

REVIEW

## Capacitating Librarians with Wikidata Literacy for Managing Wikipedia Information Resources: Implications to Libraries

### Capacitación de bibliotecarios en alfabetización de Wikidata para gestionar los recursos de información de Wikipedia: Implicaciones para las bibliotecas

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**Cite as:** Oyighan D, Oladokun BD, Ogwula JA. Capacitating Librarians with Wikidata Literacy for Managing Wikipedia Information Resources: Implications to Libraries. Management (Montevideo). 2025; 3:146. <https://doi.org/10.62486/agma2025146>

Submitted: 06-02-2024

Revised: 21-06-2024

Accepted: 01-03-2025

Published: 02-03-2025

Editor: Ing. Misael Ron 

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#### ABSTRACT

**Introduction:** the integration of Wikidata literacy in librarianship presents a significant opportunity to enhance the curation and management of Wikipedia's structured data while improving library metadata practices. This paper explores the role of Wikidata literacy in equipping librarians with the skills necessary to contribute to Wikipedia's knowledge ecosystem and improve information services within libraries.

**Method:** the paper employed the narrative review to examine the role of wiki-data literacy in equipping librarians with the skills necessary to contribute to Wikipedia's knowledge-base.

**Results:** the study examines key aspects of Wikidata literacy, including its role in structuring and organizing information, its impact on library cataloging and metadata practices, and its influence on library-user interactions. Furthermore, it highlights the implications of Wikidata literacy for improving information literacy programs and fostering collaboration among libraries and Wikimedia communities. Despite the numerous benefits, the paper identifies several challenges in capacitating librarians with Wikidata literacy, such as technical complexity, lack of structured training programs, institutional reluctance, and resource limitations.

**Conclusions:** the paper concludes that Wikidata literacy is essential for modern libraries to remain relevant in the digital age, facilitating open access, improving knowledge discovery, and strengthening the role of libraries as key contributors to global information networks.

**Keywords:** Wikidata Literacy; Librarianship; Wikipedia Information Management; Metadata Practices; Linked Open Data.

#### RESUMEN

**Introducción:** la integración de la alfabetización en Wikidata en el ámbito bibliotecario representa una oportunidad significativa para mejorar la curaduría y gestión de los datos estructurados de Wikipedia, al tiempo que optimiza las prácticas de metadatos en las bibliotecas. Este artículo explora el papel de la alfabetización en Wikidata para dotar a los bibliotecarios de las habilidades necesarias para contribuir al ecosistema de conocimiento de Wikipedia y mejorar los servicios de información dentro de las bibliotecas.

**Método:** el estudio empleó una revisión narrativa para examinar el papel de la alfabetización en Wikidata en la capacitación de bibliotecarios con las competencias necesarias para contribuir a la base de conocimientos de Wikipedia.

**Resultados:** el estudio analiza aspectos clave de la alfabetización en Wikidata, incluyendo su papel en la estructuración y organización de la información, su impacto en la catalogación bibliotecaria y las prácticas de metadatos, así como su influencia en las interacciones entre bibliotecas y usuarios. Además, destaca las implicaciones de la alfabetización en Wikidata para la mejora de los programas de alfabetización informacional y la promoción de la colaboración entre bibliotecas y comunidades Wikimedia. A pesar de sus numerosos beneficios, el artículo identifica varios desafíos en la capacitación de bibliotecarios en Wikidata, como la complejidad técnica, la falta de programas de formación estructurados, la renuencia institucional y las limitaciones de recursos.

**Conclusiones:** el artículo concluye que la alfabetización en Wikidata es esencial para que las bibliotecas modernas sigan siendo relevantes en la era digital, facilitando el acceso abierto, mejorando el descubrimiento del conocimiento y fortaleciendo el papel de las bibliotecas como contribuyentes clave a las redes globales de información.

**Palabras clave:** Alfabetización en Wikidata; Bibliotecología; Gestión de Información en Wikipedia; Prácticas de Metadatos; Datos Abiertos Enlazados.

## INTRODUCTION

The rapid digital transformation of information management has necessitated the adoption of innovative technologies and collaborative knowledge systems. Wikidata, a structured knowledge base maintained by the Wikimedia Foundation, plays a crucial role in enhancing the accessibility, organization, and retrieval of information on Wikipedia and other Wikimedia projects. Unlike traditional metadata repositories, Wikidata operates as a linked open data (LOD) system, enabling seamless integration and interoperability across various digital platforms.<sup>(1)</sup> As a machine-readable, continuously updated knowledge graph, Wikidata serves as the backbone of Wikipedia's structured data, ensuring the accuracy, reliability, and semantic connectivity of information across multiple languages and disciplines. Given its significance in structuring and validating information resources, Wikidata literacy has become an essential competency for librarians in contemporary knowledge environments.

Wikidata was introduced in 2012 to address Wikipedia's need for structured data that could be centrally maintained and utilized across its various language editions. It functions as a knowledge graph where entities, concepts, and relationships are interconnected through a standardized schema, thereby enhancing the discoverability of knowledge. Unlike Wikipedia, which primarily consists of textual content, Wikidata is designed to store factual data in a structured format, facilitating machine learning applications, automated knowledge retrieval, and data analysis.<sup>(2)</sup>

For managing Wikipedia's information resources, Wikidata provides a single source of truth for factual content, reducing redundancy and inconsistencies across Wikipedia articles. For instance, if a change is made to an entity on Wikidata, it is automatically reflected in all Wikipedia pages that rely on that data, ensuring consistency and accuracy. Additionally, Wikidata supports citation tracking, scholarly metadata integration, and automated content validation, making it an invaluable tool for improving Wikipedia's credibility and research utility.<sup>(3)</sup> These capabilities highlight the necessity of equipping librarians with Wikidata literacy to enhance their role in information verification, curation, and dissemination.

Librarians serve as information custodians, responsible for ensuring the integrity, accessibility, and usability of knowledge resources. With the growing prominence of Wikidata as a research and metadata management tool, there is an urgent need to empower librarians with the skills to effectively engage with and contribute to this platform. Wikidata literacy encompasses competencies in linked data principles, semantic web technologies, structured data curation, and collaborative knowledge creation, all of which are essential in modern library and information science (LIS) practice. Capacitating librarians with Wikidata literacy is particularly significant for bridging the gap between traditional library metadata and contemporary digital knowledge systems. Many library catalogs and institutional repositories increasingly integrate Wikidata to enhance their metadata interoperability, expanding their reach beyond localized databases.<sup>(1)</sup> This integration allows libraries to connect their collections with global knowledge networks, increasing the discoverability and scholarly impact of their resources. Furthermore, Wikidata literacy enables librarians to actively contribute to Wikipedia's information ecosystem, ensuring that authoritative and well-researched content is readily accessible to the public. Moreover, Wikidata literacy fosters a culture of open knowledge, aligning with the principles of Open Science and Open Data. Librarians with Wikidata expertise can guide researchers and students in leveraging this platform for knowledge discovery, research assessment, and citation tracking.<sup>(3)</sup> This is particularly relevant in academic libraries, where scholars increasingly rely on linked data technologies for literature reviews, bibliometric analyses, and data-driven research.

The integration of Wikidata literacy into librarianship has far-reaching implications for managing Wikipedia's information resources and improving library services. One of the key impacts is the enhancement of information accuracy and quality control. Wikipedia, as a widely used knowledge resource, is often criticized for inconsistencies and unreliable sources. Librarians with Wikidata proficiency can actively contribute to curating and validating Wikipedia content, ensuring that factual information is accurately represented and supported by authoritative references.<sup>(4)</sup> Additionally, Wikidata literacy equips librarians with the skills to harness automated tools for knowledge organization. Through structured data modeling and entity linking, libraries can streamline cataloging processes, automate metadata management, and improve resource discoverability. This functionality aligns with broader trends in scholarly communication, where linked data systems are increasingly used for academic profiling and impact assessment.<sup>(2)</sup> Furthermore, capacitating librarians with Wikidata literacy has implications for digital preservation and sustainability. Many cultural heritage institutions and libraries are utilizing Wikidata to document historical records, maintain archival collections, and create linked open data repositories.

Beyond technical applications, Wikidata literacy also fosters collaborative engagement between libraries and Wikimedia communities. The Wikimedia movement has long advocated for partnerships with libraries to improve information equity and accessibility. Through initiatives such as #1Lib1Ref (One Librarian, One Reference) and Wikidata edit-a-thons, librarians can actively participate in enhancing Wikipedia's information integrity while simultaneously promoting their institutions' collections and expertise.<sup>(4)</sup> This collaboration not only enhances librarians' professional development but also positions libraries as integral contributors to the global knowledge ecosystem.

## DEVELOPMENT

### Understanding Wikidata and its Role in Managing Wikipedia Information

Wikidata is a free, collaboratively edited knowledge base designed to support the structured organization of information across Wikimedia projects, including Wikipedia. Launched in 2012 by the Wikimedia Foundation, Wikidata functions as a central repository for structured data, enabling seamless data sharing across different languages and platforms. Its primary purpose is to collect and maintain structured data to improve the accessibility, accuracy, and interoperability of information. This centralized approach eliminates redundancy, ensures consistency, and enhances the efficiency of data management within the Wikimedia ecosystem.<sup>(5)</sup> Wikidata operates on a data model composed of items, properties, and values. Each item represents a distinct concept or entity, identified by a unique Q-number (e.g., Q42 for Douglas Adams). Properties define the attributes of items, while values provide specific information related to those properties. This structure allows for the dynamic linking of data, fostering an interconnected web of knowledge that can be queried and visualized effectively.<sup>(6)</sup>

The relationship between Wikidata and Wikipedia is symbiotic, with Wikidata serving as the backbone for structured data within Wikipedia articles. While Wikipedia focuses on narrative content, Wikidata provides the factual, machine-readable data that supports infoboxes, references, and other data-driven elements across multiple language editions. This integration ensures that updates made in Wikidata automatically reflect across all linked Wikipedia articles, promoting consistency and reducing the manual workload for editors.<sup>(7)</sup> Wikidata's role extends beyond Wikipedia to other Wikimedia projects such as Wikimedia Commons and Wikivoyage, enhancing the interconnectedness of information across platforms. The centralized data repository allows for more efficient content management and provides a robust foundation for advanced functionalities like semantic search and automated content generation.<sup>(8)</sup>

Wikidata's importance in organizing and structuring information lies in its ability to standardize data representation, facilitate data interoperability, and support advanced data analytics. By providing a unified framework for data, Wikidata enables the aggregation and comparison of information from diverse sources, enhancing the reliability and comprehensiveness of knowledge resources.<sup>(9)</sup> One of Wikidata's key strengths is its multilingual capability, which ensures that data is accessible and usable across different linguistic contexts. This feature is particularly valuable in academic and research environments, where information needs to be disseminated globally. Furthermore, Wikidata supports complex queries through its SPARQL endpoint, allowing users to extract specific data sets for research and analysis purposes.<sup>(10)</sup>

In the context of libraries, Wikidata plays a pivotal role in enhancing metadata management, supporting digital scholarship, and promoting open access to information. Librarians can leverage Wikidata to improve cataloging practices, link library collections to global knowledge networks, and develop innovative information services. The integration of Wikidata into library workflows not only enriches the user experience but also fosters a culture of data literacy and collaborative knowledge creation.<sup>(11)</sup> Moreover, Wikidata's open and collaborative nature aligns with the principles of open science and open data, encouraging transparency, reproducibility, and community engagement in knowledge production. By contributing to and utilizing Wikidata, libraries and information professionals can play a crucial role in shaping the future of information management

and knowledge dissemination.<sup>(12)</sup>

### Capacitating Librarians with Wikidata Literacy

Wikidata literacy for librarians refers to the knowledge, skills, and competencies required understanding, utilizing, and contributing effectively to Wikidata as an open, structured, and linked data repository. This literacy encompasses the ability to navigate Wikidata's interface, comprehend its data models, and apply this knowledge to enhance information management, especially in the context of Wikipedia. Wikidata literacy extends beyond basic familiarity with the platform, involving a deep understanding of its role within the semantic web and linked open data ecosystems, as well as its application in library and information science.<sup>(13)</sup>

The importance of Wikidata literacy for librarians in managing Wikipedia information cannot be overstated. As information professionals, librarians are at the forefront of knowledge curation, dissemination, and preservation. Wikidata serves as a central repository that feeds structured data into Wikipedia, enhancing the accuracy, reliability, and discoverability of information. By equipping librarians with Wikidata literacy, libraries can improve the quality of Wikipedia content, making it more trustworthy and scholarly oriented. This capability also empowers librarians to contribute to the global knowledge commons, bridging gaps in content related to underrepresented subjects, languages, and regions.<sup>(14)</sup> Furthermore, Wikidata literacy enables librarians to integrate linked data into library catalogs, enriching metadata, and facilitating more sophisticated search and discovery tools.<sup>(15)</sup>

Methods for capacitating librarians with Wikidata literacy involve a multifaceted approach that includes formal training programs, workshops, collaborative projects, and continuous professional development. Structured training sessions, both in-person and online, can introduce librarians to the fundamentals of Wikidata, covering topics such as data modeling, querying with SPARQL, and best practices for data curation. Collaborative projects with Wikimedia communities provide hands-on experience, allowing librarians to apply their knowledge in real-world contexts, such as editing Wikidata entries related to library collections or academic resources.<sup>(16)</sup> Additionally, integrating Wikidata literacy into library and information science curricula ensures that emerging professionals are well-equipped with the necessary skills from the outset of their careers.

Professional development initiatives, such as webinars, conferences, and online courses, play a critical role in keeping librarians updated on the latest developments in Wikidata and linked data technologies. Partnerships with Wikimedia chapters and open knowledge organizations can also facilitate knowledge exchange and capacity building. Moreover, mentorship programs where experienced Wikidata contributors guide librarians through the intricacies of data contribution and management can significantly enhance learning outcomes.<sup>(16)</sup> By adopting these methods, libraries can create a knowledgeable workforce capable of leveraging Wikidata to improve information management, enhance resource discoverability, and contribute meaningfully to the global knowledge ecosystem.

### Wikidata Literacy and its implications for Libraries

Wikidata plays a pivotal role in curating and organizing knowledge on Wikipedia and other platforms. When librarians are equipped with Wikidata literacy, they can leverage this tool to improve information accuracy, develop innovative services, and strengthen the role of libraries as key contributors to the global knowledge ecosystem. The implications of Wikidata literacy for libraries are extensive, ranging from enhanced curation and management of Wikipedia information to more dynamic cataloging and metadata practices, improved information literacy programs, and increased collaboration among libraries.

One of the primary benefits of Wikidata literacy for libraries is the enhanced ability to curate and manage Wikipedia information. Wikipedia is one of the most widely used sources of information, yet its reliability depends on the quality of its data sources. Wikidata serves as a structured knowledge base that feeds into Wikipedia, improving the consistency and accuracy of information. By understanding Wikidata, librarians can actively contribute verified and well-structured data, ensuring that library-related topics, collections, and historical records are accurately represented. This active engagement positions librarians as knowledge stewards who can improve Wikipedia's role as a reliable reference tool.<sup>(4)</sup> Additionally, Wikidata's structured format allows libraries to integrate their data with Wikipedia, increasing the visibility of library collections and resources.

Wikidata literacy also contributes to improved information literacy programs and services. As libraries continue to serve as hubs for digital and information literacy, incorporating Wikidata into training sessions and instructional programs can empower users to engage with structured data critically. Teaching students, researchers, and the general public how to access, interpret, and contribute to Wikidata enhances their ability to evaluate sources, detect misinformation, and navigate the complexities of linked data.<sup>(2)</sup> Libraries that integrate Wikidata literacy into their workshops can offer hands-on experiences that develop data literacy skills, ultimately improving the overall research capabilities of users. This approach aligns with the growing need for libraries to go beyond traditional bibliographic instruction and equip patrons with competencies



relevant to the digital knowledge era.

Another significant implication of Wikidata literacy is its impact on library cataloging and metadata practices. Traditional cataloging has primarily relied on authority control systems and bibliographic standards such as MARC and Dublin Core. However, Wikidata introduces a dynamic, linked data approach that enhances metadata interoperability and discoverability. By incorporating Wikidata into cataloging workflows, libraries can move toward more interconnected and enriched metadata structures, allowing resources to be seamlessly linked across institutional repositories, knowledge bases, and digital platforms.<sup>(1)</sup> This shift represents an evolution in cataloging, where libraries transition from isolated metadata systems to a more open and collaborative knowledge framework. For instance, Wikidata's structured identifiers can be linked with traditional authority records, enhancing the visibility and accessibility of library collections in broader digital ecosystems.

In addition to cataloging, Wikidata literacy also influences library-user interactions and services. Libraries are increasingly engaging with users through digital platforms, and Wikidata provides an opportunity to enhance information retrieval and reference services. When librarians are proficient in Wikidata, they can offer advanced research assistance by helping users navigate structured datasets, locate authoritative sources, and contribute to open knowledge projects.<sup>(13)</sup> Moreover, Wikidata's multilingual capabilities enable libraries to support diverse user communities by offering structured data in multiple languages, thereby promoting inclusivity and accessibility. This feature is particularly valuable for academic and research libraries serving international audiences, as it allows information to be presented in various linguistic contexts while maintaining semantic consistency.

The potential for increased collaboration and knowledge sharing among libraries is another significant outcome of Wikidata literacy. Libraries have historically operated within networks and consortia to share resources, but Wikidata offers a more decentralized and open approach to knowledge collaboration. By contributing data to Wikidata, libraries can participate in global efforts to create and maintain structured, linked knowledge that benefits a wide range of users, from researchers to educators and the general public.<sup>(2)</sup> Additionally, libraries can collaborate with Wikimedia chapters, academic institutions, and cultural organizations to develop Wikidata projects that enhance the representation of scholarly and cultural heritage materials. Such initiatives promote open knowledge and reinforce libraries' roles as essential contributors to the digital information landscape.

### **Challenges faced in capacitating librarians with Wikidata literacy**

The increasing significance of Wikidata in knowledge organization, metadata management, and linked data initiatives has made it crucial for librarians to develop Wikidata literacy. This competency enables them to contribute structured data, curate Wikipedia-related information, and integrate linked data principles into library workflows. However, capacitating librarians with Wikidata literacy is fraught with challenges that range from technical barriers to institutional resistance, resource constraints, and evolving professional roles. Overcoming these obstacles requires a systematic approach to training, collaboration, and advocacy within the library profession.

One of the foremost challenges in developing Wikidata literacy among librarians is the technical complexity associated with linked data and Wikidata's underlying structure. Unlike traditional library cataloging systems that rely on predefined schemas, Wikidata employs an open, collaborative model based on triples (subject-predicate-object relationships), SPARQL queries, and entity linking. Many librarians, particularly those without a background in metadata or programming, may find this model difficult to grasp.<sup>(1)</sup> Additionally, the requirement to understand structured query languages such as SPARQL further complicates the learning process, creating a steep learning curve for librarians unfamiliar with computational approaches to knowledge management.

Another significant challenge is the lack of formalized training programs and structured learning pathways for Wikidata literacy. While some library associations and Wikimedia chapters offer workshops and tutorials, these initiatives are often sporadic and not integrated into formal library science curricula.<sup>(2)</sup> As a result, librarians who wish to develop expertise in Wikidata often rely on self-directed learning, which may not be sufficient for mastering advanced functionalities such as automated data ingestion, entity reconciliation, and knowledge graph construction. The absence of a standardized certification or competency framework further complicates efforts to institutionalize Wikidata literacy within the profession.

Institutional resistance and limited awareness of Wikidata's potential also present challenges in capacitating librarians. Many libraries, particularly those in traditional academic and public library settings, have yet to recognize the relevance of Wikidata as an essential tool for information management.<sup>(4)</sup> This lack of institutional buy-in results in limited support for training initiatives, reluctance to allocate resources for Wikidata projects, and insufficient encouragement for librarians to engage with the Wikimedia ecosystem. In some cases, library administrators may perceive Wikidata as merely an extension of Wikipedia rather than as a robust linked data repository with significant implications for metadata interoperability and knowledge discovery.

Resource constraints, including financial limitations and competing priorities, further hinder the adoption of Wikidata literacy initiatives. Many libraries operate under tight budgets, making it difficult to allocate

funds for specialized training, dedicated Wikidata projects, or hiring personnel with expertise in linked data.<sup>(4)</sup> Additionally, libraries that rely on proprietary integrated library systems (ILS) may face challenges in integrating Wikidata due to system compatibility issues and vendor restrictions. Without adequate financial and infrastructural support, efforts to capacitate librarians with Wikidata literacy remain fragmented and unsustainable.

Another challenge lies in the evolving nature of Wikidata itself. As an open, collaborative, and continuously expanding knowledge base, Wikidata undergoes frequent changes in data modeling, policies, and best practices. This dynamism requires librarians to engage in ongoing learning and adaptation, which can be difficult given their already demanding workloads.<sup>(17)</sup> Unlike traditional cataloging systems that remain relatively stable over time, Wikidata's crowdsourced nature means that librarians must stay updated on community guidelines, participate in discussions, and contribute actively to ensure data integrity. This level of engagement may be overwhelming for librarians who are already balancing multiple responsibilities.

Additionally, concerns about data quality and reliability hinder Wikidata adoption among librarians. While Wikidata follows a collaborative editing model, it lacks the same level of authority control found in traditional library cataloging systems. Errors, inconsistencies, and biases can emerge due to the open-editing nature of the platform.<sup>(18)</sup> Librarians who are accustomed to highly structured metadata standards may be hesitant to contribute to a system where data validation relies on community oversight rather than centralized control. Overcoming this skepticism requires targeted training that emphasizes Wikidata's verification mechanisms, referencing requirements, and integration with authoritative datasets.

Time constraints also play a critical role in limiting librarians' engagement with Wikidata. Many library professionals are already managing extensive workloads that include reference services, cataloging, digital literacy instruction, and institutional research support. Finding time to learn, experiment with, and contribute to Wikidata can be difficult within these competing demands.<sup>(13)</sup> Unlike traditional library skills that are integrated into daily workflows, Wikidata literacy often requires dedicated learning time, experimentation, and participation in Wikimedia communities—activities that may not be prioritized in time-strapped library environments.

### **Strategies for maximizing the benefits of Wikidata literacy**

Wikidata has emerged as a vital tool for knowledge organization, metadata enrichment, and linked data integration in libraries. However, to fully leverage its potential, librarians must adopt effective strategies for developing and applying Wikidata literacy. One of the most effective strategies for maximizing the benefits of Wikidata literacy is integrating it into library and information science (LIS) curricula. Many librarians acquire their foundational knowledge through formal education, making it crucial for LIS programs to introduce Wikidata as part of cataloging, metadata management, and linked data courses.<sup>(3)</sup> This ensures that new professionals enter the field with the necessary skills to navigate Wikidata's structured data environment. Additionally, hands-on training in querying Wikidata using SPARQL and contributing metadata to the platform can prepare librarians for real-world applications in bibliographic control and authority data management.

For Wikidata literacy to be effectively implemented in library environments, institutional support is essential. Library administrations should recognize Wikidata as a valuable tool for metadata enhancement and provide the necessary resources to train staff. Developing policies that encourage Wikidata contributions can help institutionalize its use within library workflows.<sup>(2)</sup> Policies may include guidelines on metadata alignment, data quality standards, and ethical considerations in contributing to an open knowledge platform. Furthermore, libraries can allocate funding for Wikidata projects, ensuring sustained engagement and impact. Given the evolving nature of Wikidata, librarians must engage in continuous professional development to stay updated on best practices. Organizing training workshops, webinars, and edit-a-thons can provide librarians with hands-on experience in contributing to Wikidata.<sup>(4)</sup> These sessions can focus on various aspects, including data modeling, metadata reconciliation, and linking library catalogs to Wikidata. Collaboration with Wikimedia chapters and digital scholarship centers can further enhance learning opportunities by providing expert guidance and mentorship.

Libraries can maximize the benefits of Wikidata literacy by using it to enhance metadata interoperability across platforms. Wikidata allows libraries to connect their bibliographic records with other global datasets, improving resource discoverability.<sup>(15)</sup> By integrating Wikidata into library catalogs and institutional repositories, librarians can create richer metadata that links authors, subjects, and publications with broader knowledge networks. Implementing Wikidata-based authority control can also improve name disambiguation and subject classification, benefiting researchers and library users alike. Also, Wikidata's structured data can be harnessed to support knowledge discovery and research initiatives in academic and research libraries. For example, librarians can use Wikidata queries to generate datasets that support digital humanities projects, citation analysis, and bibliometric research.<sup>(16)</sup> Additionally, linking scholarly outputs to Wikidata can enhance the visibility of institutional research outputs, ensuring that publications, datasets, and authors are connected in a

structured and machine-readable format.

Collaboration with Wikimedia communities and open knowledge initiatives can further expand the benefits of Wikidata literacy. Libraries can partner with Wikimedia chapters to host edit-a-thons, contribute to Wikimedia projects, and participate in linked data initiatives.<sup>(4)</sup> Engaging with the Wikimedia ecosystem allows librarians to contribute expertise in metadata curation and authority control while benefiting from the open knowledge infrastructure. Institutional collaborations with Wikimedia can also lead to joint research projects, funding opportunities, and increased visibility of library collections. To sustain engagement with Wikidata, libraries can explore automation tools that facilitate data contributions and updates. Tools such as OpenRefine, Pywikibot, and Wikibase allow for batch editing and reconciliation of metadata, reducing the manual workload for librarians.<sup>(16)</sup> Automating data ingestion processes ensures that library records remain updated and aligned with Wikidata's evolving dataset. Additionally, integrating Wikidata into cataloging workflows through APIs can streamline data exchange between library systems and Wikidata, enhancing efficiency and consistency.

A crucial aspect of maximizing Wikidata literacy is raising awareness about its potential benefits among library professionals and stakeholders. Many librarians remain unaware of Wikidata's role in enhancing metadata management and linked data initiatives.<sup>(2)</sup> Advocacy efforts should focus on demonstrating how Wikidata aligns with library values of open access, knowledge dissemination, and data interoperability. Librarians can publish case studies, present at conferences, and engage in discussions to highlight successful implementations of Wikidata in libraries. To ensure the credibility of Wikidata contributions, librarians must adopt strategies for maintaining data quality and addressing ethical concerns. Wikidata operates on a collaborative model, which can sometimes lead to inconsistencies and inaccuracies. Librarians should implement quality control measures such as verifying sources, standardizing metadata contributions, and adhering to Wikidata's referencing policies.<sup>(15)</sup> Additionally, ethical considerations, such as privacy concerns and representation of marginalized knowledge, should be integrated into Wikidata literacy training. Wikidata serves as an essential component of the broader linked open data (LOD) movement. Libraries can maximize the benefits of Wikidata literacy by aligning their digital initiatives with LOD principles. By publishing bibliographic metadata as linked open data through Wikidata, libraries contribute to a more interconnected and accessible global knowledge ecosystem.<sup>(19)</sup> Wikidata's role in authority control, entity disambiguation, and semantic enrichment further supports LOD initiatives, allowing libraries to transition from traditional cataloging systems to more dynamic, networked information structures.

## CONCLUSIONS

Capacitating librarians with Wikidata literacy is a crucial step toward enhancing their ability to curate, manage, and integrate structured data into library and information services. As demonstrated in this study, Wikidata plays a transformative role in improving the accessibility, accuracy, and interoperability of Wikipedia's information resources. By equipping librarians with the necessary skills to navigate and contribute to Wikidata, libraries can strengthen their role as custodians of knowledge in the digital era. The implications of Wikidata literacy for libraries are far-reaching. Librarians proficient in Wikidata can enhance the credibility of Wikipedia by ensuring that factual content is well-researched and accurately represented. Furthermore, Wikidata literacy fosters improved metadata management, enabling libraries to integrate linked data principles into cataloging and resource discovery. This integration enhances information retrieval, supports digital scholarship, and aligns library collections with global knowledge networks. Despite its benefits, the study highlights several challenges in capacitating librarians with Wikidata literacy. These challenges include technical complexity, limited training opportunities, institutional resistance, and resource constraints. Addressing these barriers requires a structured approach that incorporates formal education, professional development initiatives, and institutional support for Wikidata projects. Strategies such as collaborative engagement with Wikimedia communities, automation of data contributions, and continuous professional development can further maximize the benefits of Wikidata literacy.

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## ACKNOWLEDGEMENT

The authors appreciate all scholars whose works were consulted during the writing of this research.

## FINANCING

The authors did not receive financing for the development of this research.

## CONFLICT OF INTEREST

The authors declare that there is no conflict of interest.



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