized, however, that spiritual and esoteric matters continue only to be shared orally.

Discussion

After identifying the characteristics of the interviewees, with the interviews we sought to understand from their reports what the function and responsibilities of each of the respondents were, and consequently the nature of the work and attributes of the Padrinhos and Madrinhas. From the data obtained, it was possible to identify aspects that allowed us to understand more about the role of the religious leader in Santo Daime and its relationship with the doctrine.

It is important to highlight that all churches have an administrative structure and are subject to a hierarchy, in which the Padrinho and/or Madrinha represent the highest level of leadership. Thus, the importance of the leaders in the conduct and administration of the church’s assets and the entire structure linked to the church is evident, as they are the main people who are responsible for the management of the church and the decision-making on its routines. This hierarchization is defined by De Cássia Machado and Rodrigues Barbosa (2018), who point out that religious organizations also need to be based on foundations that allow their functioning, especially since the organizational structure of churches is essential for the exercise of their activities. The importance of the set of beliefs and practices developed by the leaders should also be emphasized, and how they are used to gather around the church and its precepts subjects who follow the doctrine of Santo Daime (see Passos, 2006). According to Passos, religious leaders are responsible for building faith communities, as well as animating and encouraging their members by sustaining community life based on their actions and motivations.

Regarding searching for information, it was shown that the information needs of the leaders surveyed are mainly linked to religious and spiritual aspects, especially the Santo Daime ceremonies. However, the search for general knowledge to assist in the resolution of administrative and management issues of the church was also evident. Specifically, it was observed that the interviewees need to seek information on conducting ceremonies in certain situations, as reported by Padrinho João when he needed information, for example, about the fundamentals of the doctrine, such as the rites of baptism, marriage and other ceremonies, and consulted the primary sources of the church.

Dankasa (2016) reports a similar result when describing the pattern of the daily life information needs of Catholic clerics in northern Nigeria. According to Dankasa, the participants discussed some of the information needs in their daily life that resulted from the very nature of being a cleric. This included the need for information on church teachings, sermons/homilies and the resolution of pastoral issues to meet the demands of their ministry or for continuous knowledge acquisition.

Regarding the information search behaviour and use of information by these leaders related to their needs, they pointed out the use of different means and sources, both analogue and digital, to inform themselves about the daily routine of their church. It should be noted that tools such as documents filed in church secretariats and technological bases were mentioned, as well as printed
and electronic newsletters, emails, messaging platforms such as WhatsApp and Messenger, websites, the Santo Daime documentation centre, landlines and mobile phones, and social networks. Particularly during the years of the COVID-19 pandemic, the use of digital media for the dissemination of information related to religion, as well as the performance of religious ceremonies, intensified.

The use of technological tools, to a greater or lesser extent, by the interviewees should also be noted, which is in line with the Michels’ (2014) research, which investigated how church leaders in Nova Scotia experienced the search for information and observed aspects in the practice of these religious, such as the frequent use of new information technologies in their ceremonies and rituals.

Still, the relationship between the Santo Daime religion and the production and use of information occurs, as Dankasa (2016) points out in his study in Nigeria. Regarding the search for and use of information by Santo Daime leaders, the research also indicates that this religion has its own information culture, based on orality and ritualistic and mystical experiences. Also, as Dankasa (2016) points out in his work, in this study on Santo Daime leaders, the author inserted the concepts of information science, anthropology and the history of religions. The author also used his own experience as a member of the Santo Daime religion and as an information professional to offer deeper reflections on the topic. Similarly, Lindele Gunton (2011) describes her personal experience as a member of a Christian church and an information professional to reflect on the subject, and although she did not conduct empirical data collection with church participants, she proposes some research questions for future studies.

Regarding the information passed on and disseminated by the religious leaders interviewed, it was noted that it was mainly related to ceremonies and celebrations, such as weddings and baptisms, and ‘uniforms’ and other matters of a religious nature related to services and their dynamics. One of the main challenges of online communication is ensuring clarity and coherence in the messages exchanged. As pointed out by Choo (2006), the objective of passing on information that aims to promote and facilitate its sharing is a fundamental aspect for the creation of meaning, the construction of knowledge, and decision-making. However, this objective may not be achieved if the information is ambiguous, vague, or incomplete.

Similar to the information behaviour demonstrated by the Santo Daime leaders interviewed for this study, according to Borlund and Pharo (2019), the information needs belonged to different domains of social life — specifically, in this case, the need to find information that supported them in carrying out their administrative work and as spiritual leaders.

Regarding the type, motivation, path and meaning of the Santo Daime doctrine for the leaders, and what led them to their current position in the church hierarchy, there are similarities and differences between the spirituality of the Santo Daime leaders and that of Christian clerics — for example, the data presented by authors such as Allen (1987), Dankasa (2015), De Cássia Machado and Rodrigues Barbosa (2018), Lambert (2010), Michels (2014), Phillips (1992), Porcella (1973), Roland (2008a, 2008b), Saleh and Bakar (2013) and Wicks (1999) points out that the spirituality of the Santo Daime leaders is not the same as that of the Christian clergy. Bakar (2013) comments that in most research carried out in the field of information behaviour in religious contexts, the participants are defined as professionals who engage with information resources to fulfil their functions as preachers, administrators and counsellors. This behaviour is contrary to the reports of the Santo Daime leaders in the current study, whose profile, described in the contextualization of the interviewees, indicates that there is no professionalism or specific training required to assume their function in the doctrine.

Finally, the reflections offered by the interviewees are in line with the perceptions of De Cássia Machado (2019), who states that the support of religious leaders helps in the edification of a religion in its spiritual and social aspects, and thus their primary function is to take care of and transmit religious principles, given their responsibility to pass on sacred teachings, which must be preserved and disseminated, and maintain their originality.

**Dynamics of the circulation of information in Santo Daime**

The objective of the analysis was to describe and understand the information behaviour of the leaders of the Santo Daime religion, who are responsible for guiding its followers and managing the administrative and ritual issues of the religion. To this end, we investigated how these leaders seek and use information to support the development of their functions and the performance of religious ceremonies.

It is important to note that the nuances and depth of information needs are better understood in light of their domain and purpose, since it allows us to understand in more depth the context of the research and its motivations, considering that among the main objectives of communication within religious institutions is the maintenance and dissemination of beliefs and ideals, highlighting that it must occur in an organized
and systematic way so that its purposes are achieved. Regarding the results obtained from the interviews with the Santo Daime leaders, it is possible to affirm that institutional communication still occurs informally – predominantly through the transfer of information in a random, verbal way, with an emphasis on orality; this was confirmed by the interviewees, who emphasized the transfer of information among members during meetings and the rituals of the group. The importance of technologies was highlighted, especially the use of mobile phones with their multiple functions, as well as WhatsApp, although the use of computers, virtual social networks, and applications such as Messenger and email is also common.

Regarding the issue of age, although it was not the object of study in this research, it emerged during the interviews. Therefore, it is important to reflect on this issue, since it was noted that both of the younger leaders, Padrinho João and Madrinhina Maria, reported more effective and frequent use of technologies, pointing out more exchanges. This is in line with a concept currently under debate that deals with the generations of digital immigrants (older people who have become technologically ‘literate’) and digital natives (people who were born during or after the advent of the Internet and the ‘technological revolution’ arising from new information, communications and knowledge technologies). It should also be noted that both of the younger interviewees emphasized more constant use of technological resources in church routines and communication with other people and units, while Padrinho Basílio, the oldest of the interviewees, reflected more on aspects related to the Santo Daime tradition and spiritual messages. In this sense, further readings into and deepening of the gender and generational categories are appropriate, which are reflected in the uses of technologies in the daily practice and information behaviour of Santo Daime members.

It was shown that the leaders are hierarchically responsible for passing on the most important information. However, it is possible to verify that the church is not structured in a vertical way, providing other members with access to the information necessary for participation in ceremonies, among other things. In addition, Santo Daime maintains an updated website, which contains a memory centre and an online documentation centre, in addition to other information that allows the monitoring of the routines and teachings of the doctrine. The churches also have a routine presence on social networks, with updated profiles and actions in groups such as WhatsApp, Instagram and Facebook.

The construction of a well-planned and applied information network will increase the possibilities of improving communication among members, since the findings suggest, if not a thoughtful expansion project, then a desire and a perspective for the growth of Santo Daime, which has been spreading to several countries. In this sense, especially considering that Santo Daime has a worldwide network of churches, with significant expansion of its centre and, predictably, also of its members, effective institutional communication with the use of available technological resources, which are easily accessible and on a large scale, would enable and facilitate the exchange of information between the leadership and its members, and vice versa.

**Conclusion: the need to expand knowledge of Santo Daime**

Due to the lack of studies addressing the topic, it would be desirable to conduct research on the information behaviour of members of the religion to cross-check the perception of how information reaches users, given the importance of external communication as part of the information process. As for the expected results, it should be noted that we have presented a conceptual framework that illustrates how information can be used for learning within the church, considering four main areas: growing in faith, developing relationships, managing the church, and responding to religious knowledge. We have also sought to discuss how these aspects, linked to the field of research, support the expansion of knowledge in areas linked to the sciences of religion, which has still
been little addressed. Finally, we believe that studies aimed at deepening knowledge in this field can help, together with information science, to foster awareness of the impact that involvement with information has on the learning experience and its prioritization in community contexts.

Finally, regarding the results obtained, it has been demonstrated that the most used sources of information are the Daimist doctrine, personal experience, and contact with other leaders and the institution. Above all, information is sought mainly to guide the participants in rituals, solve problems, improve knowledge and strengthen faith. The information is used in a critical, reflective and creative way, always seeking consistency with the Daimist principles. Thus, it can be affirmed that this research contributes to the understanding of the information behaviour of a little-studied social group, and the appreciation of cultural and religious diversity in the information society.

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Appendix 1

Semi-structured interview guide

1. Introduction
   a) Presentation of the researcher and purpose of the interview.
   b) Explanation of how the data will be treated confidentially and anonymously.

2. Personal and religious background
   a) Characterization of the interviewee (colour, age, nationality).
   b) Questions about their involvement in the Santo Daime religion (time of dedication, hierarchical position, knowledge of the doctrine).

3. Roles and responsibilities
   a) Discussion on the role of a leader.
   b) Discussion on responsibilities within the Santo Daime doctrine.

4. Information behaviour (identification of information needs, information seeking, devices, media and sources used in information seeking, use and sharing)
   a) Questions about the sources of information used in the performance of the role of religious leader.
   b) Exploration of methods of searching for information relevant to the practice and doctrine of Santo Daime.
   c) Discussion on the use of traditional media (books, magazines, etc.) and new media (Internet, social networks, etc.) in obtaining information.
   d) Questions about the use of electronic devices, such as smartphones and computers, in the religious context.
   e) The exploitation of the use of communication applications, such as WhatsApp, for information exchange and communication with the members of the doctrine.
   f) Discussion on the challenges and benefits of using these technologies in the dissemination of religious information.

5. Conclusion
   a) Concluding questions to allow the interviewee to share additional information or make final considerations.
   b) Thank you for participating in the interview.
Abstracts

Making libraries accessible: the vision of Access City Award winners

Access City

Abstracts

Public library services for people with dementia: A study of students’ perceptions

Public multicultural libraries: A study on the information behaviour of the Terena people, Brazil
The role of users in the organization of digital information

During the implementation of the digital information system, the participants were divided into two main groups: the digital information system developers and the users. 

The group of developers includes the system administrators, technicians, and other personnel responsible for the system's implementation and maintenance. They are responsible for designing, implementing, and maintaining the system. 

The group of users includes all individuals who use the system, such as employees, students, and clients. They are responsible for utilizing the system for their intended purposes.

The developers can gather feedback from users through various methods, such as surveys, interviews, or focus groups. This feedback can help the developers identify areas for improvement and make necessary adjustments to the system.

On making libraries and museums more accessible for autistic people

As autistic individuals face different barriers in accessing libraries and museums, they require additional support to ensure their inclusion.

The following suggestions can help in making these institutions more accessible for autistic individuals:

1. Provide clear and concise information: Use simple language and visual aids to help autistic individuals understand the available services and resources.
2. Create a calming environment: Libraries and museums can be overwhelming for autistic individuals. Creating a calming environment can help reduce anxiety and stress.
3. Offer alternative sensory experiences: Many autistic individuals prefer alternative sensory experiences. Libraries and museums can provide alternative sensory experiences, such as guided tours or quiet spaces.
4. Provide additional support: Libraries and museums can provide additional support, such as trained staff who can assist autistic individuals in accessing the institution's resources.
5. Implement accessible technology: Libraries and museums can implement accessible technology, such as assistive technology for reading and listening, to help autistic individuals access information.

Towards a STEAM model for digital fluency skills: perceptions by students and teachers

The STEAM model is a framework that integrates science, technology, engineering, art, and mathematics to promote critical thinking and problem-solving skills.

In this study, the perspectives of students and teachers on the STEAM model were explored. The results indicate that the STEAM model is beneficial in helping students develop digital fluency skills. Teachers also perceive the STEAM model as a useful tool in promoting critical thinking and problem-solving skills.

The STEAM model can be implemented in schools by incorporating STEAM projects into the curriculum. This can help students develop digital literacy skills and prepare them for the future workforce.

The role of users in the organization of digital information

User participation in the organization and management of digital information is crucial. Users can provide valuable feedback and insights that can help improve the digital information system. 

By involving users in the organization process, developers can ensure that the system meets the users' needs and requirements. This can help promote user satisfaction and increase the system's effectiveness.

Additionally, involving users in the organization process can help reduce costs and increase efficiency. By leveraging user-generated data, developers can identify areas for improvement and make necessary adjustments to the system.

Overall, user participation in the organization process is essential for creating a successful digital information system. By involving users in the process, developers can ensure that the system meets the users' needs and requirements, promotes user satisfaction, and increases the system's effectiveness.

Sexual orientation for the LGBTQ+ community: Information sources and barriers

The LGBTQ+ community faces unique information-seeking challenges. 

Information sources such as family, friends, and personal experiences can provide valuable insights into the experiences of LGBTQ+ individuals. However, these sources may not always offer accurate and reliable information. 

Libraries and museums have a significant role in providing access to information sources for the LGBTQ+ community. By providing resources such as books, articles, and exhibitions, libraries and museums can help individuals gain a deeper understanding of LGBTQ+ issues.

Barriers to accessing information for the LGBTQ+ community include lack of access to resources, stigma, and discrimination. 

On making libraries and museums more accessible for autistic people

Libraries and museums can play a significant role in making information accessible for autistic individuals. 

Creating a calming environment, providing alternative sensory experiences, offering additional support, and implementing accessible technology can help make libraries and museums more accessible for autistic individuals.

The role of users in the organization of digital information

User participation in the organization of digital information is crucial. By involving users in the organization process, developers can ensure that the system meets the users' needs and requirements. This can help promote user satisfaction and increase the system's effectiveness.

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Gender perspective in the design of a SVoD search engine

Open Educational Resources on preservation - an overview
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Integrating print reference materials, curated digital collections, and information needs

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Guidelines on assigning subjects of theses and dissertations in repositories

Hristov, Radoslav Svetoslavov

Making libraries accessible: the vision of Access City Award winners

[Rendre les bibliothèques accessibles: la vision des lauréats de l’Access City Award]

Résumé:

Depuis plus de 10 ans, l’Access City Award, attribué par la Commission européenne en collaboration avec le Forum européen des personnes handicapées, fait prendre conscience des problèmes des personnes en situation de handicap tout en promouvant constamment l’accessibilité pour tous les citoyens européens. Si l’on considère l’ensemble des bonnes pratiques mises en œuvre par les lauréats pour proposer des environnements accessibles, Il est évident que l’accessibilité aux bibliothèques en fait non seulement partie, mais qu’elle est considérée comme une priorité pour de nombreuses villes. Cet article présente les activités relatives à l’accessibilité aux bibliothèques mises en place par 20 villes lauréates de l’Access City Award depuis sa première édition en 2011 jusqu’en 2022. Ces villes ont fait de l’accessibilité l’une de leurs préoccupations essentielles. L’article en conclut que, loin d’être un luxe, l’accessibilité aux bibliothèques est maintenant considérée comme normale et nécessaire, et que les résultats obtenus dans ce domaine par les lauréats de l’Access City Award peuvent inspirer toutes les villes qui font de l’accessibilité leur mission.

擴展信息行為邊界：與宗教領導者研究

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Public library services for people with dementia: A study of students’ perceptions

[Services des bibliothèques publiques à l’intention des personnes atteintes de démence: une étude de la perception des étudiants]

Faletar, Sanjica; Žilić, Tomislava
IFLA Journal, 50-1, 16–25

Résumé:
Les bibliothécaires ne sont généralement pas considérés comme des professionnels susceptibles de proposer des soins aux personnes atteintes de démence. Cependant, une recherche récente montre que les bibliothèques peuvent contribuer au développement de communautés adaptées à ces personnes, en proposant des événements consacrés à l’engagement cognitif et à l’inclusion sociale pour les personnes atteintes de démence, en fournissant des informations à leurs aidants et en éduquant le grand public à propos de la démence. Dans cet article, les auteurs présentent les résultats d’une étude qui a tenté de répondre aux questions de recherche suivantes: « Que savent les étudiants croates en bibliothéconomie et sciences de l’information au sujet de la démence? » et « Comment perçoivent-ils le rôle des bibliothèques publiques dans le développement de communautés adaptées aux personnes atteintes de démence? ». Basée sur une méthodologie quantitative, cette étude a été menée auprès de 183 étudiants en bibliothéconomie et sciences de l’information. Bien que les participants à l’étude ne sachent pas grand-chose à propos de la démence, ils estiment que les personnes atteintes de démence ont fondamentalement droit à des ressources et programmes bibliothécaires adaptés à leurs besoins spécifiques, et que les bibliothèques peuvent améliorer leur qualité de vie au sein de la communauté.

Multicultural libraries: A study on the information behaviour of the Terena people, Brazil

[Bibliothèques multiculturelles: une étude du comportement à l’égard de l’information du peuple Terena au Brésil]

Teixeira, Lilian Aguilar; Terra, Ana Lúcia; Almeida Júnior, Oswaldo Francisco de; Urquiza, Antônio Hilário Aguilera
IFLA Journal, 50-1, 26–41

Résumé:
Cet article rend compte d’une étude du comportement à l’égard de l’information du peuple Terena, une communauté indigène brésilienne. L’objectif de cette étude est de présenter et d’analyser les données collectées à propos de ce comportement, pour établir un modèle afin de créer une bibliothèque multiculturelle assortie d’une perspective socioculturelle, dans le cadre d’un projet de recherche de doctorat. Pour collecter les données, une étude qualitative et explicative a été menée au sein de cette structure ethnographique. Entre 2021 et 2022, des rencontres et des entretiens sur le terrain ont eu lieu avec 18 participants issus des peuples indigènes de la communauté Bananal. L’analyse des données montre que leur comportement à l’égard de l’information était influencé par des facteurs culturels. Il est par conséquent essentiel de tenir compte des aspects multiculturels dans ce contexte et de veiller à ce que l’information aborde la question des diversités culturelles, en favorisant la visibilité sociale des peuples indigènes et en évitant leur exclusion. De futures études devraient viser à améliorer l’accès multiculturel à l’information, en développant des stratégies inclusives qui prennent en considération les perspectives et les connaissances indigènes.

On making libraries and museums more accessible for autistic people

[Rendre les bibliothèques et les musées plus accessibles aux personnes autistes]

Bjørkeli Svaler, Tirill
IFLA Journal, 50-1, 42–52

Résumé:
Cet article examine comment les bibliothèques et musées peuvent devenir plus accessibles, et par conséquent aussi plus inclusifs, pour les utilisateurs autistes. Par le biais d’un court questionnaire, d’une analyse documentaire et d’une brève étude de cas, il évalue les mesures à prendre afin de rendre ces endroits plus accessibles à cette partie de la population. 126 personnes ont répondu au questionnaire, dont 12 avaient été diagnostiquées autistes et 28 s’estimaient être autistes. Les résultats montrent que plus de la moitié des participants rencontrent des difficultés dues à une surcharge sensorielle, aux interactions sociales et à l’anxiété dans ces endroits. Une liste d’idées sur la façon de rendre ces espaces mieux adaptés aux personnes autistes est proposée en conclusion, y compris différentes dispositions tenant compte des aspects sensoriels et sociaux.
Sexual orientation for the LGBTQ+ community: Information sources and barriers.

[L’orientation sexuelle pour la communauté LGBTQ+: sources d’information et obstacles.]

Clavijo-Toledano, Marina; Úbeda-Cano, Noelia; Heredero-Cardona, Laia; Boté-Vericad, Juan-José

IFLA Journal, 50-1, 53–63

Résumé:
Cette étude vise à identifier les obstacles que rencontrent les membres de la communauté LGBTQ+ (lesbiennes, gays, bisexuels, transgenres, queers, autres) quand ils recherchent des informations sur l’orientation sexuelle. Cette étude a utilisé une méthodologie qualitative, basée sur un questionnaire auquel ont répondu divers groupes au sein de cette communauté. Les résultats montrent que les personnes ayant répondu au questionnaire utilisaient de préférence Internet pour rechercher des informations, en raison de l’abondance de ressources, de la facilité d’accès et de l’anonymat. Cependant, elles l’estimaient insuffisant pour déterminer leur sexualité, à cause de la présence d’informations erronées et de commentaires blessants de la part d’autres utilisateurs. De plus, seuls quelques-uns des participants à l’étude connaissaient l’existence de bibliothèques spécialisées LGBTQ+. Ils pensaient que le manque de ressources financières incitait ces bibliothèques à sélectionner certaines ressources plutôt que d’autres. Les bibliothèques peuvent par conséquent jouer un rôle déterminant pour renseigner la communauté LGBTQ+ en rassemblant des collections en rapport avec leur orientation sexuelle. Proposer des informations fiables à la communauté LGBTQ+ pourrait permettre de surmonter des obstacles.

Towards a STEAM model for digital fluency skills: perceptions by students and teachers

[Vers un modèle STEAM pour les aptitudes de maîtrise numérique: les perceptions des étudiants et des professeurs]

Encheva, Marina; Tammaro, Anna Maria; Conti, Giulia; Maasilta, Mari; Yancheva, Gergana; Zlatkova, Plamena

IFLA Journal, 50-1, 75–92

Résumé:
La translittération nécessite des aptitudes, une pensée critique et des actes basés sur une maîtrise du numérique dans un contexte technologique. Ce concept est fondé sur les connaissances et les compétences à acquérir pour apprendre ainsi que pour éviter les faux contenus, mais n’est actuellement pas intégré à une approche STEAM. Le projet TLIT4U Erasmus + (TLIT4U – Améliorer les aptitudes de translittération par le biais des jeux sérieux) porte sur les compétences en matière de translittération et identifie la formation STEAM et les jeux dits « sérieux » comme une approche pour les acquérir. Dans sa première phase, le projet TLIT4U visait à expliquer le cadre STEAM pour en faire un modèle de formation à l’apprentissage reposant sur la recherche. Les partenaires ont organisé un atelier de formation avec les étudiants de leurs universités respectives, appartenant à diverses disciplines. Ensuite, les partenaires ont

The role of users in the organization of digital information

[Le rôle des utilisateurs dans l’organisation des informations numériques]

Silva, Patricia; Terra, Ana Lúcia

IFLA Journal, 50-1, 64–74

Résumé:
Avec l’évolution des plateformes numériques, les utilisateurs lambda peuvent participer à l’organisation des connaissances numériques. C’est ce qui a donné naissance à la folksonomie, également appelée indexation sociale, et à l’obligation pour les services d’information de faire participer les utilisateurs à l’organisation de leurs collections numériques. Cet article présente une étude de cas sur l’implication des utilisateurs d’un musée et archive universitaire dans l’indexation d’un ensemble de ressources, dans le cadre d’un projet de conservation numérique. Le principal objectif de cette étude était d’analyser les libellés suggérés par l’utilisateur moyen ainsi que d’identifier et d’expliquer les critères utilisés pour choisir et attribuer les termes servant à représenter le contenu des documents. Les résultats répartissent les réponses par catégories en se basant sur l’analyse du contenu, et comparent également les libellés attribués par les étudiants avec les termes d’indexation utilisés par les professionnels des sciences de l’information. Bien que les étudiants n’étaient pas familiers des méthodes appliquées par ces professionnels, ils avaient acquis suffisamment de discernement pour comprendre la nécessité de la validation des termes et reconnaître que la sélection des termes est un choix subjectif.
proposé des entretiens et des groupes de discussion avec les professeurs impliqués dans le projet TLIT4U. Cet article présente les principales conclusions et les questions encore en suspens mises en évidence par l’étude comparative de TLIT4U.

Cultural Heritage on the Semantic Web: The Europeana Data Model

[Le patrimoine culturel sur le Web sémantique: le modèle de données Europeana]

Silva, Ana Luisa; Terra, Ana Lúcia

IFLA Journal, 50-1, 93–107

Résumé:

Le Web sémantique permet de relier des données sur le Web et structure les informations afin qu’elles puissent être utilisées par les humains et les machines. En outre, il explicite les relations entre les données, permettant la création de données liées. Par le biais d’une étude documentaire, les principes et technologies à la base des données liées sont présentés, notamment le cadre de description des ressources, et des modèles sont développés à l’intention des bibliothèques, archives et musées. Europeana regroupe le patrimoine culturel numérique d’institutions européennes et a développé un modèle suivant les principes des données liées. Pour mieux comprendre ce modèle de données, Europeana est présenté avec des exemples de deux approches de représentation, illustrant les avantages de l’enrichissement des métadonnées dans la découverte des informations. L’expérience de l’université de Coimbra à l’égard d’Europeana est brièvement expliquée. Enfin, l’article évoque les défis auxquels doivent faire face les institutions chargées du patrimoine culturel pour adopter ces modèles et libérer leurs informations du carcan qui les enserrre, en tirant parti du potentiel qu’offrent les données liées.

Prejudice, but no pride: Portuguese Universal Decimal Classification labelling sexual orientation

[Des préjugés, mais pas d’orgueil ni pride: la classification décimale portugaise qualifiant l’orientation sexuelle]

Vicente, Paulo Miguel Oliveira; Terra, Ana Lúcia; Freitas, Maria Cristina Vieira de; Cardoso, Maria Manuela Tavares de Matos

IFLA Journal, 50-1, 108–117

Résumé:

Un catalogage critique vise à étudier les cas d’injustice sociale, de falsification, de préjugés négatifs, de terminologies blessantes et de structures hiérarchiques hégémoniques et oppressives dans la représentation des communautés et des identités au sein de systèmes d’organisation. Cette étude a pour but de fournir une analyse critique de la représentation de l’orientation sexuelle dans la classification décimale universelle (CDU) portugaise, basée sur une méthode d’analyse du contenu qualitatif. Les résultats montrent que le principe d’exhaustivité ne se manifeste pas dans la représentation de l’orientation sexuelle. L’absence du terme hétérosexualité reflète l’hégémonie hétéronormative, alors que la minorisation du lesbianisme, mais pas de l’homosexualité masculine, reflète l’hégémonie patriarcale. La représentation de l’orientation sexuelle transmet la pathologisation historique des orientations sexuelles autres que l’hétérosexualité. La CDU portugaise véhicule des préjugés négatifs et donne une représentation erronée de l’orientation sexuelle de façon irréconciliable avec la réalité actuelle. Il faut encourager une pensée critique au sein de la communauté bibliothécaire et revoir et mettre à jour rapidement la CDU.

Gender perspective in the design of a SVoD search engine

[Approche sexospécifique dans la conception du moteur de recherche d’une plateforme numérique de vidéos à la demande]

Díaz Martínez, Lara; Pérez López, Davinia

IFLA Journal, 50-1, 118–137

Résumé:

La plupart du temps, la conception interactive discrimine involontairement certains groupes d’individus, et les plateformes de vidéo à la demande font souvent l’objet d’une conception interactive. Cet article propose une introduction à l’approche sexospécifique de la conception d’une expérience d’utilisateur (EU) pour le moteur de recherche d’une plateforme numérique de vidéos à la demande. Par essence, l’EU inclut les besoins des utilisateurs afin de supprimer les obstacles que ceux-ci rencontrent quand ils veulent avoir une expérience productive, simple et agréable. Ce projet a été mené en utilisant des méthodes et techniques éprouvées en matière d’EU. La conception finale fournit un prototype de moteur de recherche avancé au sein des plateformes de vidéos à la demande et inclut tous les éléments dans le système
de filtrage du catalogue principal. Elle supprime les différences entre les sexes et encourage l’émancipation des femmes, fournissant ainsi une expérience dans laquelle les utilisateurs se sentent confortables, satisfaits et heureux.

Open Educational Resources on preservation - an overview

[Ressources éducatives ouvertes sur la conservation: une vue d’ensemble]
Milosˇevic´, Marija; Horvat, Ines; Hasenay, Damir
IFLA Journal, 50-1, 138–150
Résumé:
Ces dix dernières années, de nombreux projets et initiatives ont été consacrés aux ressources éducatives ouvertes (REO) afin de permettre un meilleur accès à l’éducation, mais aussi d’améliorer les pratiques éducatives officielles. Le projet DECriS Erasmus+ est l’une de ces initiatives et a notamment pour objectif intellectuel de produire une nouvelle ressource éducative ouverte basée sur la conservation. Planifier et concevoir une telle ressource nécessite de comprendre le contenu qui constitue le domaine complexe de la conservation. Cela constitue aussi la base pour mener des recherches sur les REO disponibles dans ce domaine. L’article vise à offrir une vue d’ensemble des REO consacrées à la conservation, en étudiant des plateformes de REO, en trouvant des REO consacrées à la conservation et en les analysant en regard du contexte théorique de la conservation. Cela permet de comprendre quelles REO existent dans le domaine de la conservation, ainsi que faire des recommandations sur la façon dont une nouvelle REO devrait être conçue.

Integrating print reference materials, curated digital dlications, and information needs

[Intégrer les sources de référence imprimées, les collections numériques et les besoins en information]
Makarova, Olga; Ashcraft, Katherine
IFLA Journal, 50-1, 151–159
Résumé:
Cet article étudie le paysage actuel de la recherche sur fond d’évolution des besoins en informations, ainsi que la nécessité d’un accès numérique aux ressources des bibliothèques. Il aborde les sources de référence imprimées, en particulier les bibliographies, et présente les solutions possibles pour améliorer leur pertinence et leur attrait comme point de référence stable. Plusieurs collections numérisées créées à partir des documents de référence bibliographiques sont mises en évidence comme un moyen de réintroduire ces documents en tant que source d’information fiable et accessible. L’article conclut en proposant des orientations futures pour étudier l’usage de sources consultables imprimées ainsi que les points essentiels pour modifier les services de référence et de recherche d’une bibliothèque universitaire.

Guidelines on assigning subjects of theses and dissertations in repositories

[Recommandations pour désigner les sujets de thèse et de dissertations dans les dépôts]
Fujita, Mariangela Spotti Lopes; Panuto, Jessica Cristina
IFLA Journal, 50-1, 160–169
Résumé:

Expanding information behaviour boundaries: a study with religious leaders

[Repousser les limites du comportement informationnel: une étude des chefs religieux]
Rodrigues, Evandro Ribeiro; Terra, Ana Lúcia
IFLA Journal, 50-1, 170–183
Résumé:
Le comportement informationnel est un domaine d’étude très productif des sciences de l’information, bien que certains contextes d’étude soient encore peu explorés, notamment les pratiques religieuses et spirituelles, en particulier celles en rapport avec les religions minoritaires. Cette étude s’intéresse par conséquent au comportement informationnel de chefs religieux du Santo Daime, une religion originaire de l’Amazonie brésilienne. Une recherche exploratoire basée sur une approche qualitative et des entretiens semi-directifs avec quatre chefs de cette doctrine a été menée. Les principales sources d’information utilisées sont des documents sur la religion Santo Daime, l’expérience personnelle, le contact avec d’autres chefs et avec l’institution. Des informations sont recueillies afin de guider les participants au cours du rituel, de résoudre des problèmes administratifs, d’améliorer les connaissances et de renforcer la foi. Utilisées de façon critique, réfléctive et créative, elles visent à établir une cohérence avec les principes du Santo Daime. Les résultats de l’étude peuvent aider à comprendre le comportement informationnel de ce groupe social peu connu et à apprécier la diversité culturelle et religieuse au sein de la société.

Making libraries accessible: the vision of Access City Award winners

(Höchtkoteln zugänglich machen: die Vision der Gewinner des Access City Award)

Hristov, Radoslav Svetoslav
IFLA Journal, 50-1, 7–15

Zusammenfassung:

Public library services for people with dementia: A study of students’ perceptions

(Öffentliche Bibliotheksdienste für Menschen mit Demenz: Eine Studie über die Wahrnehmungen von Studierenden)

Faletar, Sanjica; Žilić, Tomislava
IFLA Journal, 50-1, 16–25

Zusammenfassung:
Zusammenfassung:


On making libraries and museums more accessible for autistic people
(Wie man Bibliotheken und Museen für Autisten besser zugänglich macht)

Bjørkeli Svaler, Tirill
IFLA Journal, 50-1, 42–52

Zusammenfassung:


Sexual orientation for the LGBTQ+ community: Information sources and barriers.
(Sexuelle Orientierung für die LGBTQ+-Gemeinschaft: Informationsquellen und Barrieren.)

Clavijo-Toledano, Marina; Úbeda-Cano, Noelia; Heredero-Cardona, Laia; Boté-Vericad, Juan-José
IFLA Journal, 50-1, 53–63

Zusammenfassung:


The role of users in the organization of digital information
(Die Rolle von Nutzer*innen bei der Organisation von digitalen Informationen)

Silva, Patricia; Terra, Ana Lúcia
IFLA Journal, 50-1, 64–74
Zusammenfassung:

Towards a STEAM model for digital fluency skills: perceptions by students and teachers

(Auf dem Weg zu einem STEAM-Modell für digitale Kompetenz: Wahrnehmungen von Schülerinnen/Schülern und Lehrkräften)

Encheva, Marina; Tammaro, Anna Maria; Conti, Giulia; Maasilta, Mari; Yancheva, Gergana; Zlatkova, Plamena

IFLA Journal, 50-1, 75–92

Zusammenfassung:

Cultural Heritage on the Semantic Web: The Europeana Data Model

(Kulturelles Erbe im Semantic Web: Das Europeana-Datenmodell)

Silva, Ana Luisa; Terra, Ana Lúcia

IFLA Journal, 50-1, 93–107

Zusammenfassung:
Prejudice, but no pride: Portuguese Universal Decimal Classification labelling sexual orientation

(Vorurteile, aber kein Stolz: Universelle Dezimalklassifikation in Portugal zur Kennzeichnung der sexuellen Ausrichtung)

Vicente, Paulo Miguel Oliveira; Terra, Ana Lúcia; Freitas, Maria Cristina Vieira de; Cardoso, Maria Manuela Tavares de Matos

IFLA Journal, 50-1, 108–117

Zusammenfassung:

Gender perspective in the design of a SVoD search engine

(Geschlechterperspektive bei der Entwicklung einer SVoD-Suchmaschine)

Díaz Martínez, Lara; Pérez López, Davinia

IFLA Journal, 50-1, 118–137

Zusammenfassung:

Open Educational Resources on preservation - an overview

(Offene Bildungsressourcen zur Bewahrung - ein Überblick)

Milošević, Marija; Horvat, Ines; Hasenay, Damir

IFLA Journal, 50-1, 138–150

Zusammenfassung:
Integrating print reference materials, curated digital dollections, and information needs

(Makarova, Olga; Ashcraft, Katherine
IFLA Journal, 50-1, 151–159)

Zusammenfassung:

Guidelines on assigning subjects of theses and dissertations in repositories

(Fujita, Mariângela Spotti Lopes; Panuto, Jessica Cristina
IFLA Journal, 50-1, 160–169)

Zusammenfassung:

Expanding information behaviour boundaries: a study with religious leaders

(Rodrigues, Evandro Ribeiro; Terra, Ana Lúcia
IFLA Journal, 50-1, 170–183)

Zusammenfassung:
Making libraries accessible: the vision of Access City Award winners
Обеспечение доступности библиотек: видение лауреатов премии Access City Award
Hristov, Radoslav Svetoslavov
Христов, Радослав Светославов
Журнал ИФЛА, 50-1, 7–15
Аннотация:
Вот уже более 10 лет премия Access City Award, присуждаемая Европейской комиссией совместно с Европейским форумом инвалидов, повышает осведомленность и озабоченность проблемами людей с ограниченными возможностями, продолжая при этом способствовать обеспечению доступности для всех граждан Европы. При рассмотрении всей палитры передовых практик обеспечения доступной среды, реализованных лауреатами премии, бросается в глаза, что доступность библиотек является не только частью подобных практик, но и устанавливается в качестве приоритета для многих городов. В данном документе представлены мероприятия по обеспечению доступности библиотек в 20 городах, удостоенных премии Access City, с момента ее первого выхода в 2011 по 2022 год, при этом внимание в портфолио было сосредоточено на этом типе доступности. Автор приходит к выводу о том, что доступность библиотек - это далеко не роскошь, а необходимая норма жизни. Достижения лауреатов премии Access City Award в этой области являются источником вдохновения для всех городов, которые считают доступность библиотек своей миссией.

Public library services for people with dementia: A study of students’ perceptions
Услуги публичных библиотек для людей с деменцией: исследование восприятия учащихся
Faletar, Sanjica; Žilić, Tomislava
Фалетар, Санжица; Жилич, Томислава
Журнал ИФЛА, 50-1, 16–25
Аннотация:
Хотя библиотекари традиционно не признавались профессионалами, оказывающими помощь людям с деменцией, недавние исследования показывают, что библиотеки могут способствовать развитию сообществ, дружелюбно настроенных к таким людям. Они могут проводить мероприятия по когнитивному вовлечению и социальной интеграции для людей с деменцией, предоставлять информацию лицам, осуществляющим уход за ними, а также вести просветительскую деятельность относительно деменции в обществе. В этой статье авторы представляют результаты исследования, в котором была предпринята попытка ответить на следующие вопросы исследования: “Как много студенты библиотечного дела и информатики в Хорватии знают о деменции?” и “Как они воспринимают роль публичных библиотек в развитии сообществ, благоприятствующих развитию деменции?” Исследование было проведено с использованием количественной методологии среди 183 студентов, изучающих библиотечное дело и информатику. Хотя респонденты имели несколько скудные знания о деменции, они полагали, что люди с деменцией имеют неотъемлемое право пользования библиотечными материалами и право участия в программах, соответствующих их конкретным потребностям, и что библиотеки могут способствовать повышению качества их жизни в обществе.

Multicultural libraries: A study on the information behaviour of the Terena people, Brazil
Мультикультурные библиотеки: исследование информационного поведения народа Терена, Бразилия
Teixeira, Lilian Aguilar; Terra, Ana Lúcia; Almeida Júnior, Oswaldo Francisco de; Urquiza, Antônio Hilario Aguilera
Тейксейра, Лилиан Агилар; Терра, Ана Лусия; Алмейда Джуниор, Освальдо Франсиско де; Уркиза, Антонио Хиларио Агилера
Журнал ИФЛА, 50-1, 26–41
Аннотация:
В данной статье сообщается об исследовании информационного поведения народа Терена из бразильской общины коренных народов. Цель этого исследования - представить и проанализировать собранные данные об информационном поведении народа Терена, что послужит основой для предложения модели создания мультикультурной
On making libraries and museums more accessible for autistic people

Bjørkeli Svaler, Tirill

In this article, Bjørkeli Svaler and Tirill Bjørkeli Svaler discuss the analysis of how information behavior was influenced by their information behavior, as well as the importance of creating such conditions, which is crucial for the development of the cultural and social identity of indigenous peoples.

Sexual orientation for the LGBTQ+ community: Information sources and barriers.

Clavijo-Toledano, Marina; Úbeda-Can, Noelia; Heredero-Cardona, Laia; Boté-Vericad, Juan-José

This study is focused on the analysis of the impact of sexual orientation on the information behavior of users of specialized libraries for LGBTQ+. The study involved 18 randomly selected participants from the indigenous communities of the Granada region, with a focus on the use of the Internet for Internet searches and the use of electronic databases.

The role of users in the organization of digital information

Silva, Patricia; Terra, Ana Lúcia

This study examines the role of users in the organization of digital information, with a focus on the analysis of the impact of sexual orientation on the information behavior of users of specialized libraries for LGBTQ+. The study involved 18 randomly selected participants from the indigenous communities of the Granada region, with a focus on the use of the Internet for Internet searches and the use of electronic databases.
Аннотация:
С развитием цифровых платформ обычные пользователи получили возможность участвовать в организации цифровых знаний. Это привело к появлению фолкэкономии или социальной индексации и обязанности информационных служб интегрировать участие пользователей в организации своих цифровых коллекций. В данной статье представлено тематическое исследование вовлечения пользователей академического музея и архива в индексацию набора ресурсов в рамках проекта по цифровому сохранению. Основная цель этого исследования состояла в том, чтобы проанализировать ярлыки, предлагаемые среднестатистическим пользователем, а также определить и объяснить критерии, которые они использовали при выборе и присвоении терминов для представления содержания документов. Результаты классифицируют ответы на основе контент-анализа, а также сравнивают ярлыки, присвоенные учащимися, с терминами индексации, используемыми специалистами в области информатики (IS). Хотя студенты не были знакомы с методами профессионалов в области информационных технологий, они приобрели достаточную чувствительность для понимания необходимости проверки терминологии, а также смогли признать, что выбор термина является субъективным выбором.

Towards a STEAM model for digital fluency skills: perceptions by students and teachers
На пути к модели STEAM для развития навыков свободного владения цифровыми технологиями: восприятие студентами и преподавателями

Encheva, Marina; Tammara, Anna Maria; Conti, Giulia; Maasilta, Mari; Yancheva, Gergana; Zlatkova, Plamena
Энчева, Марина; Таммаро, Анна Мария; Конти, Джулия; Маасильта, Мари; Янчева, Гергана; Златкова, Пламена

Журнал ИФЛА, 50-1, 75–92

Аннотация:
Транслитерация предполагает навыки, критическое мышление и действия, основанные на свободном владении цифровыми технологиями в технологическом контексте. Эта концепция основана на знаниях и навыках, которые необходимо приобрести для обучения, а также для предотвращения поддельного контента, но в настоящее время не является интегрированной в подход STEAM. Проект TLIT4U Erasmus + (TLIT4U - Улучшение навыков транслитерации с помощью серьезных игр) фокусируется на компетенциях в области транслитерации и определяет модель образования STEAM и серьезные игры как подход к приобретению подобных навыков. На первом этапе TLIT4U стремилась уточнить структуру STEAM для перехода к модели обучения, основанной на запросах. Партнеры организовали семинар со студентами своих соответствующих университетов с различным дисциплинарным опытом. Впоследствии партнеры организовали интервью и фокус-группы с преподавателями,участвующими в проекте TLIT4U. В данной статье представлены основные выводы и открытые вопросы, подтвержденные сравнительным анализом TLIT4U.

Cultural Heritage on the Semantic Web: The Europeana Data Model
Культурное наследие в семантической сети: модель данных Europeana
Silva, Ana Luisa; Terra, Ana Lucia
Сильва, Ана Луиза; Терра, Ана Луисия

Журнал ИФЛА, 50-1, 93–107

Аннотация:
Семантическая сеть позволяет связывать данные в Сети и структурировать информацию с целью использования людьми и машинами. Кроме того, эта сеть создает явные отношения между данными, позволяя создавать связи между ними. На основе обзора литературы представлены принципы и технологии, лежащие в основе связанных данных, а именно структура описания ресурсов и модели, разработанные для библиотек, архивов и музеев. Модель данных Europeana объединяет цифровое культурное наследие европейских учреждений, разработав модель, которая следует принципам связанных данных. Для более глубокого понимания вопроса была представлена модель данных Europeana с примерами двух подходов к представлению и преимуществами обогащения метаданными при поиске информации. Кратко объясняется опыт Университета Коимбрь с моделью данных Europeana. Наконец, мы упоминаем о трудностях, с которыми сталкиваются учреждения культурного наследия.
при внедрении таких моделей. Им важно освободить свою информацию от той разрозненности, в которой она находится теперь, используя потенциал, предоставляемый системой связанных данных.

Prejudice, but no pride: Portuguese Universal Decimal Classification labelling sexual orientation

Предубеждение, но не гордость: Португальская универсальная десятичная классификация сексуальной ориентации

Vicente, Paulo Miguel Oliveira; Terra, Ana Lúcia; Freitas, Maria Cristina Vieira de; Cardoso, Maria Manuela Tavares de Matos

Висенте, Пауло Мигель Оливейра; Терра, Ана Люсия; Фрейтас, Мария Кристина Виейра де; Кардозо, Мария Мануэла Таварес де Матос

Журнал ИФЛА, 50-1, 108–117

Аннотация:
Критическая каталогизация направлена на изучение случаев социальной несправедливости, искажения информации, негативных предубеждений, оскорбительной терминологии, а также гегемонистских и деспотичных иерархических структур в репрезентации сообществ и идентичностей в системах организации знаний. Целью данного исследования является критический анализ репрезентации сексуальной ориентации в португальской универсальной десятичной классификации (УДК), основанный на методе качественного контент-анализа. Результаты показывают, что принцип исчерпываемого не проявляется в репрезентации сексуальной ориентации. Отсутствие термина “гетеросексуальность” отражает гетеронормативную гегемонию, в то время как миноритизация лесбиянства, но не гомосексуальности женщин, отражает патриархальную гегемонию. Представление сексуальной ориентации несет в себе историческую патологизацию сексуальных ориентаций, отличных от гетеросексуальности. Португальский УДК передает негативные предубеждения и искажает сексуальную ориентацию способом, несовместимым с современной реальностью. В библиотечном сообществе необходимо поощрять критическое мышление, при этом УДК необходимо оперативно пересматривать и обновлять.

Gender perspective in the design of a SVoD search engine

Гендерный аспект в разработке поисковой системы SVoD

Díaz Martínez, Lara; Pérez López, Davinia

Диас Мартинез, Лара; Перес Лопес, Давиния

Журнал ИФЛА, 50-1, 118–137

Аннотация:
Большинство проектов взаимодействия неосознанно дискриминируют определенные группы людей, и платформы видео по запросу часто включаются в эти проекты взаимодействия. В данной работе представлен гендерный подход к дизайну пользовательского интерфейса (UX) поисковой системы платформы видео по запросу. UX по своей сути учитывает потребности пользователей, чтобы устранить препятствия, с которыми пользователи сталкиваются на пути к продуктивному, легкому и удовлетворительному опыту. Данный проект был реализован с использованием устоявшихся методов и техник интерфейса UX. Окончательный дизайн представляет собой прототип расширенной поисковой системы на платформах SVoD и включает в себя все элементы системы фильтрации основного каталога. Такой подход устраняет гендерный разрыв и способствует расширению прав и возможностей женщин, тем самым обеспечивая положение, при котором пользователи чувствуют себя комфортно, испытывают удовлетворение и довольны собой.

Open Educational Resources on preservation - an overview

Открытые образовательные ресурсы по сохранению - обзор

Milošević, Marija; Horvat, Ines; Hasenay, Damir

Милошевич, Мария; Хорват, Инес; Хасеней, Дамир

Журнал ИФЛА, 50-1, 138–150

Аннотация:
С целью создания более доступной системы образования, а также улучшения формальных образовательных практик в течение последнего десятилетия появилось большое количество

Gender perspective in the design of a SVoD search engine

Гендерный аспект в разработке поисковой системы SVoD

Díaz Martínez, Lara; Pérez López, Davinia

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инициатив и проектов, связанных с открытыми образовательными ресурсами. Проект DECriS Erasmus+ также является подобной инициативой, и в качестве одного из ее интеллектуальных результатов планируется подготовить новое предложение относительно сохранности. Планирование и создание предложения, основанного на сохранности, должно основываться на понимании содержания, составляющего сложную область сохранности. Это также обеспечивает основу для проведения исследований доступных предложений в данной области. Цель статьи — предоставить обзор доступных предложений относительно сохранности, основанный на изучении других платформ, поиске предложений по сохранности и анализе их в соответствии с теоретическими основами процесса сохранения. Исследование дало представление о том, какие предложения существуют в области сохранности, а также о том, каким образом следует создавать новое предложение.

**Integrating print reference materials, curated digital dlections, and information needs**

Интеграция печатных справочных материалов, кураторских цифровых коллекций и информационных потребностей

*Makarova, Olga; Ashcraft, Katherine*

Журнал ИФЛА, 50-1, 151–159

**Abstract:**

Целью данной статьи является изучение текущего исследовательского ландшафта меняющихся информационных потребностей, а также изучение потребности в цифровом доступе к библиотечным материалам. Здесь обсуждаются печатные справочные источники, в частности библиографии, а также представлены возможные решения для повышения их актуальности и привлекательности в качестве стабильной точки отсчета. Несколько цифровых кураторских коллекций, созданных с использованием библиографических справочных материалов, выделяются как способ повторного предоставления этих материалов в качестве надежного и доступного источника информации. В заключение излагаются будущие направления изучения использования печатных консультативных источников и основные рекомендации по корректировке справочной и исследовательской помощи в академической библиотеке.

**Guidelines on assigning subjects of theses and dissertations in repositories**

Рекомендации по распределению тем дипломных работ и авторефератов в репозиториях

*Fujita, Mariângela Spotti Lopes; Panuto, Jessica Cristina*

Журнал ИФЛА, 50-1, 160–169

**Abstract:**

Целью данного исследования является изучение того, как университетские репозитории управляют представлением предметов при самоархивировании своих информационных ресурсов. В качестве метода было использовано исследовательское и качественное изучение предмета для постановки диагноза с применением электронного исследовательского анализа в хранилищах, а также метод анализа расшифровок тезисов и индивидуальных устных протоколов авторов диссертаций в процессе самоархивирования. Анализ результатов в выборке репозиториев бразильского университета показал, что в десяти из них действует политика самоархивирования, а в пяти содержатся рекомендации автору по представлению темы и качеству метаданных. Анализ транскрипции устных протоколов авторов показывает, что все авторы считают ключевое слово важным для представления контента. Исследователи пришли к выводу, что процесс самоархивирования имеет основополагающее значение для распространения научной информации и широкого доступа общественности к ней.

**Expanding information behaviour boundaries: a study with religious leaders**

Расширение границ информационного поведения: исследование с участием религиозных лидеров

*Rodrigues, Evandro Ribeiro; Terra, Ana Lúcia*

Журнал ИФЛА, 50-1, 170–183
Аннотация:
Информационное поведение является весьма продуктивной областью исследований в информатике, хотя некоторые контексты исследований все еще мало изучены, такие как религиозные и духовные практики, особенно связанные с религиями меньшинств. Таким образом, в этом исследовании изучалось информационное поведение религиозных лидеров в Санто-Дайме, религии, берущей начало в бразильской Амазонии. Было проведено предварительное исследование с использованием качественного подхода и полуструктурированных интервью с четырьмя лидерами доктрины. Наиболее часто используемыми источниками информации являются документы о религии дайме, личный опыт, контакты с другими лидерами и учреждением. Запрос информации необходим для руководства участниками ритуала, решения административных проблем, улучшения знаний и укрепления веры. Это происходит особенным образом с использованием критики, рефлексии и творчества в стремлении к согласованию с принципами даймизма. Полученные результаты могут способствовать пониманию информационного поведения этой малознакомой социальной группы, а также признанию культурного и религиозного разнообразия в обществе.

Public library services for people with dementia: A study of students’ perceptions
(Servicios de bibliotecas públicas para personas con demencia: Un estudio de las percepciones de los estudiantes)

Faletar, Sanjica; Zilic, Tomislava
IFLA Journal, 50-1, 16–25

Resumen:
A pesar de que, tradicionalmente, no se ha reconocido a los bibliotecarios como profesionales que prestan atención a las personas con demencia, investigaciones recientes indican que las bibliotecas pueden contribuir al desarrollo de comunidades sensibles a la demencia. Pueden ofrecer actividades de compromiso cognitivo e inclusión social para personas con demencia, proporcionar información a sus cuidadores y educar al público en general sobre la demencia. En este artículo, los autores presentan los resultados de un estudio que intentaba dar respuesta a las siguientes preguntas de investigación: “¿Cuánto saben los estudiantes de biblioteconomía y ciencias de la información de Croacia sobre la demencia?” y “¿Cómo perciben el papel de las bibliotecas públicas en el desarrollo de comunidades sensibles a la demencia?”. El estudio se realizó utilizando una metodología cuantitativa entre 183 estudiantes de biblioteconomía y ciencias de la información de Croacia sobre la demencia. Durante más de 10 años, el Premio Ciudad Accesible, concedido por la Comisión Europea junto con el Foro Europeo de la Discapacidad, ha aumentado la concienciación y la preocupación por los problemas de las personas con discapacidad, al tiempo que ha continuado promoviendo la accesibilidad para todos los ciudadanos europeos. Si observamos toda la paleta de buenas prácticas destinadas a proporcionar entornos accesibles que han llevado a cabo los galardonados, resulta sorprendente que la accesibilidad de las bibliotecas no sólo forme parte de ellas, sino que se establezca como una prioridad para muchas ciudades. Este documento presenta las actividades de accesibilidad a las bibliotecas de 20 ciudades galardonadas con el premio Ciudad Accesible desde su primera edición celebrada en 2011 hasta 2022 que se han centrado en este tipo de accesibilidad en su programa. Se ha llegado a la conclusión de que, lejos de ser un lujo, la accesibilidad de las bibliotecas es ahora una normalidad necesaria, y los avances realizados por los ganadores del Premio Ciudad Accesible en este campo son una inspiración para todas las ciudades que adoptan la accesibilidad como su misión.
Multicultural libraries: A study on the information behaviour of the Terena people, Brazil

(Bibliotecas multiculturales: Un estudio sobre el comportamiento informativo del pueblo Terena, Brasil)

Teixeira, Lilian Aguilar; Terra, Ana Lúcia; Almeida Júnior, Oswaldo Francisco de; Urquiza, Antônio Hilario Aguilera

IFLA Journal, 50-1, 26–41

Resumen:
Este artículo da cuenta de una investigación sobre el comportamiento informativo del pueblo terena de una comunidad indígena brasileña. El objetivo de este estudio es presentar y analizar los datos recogidos sobre el comportamiento informativo del pueblo terena, que servirán de base para proponer un modelo de creación de una biblioteca multicultural vinculado a una perspectiva sociocultural en el marco de un estudio de investigación de doctorado. Para la recogida de datos se llevó a cabo un estudio cualitativo y explicativo dentro de la estructura etnográfica. Entre 2021 y 2022 se realizaron reuniones sobre el terreno y entrevistas con 18 participantes en la investigación pertenecientes a los pueblos indígenas de la comunidad de Bananal. El análisis de los datos muestra que su comportamiento informativo estaba influido por factores culturales, por lo que resulta esencial abordar las cuestiones multiculturales en este contexto. Es importante garantizar que la información aborde las diversidades culturales, fomentando la visibilidad social de los pueblos indígenas y evitando su exclusión. Las investigaciones que se realicen en el futuro deberán mejorar el acceso multicultural a la información mediante el desarrollo de estrategias inclusivas que tengan en consideración las perspectivas y los conocimientos indígenas.

On making libraries and museums more accessible for autistic people

(Sobre cómo hacer que las bibliotecas y los museos sean más accesibles para las personas autistas)

Bjørkeli Svaler, Tirill

IFLA Journal, 50-1, 42–52

Resumen:
Este artículo explora cómo pueden las bibliotecas y los museos ser más accesibles, y a su vez también más inclusivos, para los usuarios con autismo. A través de una pequeña encuesta, una revisión bibliográfica y un breve estudio de caso, evalúa qué pasos deben seguirse para que estos lugares sean más accesibles para esta parte de la población. La encuesta contó con 126 participantes, de los que 12 estaban diagnosticados de autismo y 28 se autodiagnosticaron como autistas. La encuesta indica que más de la mitad de los participantes tuvieron problemas con la sobrecarga sensorial, las interacciones sociales y la ansiedad en estos lugares. En la conclusión se ofrece una lista de ideas sobre cómo hacer que estos espacios sean más adecuados para las personas con autismo, incluyendo diferentes tipos de disposiciones sensoriales y sociales.

Sexual orientation for the LGBTQ+ community: Information sources and barriers.

(Orientación sexual para la comunidad LGBTQ+: Fuentes de información y barreras)

Clavijo-Toledano, Marina; Úbeda-Cano, Noelia; Hereder-Cardona, Laia; Boté-Vericad, Juan-José

IFLA Journal, 50-1, 53–63

Resumen:
El objetivo de este estudio es identificar las barreras informativas que encuentra la comunidad LGBTQ+ (lesbianas, gays, bisexuales, transexuales, queer, otros) a la hora de buscar información sobre orientación sexual. Para realizar este estudio se optó por una metodología cualitativa basada en un cuestionario que respondieron varios grupos de la comunidad. Las conclusiones indican que los encuestados prefieren Internet a la hora de buscar información debido a la abundancia de recursos, la fácil accesibilidad y el anonimato. Sin embargo, les pareció insuficiente para determinar su sexualidad debido a la presencia de información inexacta y comentarios hirientes de otros usuarios. Además, sólo unos pocos de los encuestados conocían la existencia de bibliotecas especializadas en LGBTQ+. Creían que la falta de recursos financieros hace que estas bibliotecas seleccionen unos recursos en lugar de otros. Por lo tanto, las bibliotecas pueden desempeñar un papel clave en el servicio a la comunidad LGBTQ+ conservando las colecciones en relación con su orientación sexual. Así podrían superarse las barreras mediante el acceso a información fiable para la comunidad LGBTQ+.
The role of users in the organization of digital information

(El papel de los usuarios en la organización de la información digital)

Silva, Patricia; Terra, Ana Lúcia
IFLA Journal, 50-1, 64–74

Resumen:
Con la evolución de las plataformas digitales, los usuarios de a pie tuvieron la oportunidad de participar en la organización del conocimiento digital. Esto dio lugar a las folcsonomías o indexación social y al deber de los servicios de información de integrar la participación de los usuarios en la organización de sus colecciones digitales. Este documento presenta un estudio de caso sobre la implicación de los usuarios de un museo y archivo académico en la indización de un conjunto de recursos dentro de un proyecto sobre preservación digital. El principal objetivo de este estudio era analizar las etiquetas sugeridas por el usuario medio, e identificar y explicar los criterios que utilizaban para elegir y asignar los términos que representaban el contenido de los documentos. Los resultados categorizan las respuestas basándose en el análisis de contenido, y también comparan las etiquetas asignadas por los estudiantes con los términos de indexación utilizados por los profesionales de las Ciencias de la Información (CI). Aunque los estudiantes no estaban familiarizados con los métodos de los profesionales de las CI, adquirieron la sensibilidad suficiente para entender la necesidad de la validación de términos y reconocer que la selección de términos es una elección subjetiva.

Towards a STEAM model for digital fluency skills: perceptions by students and teachers

(Hacia un modelo STEAM para las competencias de fluidez digital: percepciones de alumnos y profesores)

Encheva, Marina; Tammaro, Anna Maria; Conti, Giulia; Maasilta, Mari; Yancheva, Gergana; Zlatkova, Plamena
IFLA Journal, 50-1, 75–92

Resumen:
La transalfabetización conlleva habilidades, pensamiento crítico y acciones basadas en la fluidez digital en un contexto tecnológico. Este concepto se basa en los conocimientos y habilidades que deben lograrse para el aprendizaje, así como para evitar contenidos falsos, pero en la actualidad no está integrado en un planteamiento STEAM. El proyecto Erasmus + TLIT4U (TLIT4U - Improving Transliteracy Skills through Serious Games) se centra en las competencias de transalfabetización e identifica la educación STEAM y los juegos serios como el enfoque para adquirirlas. En su primera fase, TLIT4U pretendía clarificar el marco STEAM hacia un modelo formativo de aprendizaje basado en la indagación. Los colaboradores organizaron un Taller con los estudiantes de sus respectivas universidades, con diferentes formaciones disciplinarias. Posteriormente, los colaboradores organizaron entrevistas y grupos de debate con los profesores participantes en el proyecto TLIT4U. En este documento se presentan las conclusiones principales y las cuestiones pendientes que evidenció el estudio comparativo de TLIT4U.

Cultural Heritage on the Semantic Web: The Europeana Data Model

(Patrimonio cultural en la Web Semántica: El modelo de datos de Europeana)

Silva, Ana Luisa; Terra, Ana Lúcia
IFLA Journal, 50-1, 93–107

Resumen:
La Web Semántica permite enlazar datos en la web y estructurar la información para su uso por parte de humanos y máquinas. Además, explicita las relaciones entre los datos, lo que permite la creación de datos enlazados. A partir de la revisión bibliográfica, se presentan los principios y tecnologías subyacentes a los datos enlazados, en concreto el Marco de Descripción de Recursos, y los modelos desarrollados para bibliotecas, archivos y museos. Europeana agrega el patrimonio cultural digital de las instituciones europeas habiendo desarrollado un modelo que sigue los principios de los datos enlazados. Para una comprensión más profunda de este modelo, se presenta el Modelo de Datos de Europeana con ejemplos de dos métodos de representación y las ventajas del enriquecimiento de metadatos en el descubrimiento de información. Se explica brevemente la experiencia de la Universidad de Coimbra con Europeana. Por último, mencionamos los retos a los que se enfrentan las instituciones del patrimonio cultural para adoptar estos modelos y liberar su información de los silos en
los que se encuentra, aprovechando el potencial que ofrecen los datos enlazados.

Prejudice, but no pride: Portuguese Universal Decimal Classification labelling sexual orientation

(Prejuicio, pero sin orgullo: La Clasificación Decimal Universal portuguesa etiquetando la orientación sexual)

Vicente, Paulo Miguel Oliveira; Terra, Ana Lucía; Freitas, Maria Cristina Vieira de; Cardoso, Maria Manuela Tavares de Matos

IFLA Journal, 50-1, 108–117

Resumen:
La Catalogación Crítica pretende estudiar los casos de injusticia social, tergiversación, sesgos negativos, terminologías ofensivas y estructuras jerárquicas hegemónicas y opresivas en la representación de comunidades e identidades en los sistemas de organización del conocimiento. El objetivo de este estudio es proporcionar un análisis crítico de la representación de la orientación sexual en la Clasificación Decimal Universal (CDU) portuguesa, basado en el método de análisis de contenido cualitativo. Los resultados muestran que el principio de exhaustividad no se manifiesta en la representación de la orientación sexual. La ausencia del término heterosexualidad refleja la hegemonía heteronormativa, mientras que la minorización del lesbianismo, pero no de la homosexualidad masculina, refleja la hegemonía patriarcal. La representación de la orientación sexual conlleva la patologización histórica de las orientaciones sexuales distintas de la heterosexualidad. La CDU portuguesa transmite prejuicios negativos y tergiversa la orientación sexual de una forma irreconciliable con la realidad actual. Es necesario fomentar el pensamiento crítico en la comunidad bibliotecaria y revisar y actualizar sin demora el CDU.

Gender perspective in the design of a SVoD search engine

(Perspectiva de género en el diseño de un motor de búsqueda SVoD)

Díaz Martínez, Lara; Pérez López, Davinia

IFLA Journal, 50-1, 118–137

Resumen:
La mayoría de los diseños de interacción discriminan inconscientemente a determinados grupos de personas, y las plataformas de video bajo demanda suelen incluirse en estos diseños de interacción. Este trabajo presenta una introducción de la perspectiva de género en el diseño de la experiencia de usuario (UX) de un motor de búsqueda de una plataforma de video bajo demanda. En su esencia, la UX consiste en tener en cuenta las necesidades del usuario para eliminar los obstáculos que éste encuentra en su camino hacia una experiencia productiva, fácil y placentera. Este proyecto se ha llevado a cabo utilizando métodos y técnicas de UX establecidos. El diseño final presenta un prototipo de diseño de un motor de búsqueda avanzado dentro de las plataformas SVoD y incluye todos los elementos del sistema de filtrado del catálogo principal. Elimina la brecha de género y promueve el empoderamiento de las mujeres, proporcionando así una experiencia en la que las usuarias se sientan cómodas, satisfechas y complacidas.

Open Educational Resources on preservation - an overview

(Recursos educativos abiertos sobre conservación - descripción general)

Milosˇević, Marija; Horvat, Ines; Hasenay, Damir

IFLA Journal, 50-1, 138–150

Resumen:
En la última década ha habido multitud de iniciativas y proyectos que se ocupan de los Recursos Educativos Abiertos con el objetivo tanto de hacer más accesible la educación como de mejorar las prácticas educativas formales. El proyecto DECrIS Erasmus+ es una iniciativa de este tipo y, como uno de sus resultados intelectuales, tiene previsto elaborar un nuevo REA sobre conservación. La planificación y la creación de un REA basado en la conservación deben basarse en la comprensión del contenido que comprende el complejo campo de la conservación. Esto también proporciona la base para realizar una investigación sobre los REA disponibles en este campo. El objetivo de este documento es ofrecer una visión general de los REA disponibles sobre conservación basándose en la investigación de las plataformas de REA, la búsqueda de REA sobre conservación y su análisis en función de los antecedentes teóricos sobre conservación. Esto permitió comprender qué tipos de REA existen en el ámbito
de la conservación, así como informar sobre cómo debe crearse un nuevo REA.

**Integrating print reference materials, curated digital dollections, and information needs**

(Integración de materiales de referencia impresos, colecciones digitales curadas y necesidades de información)

*Makarova, Olga; Ashcraft, Katherine*

*IFLA Journal, 50-1, 151–159*

**Resumen:**

El objetivo de este documento es explorar el panorama actual de la investigación sobre las cambiantes necesidades de información y la demanda de acceso digital a los materiales bibliotecarios. Se debaten las fuentes de referencia impresas, en particular las bibliografías, y se presentan posibles soluciones para aumentar su relevancia y atractivo como punto de referencia estable. Destacan varias colecciones digitales curadas creadas con materiales de referencia bibliográfica como forma de reintroducir estos materiales en su calidad de fuente de información fiable y accesible. El documento concluye con futuras orientaciones para el estudio del uso de fuentes de consulta impresas y conclusiones principales para ajustar la asistencia de referencia e investigación en las bibliotecas académicas.

**Guidelines on assigning subjects of theses and dissertations in repositories**

(Directrices para la asignación de temas de tesis y tesinas en repositorios)

*Fujita, Mariângela Spotti Lopes; Panuto, Jessica Cristina*

*IFLA Journal, 50-1, 160–169*

**Resumen:**

El objetivo de este estudio es investigar la forma en que los repositorios universitarios orientan la representación temática en el autoarchivo de sus recursos de información. Se debaten las transcripciones de los Protocolos verbales individuales de los autores de tesis y tesinas durante el autoarchivo. El análisis de los resultados de la muestra de repositorios universitarios brasileños puso de manifiesto que diez cuentan con una política de autoarchivo y cinco incluyen orientación al autor sobre la representación temática y la calidad de los metadatos. El análisis de la transcripción de los protocolos verbales de los autores revela que todos ellos consideran que la palabra clave es importante para la representación del contenido. La investigación determinó que el proceso de autoarchivo es fundamental para la difusión de la información científica y el amplio acceso a la comunidad.

**Expanding information behaviour boundaries: a study with religious leaders**

(Ampliar los límites del comportamiento informativo: un estudio con líderes religiosos)

*Rodrigues, Evandro Ribeiro; Terra, Ana Lúcia*

*IFLA Journal, 50-1, 170–183*

**Resumen:**

El comportamiento informativo es un área de investigación muy productiva en la Ciencia de la Información, aunque algunos contextos de estudio siguen estando poco explorados, como las prácticas religiosas y espirituales, en particular las relacionadas con las religiones minoritarias. Así, este estudio investigó el comportamiento informativo de los líderes religiosos del Santo Daime, una religión originaria de la Amazonia brasileña. Se llevó a cabo una investigación exploratoria con un enfoque cualitativo y entrevistas semiestructuradas con cuatro líderes doctrinales. Las fuentes de información más utilizadas son los documentos sobre la religión Daime, la experiencia personal, el contacto con otros líderes y la institución. Se recaba información para orientar a los participantes en el ritual, resolver problemas administrativos, mejorar los conocimientos y reforzar la fe. Utilizado de forma crítica, reflexiva y creativa, busca la coherencia con los principios daimistas. Las conclusiones pueden contribuir al entendimiento del comportamiento informativo de este grupo social poco estudiado y a la apreciación de la diversidad cultural y religiosa en la sociedad.