



# The Montessori Bibliography Online: A Resource for the Global Montessori Community

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*Keywords:* Montessori method of education, Maria Montessori, databases, student-centered learning, bibliography, electronic information resources, peace education, nongraded schools

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**Abstract:** The Montessori Bibliography Online (MBO) makes information about Montessori education and the Montessori movement more accessible through an online interface that includes links to digitized source materials. Historically, Montessori bibliographies and indexes have been published in physical form and include references to other sources, but a direct link is absent. This database builds on previously compiled indexes to consolidate citations into a comprehensive repository with an intuitive user interface and a robust search capability. Additionally, the MBO provides hyperlinks to digitized source material. Although this type of tool is not unprecedented in the larger research and educational landscape, it is novel within the domain of Montessori education. This methodological essay discusses the steps I took to compile and develop the MBO. Beginning with a review of the literature and legal matters, the discussion describes the methods and processes employed. It concludes by outlining future directions for the MBO. The MBO is accessible at <https://montessoribib.ku.edu>.

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Indexes and bibliographies that are domain-specific (e.g., education, business, law) are particularly valuable for scholars and researchers. These tools provide access to existing knowledge so that new knowledge can be created and shared to advance the arts and sciences. Likewise, an index or bibliography that focuses on Montessori education is particularly valuable for the global Montessori community. With the advent of the Internet, the door to explore the creation of an online Montessori education bibliography opened, and, specifically, one that provides links to online versions of the source material referenced within the bibliography.

Across the decades, individuals and organizations in the global Montessori community have recognized the value and necessity of bibliographies and indexes that focus solely on Montessori education (Boehnlein, 1985, 1995; Böhm, 1999; Cleveland Montessori Association, 1962; Donahue, 1962; Packard, 1973; Pendleton, 2002; Rambusch, 1975; Stevens, 1913; Tornar, 2001). The Montessori Bibliography Online (MBO) differs from previous efforts in that it uses digital technology to connect citations directly to the digitized source material when available. It also seeks to build on these past efforts by collating and cataloging current and historic citations

of content related to Montessori education, Maria Montessori, and other related aspects of Montessori education (e.g., student-centered learning, peace education, multiage classes, nongraded schools).

The following sections include a literature review, a legal review, a discussion of methods and processes, and some concluding remarks. The literature review dives into the details concerning the many Montessori education indexes and bibliographies that have been compiled throughout the 20th century and into the 21st century. The Legal Review section discusses copyright and intellectual property laws relevant to this resource. After this is a discussion of the methods and processes involved in creating and compiling the MBO. Finally, this essay ends with some concluding remarks regarding the future directions of the MBO. The MBO is accessible at <https://montessoribib.ku.edu>.

## Literature Review

While it would have been ideal to consult as many of the preexisting bibliographies and indexes as possible, the feasibility of doing so was limited by available resources. Likewise, it would have been ideal to consult the bibliographic references connected to all previous scholarship related to Montessori education; however, it was impractical to tackle in this initial phase. Therefore, my efforts focused on tracking down the most compre-

hensive bibliographies; Table 1 provides a review of their contents.

After I acquired these sources and reviewed their contents, it was evident three sources were particularly extensive.

1. *Montessori: Bibliografia Internazionale / International Bibliography, 1896–2000*, which was published by the Opera Nazionale Montessori (ONM; Tornar, 2001)
2. *The North American Montessori Teachers' Association (NAMTA) Montessori Bibliography* (Boehnlein, 1985, 1995; Pendleton, 2002)
3. *Maria-Montessori-Bibliographie, 1896–1996* (Böhm, 1999).

Many of the sources listed in Table 1 include select citations based on certain criteria. For instance, some include only content contemporary to their publication or a cumulative compilation up to the date of publication (e.g., Böhm, 1999; Donahue, 1962; Stevens, 1913; Tornar, 2001). Other sources include citations that are domain-specific (Orem, 1969a, 1969b; Packard, 1973), and others are supplements to, or editions of, sources (Boehnlein, 1985, 1995; Pendleton, 2002; Salassa, 2004, 2005).

Upon further investigation into two of the extensive sources—NAMTA and ONM—I discovered that digital forms of both sources already existed. The ONM volume was published with a CD-ROM that included documen-

**Table 1**  
*Quantity of Citations in Select Sources*

Source	Quantity
<i>Opera Nazionale Montessori</i> (Tornar, 2001)	~ 17,000
North American Montessori Teachers' Association (Boehnlein, 1995, 1985; Pendleton, 2002)	~ 15,000
Böhm (1999)	~ 12,500
Packard (1973)	~ 350
Donahue (1962)	481
Rambusch (1975)	~ 256
Salassa (2004, 2005)	102
Stevens (1913)	53
Cleveland Montessori Association (1962)	42
Orem (1969a, 1969b)	17

*Note.* Because of the different formats of the bibliographies (e.g., endnotes, works cited, references, etc.) across these sources, approximations were necessary in some instances. Also, many citations are duplicated across one or more of these sources; the quantities are not mutually exclusive.

tation indicating it contained a database with all of the data included in the print bibliography. Similarly, the NAMTA volume had been converted to a database that was available through NAMTA's website. Meanwhile, the other sources outlined in Table 1 were available as print documents or digitized versions of print documents; the data had not been collected and assembled in a digital database.

The ONM database contained on the CD-ROM had been assembled around the turn of the 21st century (between 1999 and 2000). Because the database used an obscure software that has since lapsed in use (i.e., CDS/ISIS), the data are now generally inaccessible and essentially trapped. This was a setback, but I identified a solution, which is outlined in the Methods and Processes section.

The online version of the *NAMTA Montessori Bibliography* enabled a methodical review of its contents and a comparison with the print versions of the same source. The online interface enabled users to search within the database, serving as an index or catalog of the NAMTA Archives' collection of publications. This version of the *NAMTA Montessori Bibliography* was a tool for interested parties to search for and then request material from NAMTA for a nominal fee. This tool became useful when it came to compiling and cross-referencing citations from different sources, which is discussed in more detail in the Methods and Processes section.

I conducted a review of the ONM and NAMTA bibliographies, in addition to the Böhm (1999) bibliography, which revealed they were not mutually exclusive or unique—there were overlaps across them. Similarly, I performed a thorough review of the other sources that revealed they contained citations that had not been included in these larger bibliographies. Therefore, I realized it would be necessary for my process to draw on all of these sources to compile the most extensive database of citations.

In addition to consulting the aforementioned sources, I conducted a cursory search across select digital libraries and research databases. A more in-depth description of the methods I employed is described in the Methods and Processes section. I selected digital collections that I could access, meaning they were publicly searchable and generally not behind a paywall. Specific examples include HathiTrust Digital Library, Internet Archive, WorldCat, Directory of Open Access Journals, and the online libraries of various academic publishers (e.g., SAGE, ScienceDirect, Springer Nature, Taylor & Francis, Wiley). I also searched within a limited selection of pay-to-access

databases that I was able to access through my local public library and my former university. Some examples of these databases include Newspapers.com, ProQuest databases (e.g., Dissertations and Theses, Historical Newspapers), as well as a number of EBSCO databases. The purpose of searching these resources was twofold: to determine (a) whether any of the source materials cited in the other bibliographies were available online and (b) whether these resources included materials that had not previously been included in the existing bibliographies. These efforts led to the discovery that digitized source materials for a portion of the citations included in the bibliographies were available online, either openly available or behind a paywall. This review confirmed there were other historic and contemporary sources that had not been previously included in the existing bibliographies. Similarly, searching other digital collections revealed various international sources that had not been included in the existing bibliographies and indexes.

Through this review of existing Montessori education bibliographies and a review of select digital collections, I determined there was a vast amount of citations that would need to be collected and assembled to create an extensive tool as envisioned.

## Legal Review

Given the intent to assemble an extensive database with bibliographic citations related to Montessori education, I believed it was necessary to carefully consider intellectual property rights pertaining to citations and other related information. First, because this resource is being assembled and made available in the United States, U.S. laws are applicable to this scenario. The evaluation relied on *A Framework for Analyzing any U.S. Copyright Problem* (Smith & Macklin, 2014), which provides a clear and concise five-point checklist to evaluate copyright status.

I used the Smith and Macklin (2014) framework to assess the copyright status of the different data elements. Their framework supports the assertion that citation data are uncopyrightable data and therefore can be used. Abstracts are generally protected by intellectual property laws, either copyright or, in some cases, open licenses such as a Creative Commons license. Within the MBO, abstracts for sources protected by a Creative Commons license (or other open license) are reused in accordance with the license. Abstracts for sources that are protected by copyright, however, are included according to an assessment of fair use that is informed by the Smith and Macklin (2014) framework. My assessment evaluated the

purpose and character of use, the nature of the copyrighted work, the amount and substantiality of the portion used, and the effect of the use upon the market for the original as recommended by U.S. Copyright law (Limitations on exclusive rights: Fair use, 1978). From this evaluation, I have concluded the use of these data in the MBO is fair and appropriate, given the statutory guidelines.

### **Methods and Processes**

Using the survey of existing Montessori education bibliographies and indexes and a review of the relevant laws and statutes, a pathway to the legal collection of citations for inclusion in the MBO database was identified. The collection of factual information, like citation information, is allowed, while the collection and use of original and creative data, like value-added descriptive keywords and summaries, needs to observe fair use. The following subsections—Technical Details, Citation Collection, Descriptive Cataloging, and Data Presentation—outline the methods and processes performed to arrange, collect, describe, and provide open access to the MBO.

Given that legal protections relevant to the ONM database have lapsed<sup>1</sup> and the factual information contained within is not protected by copyright, the data can be extracted, converted, and assembled into a new database. This is fortuitous for a couple reasons. First, the software used for assembling the bibliographic database—CDS/ISIS—is nearly obsolete, meaning the data contained within are generally inaccessible. Therefore, I hired a consultant to migrate the data to a usable format (details are outlined in the Citation Collection subsection). Second, as the ONM database is one of the most extensive bibliographies concerning Montessori education and Montessori, it enables these citations to be used as a foundation for the MBO.

### **Technical Details**

Now that the legal boundaries were clear, the data collection process could move forward. However, before collecting the data, I needed to find a database software package with a generally intuitive user interface to

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<sup>1</sup> This publication was published in 2001 in Italy. Therefore, European “database rights” apply to the database contained on the enclosed CD-ROM. These database rights “shall expire fifteen years from the first of January of the year following the date of completion” (Directive 96/9/EC of the European Parliament and of the Council of 11 March 1996 on the legal protection of databases, 1996). Thus, rights lapsed on January 1, 2017.

manage the data. Relying on my personal knowledge of reference management software, I turned to this type of software and examined different options by comparing their specifications. Fortunately, a comparison of these tools was readily available (“Comparison of Reference Management Software,” 2022). Currently, approximately 21 different products are on the market, and four dominate: EndNote, Mendeley, Ref Works, and Zotero. Having used EndNote and Zotero previously, my review was biased toward these two products. Ultimately, I selected Zotero because it is open source (as opposed to proprietary), free, and has a web-based interface along with a cross-platform desktop application. Also, Zotero has a plug-in (i.e., Zotero Connector) that allows easy collection of individual citations directly from web browsers (e.g., Chrome, Firefox, Safari), as well as other add-ons or plug-ins that enable additional useful functionality (e.g., Zutilo). Because Zotero is an open-source product, data are easily exported to other formats or even migrated to another platform if desired. Further, Zotero has built-in application programming interfaces (APIs) that allow the data to be exposed (e.g., accessed, queried, retrieved, and even edited) to web applications. Zotero uses the SQLite database format and, in the case of the MBO, the data are exposed through an API to a WordPress-based website that employs a variety of plug-ins to query and display the data in a meaningful way.

The next technical element was the challenge of getting access to the data in the ONM CD-ROM included in a CDS/ISIS database. To overcome the hurdle of accessing the database, I hired a contractor who specializes in these conversions to migrate the data into a new database. After 6 months of troubleshooting and fine tuning, data from the ONM database were successfully migrated into the Zotero database by way of the BibTex format.<sup>2</sup> These data laid the foundation for collecting more citations and then cross-referencing entries with other bibliographies, as described below.

### **Citation Collection**

To collect more citations related to Montessori education and Montessori, I realized it would be necessary to acquire and consult as many bibliographies and other relevant sources as possible. It also became necessary to define the criteria for inclusion in the MBO. Citations for

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<sup>2</sup> The contractor migrated the data in a number of different formats but the BibTex format was used because of Zotero’s ability to easily import this data format.

sources meeting one or more of these three criteria have been included in the MBO.

1. Content created by or about Maria Montessori, Mario M. Montessori, Montessori-related organizations (e.g., Association Montessori Internationale, American Montessori Society), or other figures within the global Montessori movement
2. Content about the Montessori Method of education, Montessori schools, or the global Montessori movement
3. Content about topics that are closely related to principles of Montessori education (e.g., peace education, cosmic education, multiage classes, student-centered learning)

Using these criteria as a guiding light, the initial collection phase relied on consulting the sources outlined in Table 1 that clearly related to Maria Montessori and Montessori education. The citations within these publications, including the *NAMTA Montessori Bibliography*, were cross-referenced with the entries in the MBO database, which resulted in the enhancement of existing entries and the addition of new entries to the database.

A second phase, which happened somewhat concurrently, involved searching through various digital collections (see Table 2) to locate digitized source material, verify existing citations in the database, and add new entries to the database. My methodology for this operation entailed searching across all of the resources identified in Table 2 using the following words or phrases: “Montessori,” “Maria Montessori,” “Montessori education,” or “Montessori method of education.” The search results were further filtered by relevancy: How many times did the search word or phrase appear in the text? Is it listed as a keyword? Does it appear in the abstract as a primary or secondary focus of the source? Does it appear in the title of the source? Moreover, topics that are Montessori-adjacent (see Criterion 3, above) were retrieved using a similar method. As this process matured, other terms, names, and phrases became evident, and the search method adapted to incorporate them.

The phrase “Montessori method of education” was particularly valuable when searching WorldCat because it is an authorized term from the Library of Congress Subject Headings (LCSH), a controlled vocabulary used by many libraries around the world. Notably, the common denominator across the search terms and phrases was the word “Montessori” and, over time, it became clear that a search for just the word “Montessori” was most successful, so that became the dominant search query.

Many of the citations for items published in the early 20th century are now publicly available online because of their public domain status (i.e., works with lapsed or expired copyright). Most of these public domain sources—books, journals, government documents, etc.—are primarily available via HathiTrust Digital Library, Google Books, or Internet Archive. Therefore, the search for digitized versions of the relevant source material was conducted across these collections.

Another aspect of this second phase was the search for relevant materials published after 1999 as the ONM data included citations up to or around 2000. The collection of these citations was enabled by the Zotero Connector plug-in, which facilitated a semiautomated import of individual citations into the database. As this process moved forward, the scope of this endeavor expanded and ultimately became a search for relevant content going as far back as 1896. To reiterate, this process provided me with the valuable opportunity to cross-reference citation information to enhance existing entries with more-complete data, verify existing citations to ensure their accuracy, and add links to digitized source material when available.

After this second phase had begun and a workflow had been established, a third phase commenced during which I reviewed the content available from NAMTA. In the past year or two, NAMTA migrated the data from its bibliography into a database with an e-commerce front-end interface (i.e., Shopify) that had provided users the ability to search for and order photocopies of articles from publications within their collection. The NAMTA collection is impressive for both its breadth and depth of coverage: many of the publications in this collection are not readily available elsewhere. The search function of the NAMTA shop was consulted to cross-reference the entries within the MBO database and to add any citations that were not already included.<sup>3</sup>

After completing this third phase, I was able to begin a fourth phase that entailed cross-referencing Böhm (1999) with the data in the MBO, a manual, ongoing process. Meanwhile, the second phase does not have a clear end either, as it involves the constant collection of contemporary and historic citations from varied sources; it continues in an effort to make the MBO as extensive as possible.

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<sup>3</sup> According to personal correspondence with NAMTA, requests for items in the NAMTA Montessori Archive have been halted, and the Archive was “decommissioned” on March 31, 2022.

**Table 2***Selected List of Databases and Indexes Consulted*

Resource name	URL
Education Resources Information Center (ERIC)	<a href="https://eric.ed.gov">https://eric.ed.gov</a>
WorldCat	<a href="https://www.worldcat.org">https://www.worldcat.org</a>
Academic publishers	
SAGE	<a href="https://journals.sagepub.com">https://journals.sagepub.com</a>
ScienceDirect	<a href="https://www.sciencedirect.com">https://www.sciencedirect.com</a>
SpringerNature	<a href="https://link.springer.com">https://link.springer.com</a>
Taylor & Francis	<a href="https://www.tandfonline.com">https://www.tandfonline.com</a>
Wiley	<a href="https://onlinelibrary.wiley.com">https://onlinelibrary.wiley.com</a>
HathiTrust Digital Library	<a href="https://www.hathitrust.org">https://www.hathitrust.org</a>
Internet Archive	<a href="https://archive.org">https://archive.org</a>
JSTOR	<a href="https://www.jstor.org">https://www.jstor.org</a>
ProjectMUSE	<a href="https://muse.jhu.edu">https://muse.jhu.edu</a>
Directory of Open Access Journals (DOAJ)	<a href="https://doaj.org">https://doaj.org</a>
Google	
Google Scholar	<a href="https://scholar.google.com">https://scholar.google.com</a>
Google Books	<a href="https://books.google.com">https://books.google.com</a>
ProQuest databases	<a href="https://www.proquest.com">https://www.proquest.com</a>
EBSCO databases	<a href="https://www.ebsco.com">https://www.ebsco.com</a>
Historical newspaper collections (selected)	
Google News Archive	<a href="https://news.google.com/newspapers">https://news.google.com/newspapers</a>
Chronicling America (Library of Congress)	<a href="https://chroniclingamerica.loc.gov">https://chroniclingamerica.loc.gov</a>
California Digital Newspaper Collection	<a href="https://cdnc.ucr.edu">https://cdnc.ucr.edu</a>
Center for Research Libraries	<a href="https://www.crl.edu/electronic-resources">https://www.crl.edu/electronic-resources</a>
Newspapers.com	<a href="https://www.newspapers.com">https://www.newspapers.com</a>
The British Newspaper Archive	<a href="https://www.britishnewspaperarchive.co.uk">https://www.britishnewspaperarchive.co.uk</a>
NewspaperArchive	<a href="https://newspaperarchive.com">https://newspaperarchive.com</a>
Archival collections (selected)	
Online Archive of California	<a href="https://oac.cdlib.org">https://oac.cdlib.org</a>
ArchivesWest	<a href="https://archiveswest.orbiscascade.org">https://archiveswest.orbiscascade.org</a>
University of Connecticut Library Archives & Special Collections	<a href="https://lib.uconn.edu/location/asc/">https://lib.uconn.edu/location/asc/</a>
Networked Digital Library of Theses and Dissertations (NDLTD)	<a href="http://www.ndltd.org">http://www.ndltd.org</a>
National Libraries and Archives (selected)	
Library of Congress (USA)	<a href="https://www.loc.gov">https://www.loc.gov</a>
National Archives and Records Administration (USA)	<a href="https://www.archives.gov">https://www.archives.gov</a>
Bibliothèque nationale de France	<a href="https://www.bnf.fr">https://www.bnf.fr</a>
Deutsche Nationalbibliothek (Germany)	<a href="https://www.dnb.de">https://www.dnb.de</a>
The British Library	<a href="https://www.bl.uk">https://www.bl.uk</a>
Biblioteka Narodowa (Poland)	<a href="https://www.bn.org.pl">https://www.bn.org.pl</a>
Biblioteca Nacional de Chile	<a href="https://www.bibliotecanacional.gob.cl">https://www.bibliotecanacional.gob.cl</a>
National Library of Australia	<a href="https://trove.nla.gov.au">https://trove.nla.gov.au</a>

It is worth noting that some citations were collected by way of a general inquiry distributed in a few Montessori-related Facebook groups. One person responded and indicated they had previously compiled a collection of citations—also in Zotero—that were related to Montessori education and multiage classrooms (also referred to as nongraded schools). They happily shared these data and, because they were also collected in a Zotero database, import of the data was straightforward.

### **Descriptive Cataloging**

As for the descriptive cataloging of the entries, that is, assigning descriptive keywords, I knew it was imperative to establish conventions and standards regarding terminology and structure. To maintain a level of consistency and standardization with the terms, I adopted standardized vocabularies established and used within information-management fields (e.g., libraries, archives, museums). Use of these standardized vocabularies enables improved information access and retrieval.

Table 3 outlines the four different vocabularies used within the MBO. Conceptual terms are sourced from LCSH and Haines (2011). LCSH is the source of general terms, while Haines is the source for terms specific to Montessori education and Montessori philosophy. With regard to geographic names, the United Nations Geoscheme (UN Geoscheme) is used. This taxonomy includes names of continents, subcontinent regions, and countries. Additionally, when available, names of individuals, organizations, and other proper names are sourced from Wikidata.

As is generally typical in the information-management field, standardized vocabularies are often modified or amended according to their specific application. This may be done because the vocabulary or vocabularies do not include the necessary term or phrase

to accurately describe the material being cataloged. Therefore, the addition or modification of terms or phrases may be necessary. The intent is that this practice will ultimately improve information access and retrieval, resulting in more-accurate and more-relevant search results for users.

In the case of the MBO, I amended the UN Geoscheme to better reflect the use of common geographic terms. For example, “Middle East” is not included in the UN Geoscheme; however, it is a commonly used geographic term, so it has been included in the MBO. Other examples include alternate country names (e.g., Holland and the Netherlands, Cote d’Ivoire and Ivory Coast) and common subcontinent names (e.g., Great Britain, Scandinavia, Maghreb, Australasia).

Having identified the different vocabularies to use, I proceeded to the next step of assigning keywords to each database entry. This process has generally entailed manual data entry, that is, manually adding individual keywords to each entry. It has been somewhat streamlined by assigning keywords in bulk to a group of records.<sup>4</sup> However, bulk processing or cataloging is not particularly feasible because the assignment of keywords is an intellectual process requiring the evaluation of each entry to determine relevant terms. This process requires the cataloger—that is, me—to make subjective judgments based on the metadata and therefore is a slow process compared to the other aspects that have been outlined here. This is the nature of descriptive cataloging.

Although descriptive cataloging is based on subjective decisions, specific methods or standards make the practice more objective. In the MBO, entries are assigned keywords based on three basic criteria: name(s) of the

<sup>4</sup> This process has been aided by using a Zotero plug-in called Zutilo.

**Table 3**  
*Vocabularies and Taxonomies Used by the Montessori Bibliography Online and Their Purpose*

Name	Purpose
Library of Congress Subject Headings (LCSH) <a href="https://id.loc.gov/authorities/subjects.html">https://id.loc.gov/authorities/subjects.html</a>	General concepts
<i>A Montessori Dictionary</i> (Haines, 2011)	Montessori-specific concepts
United Nations Geoscheme (UN Geoscheme) <a href="https://unstats.un.org/unsd/methodology/m49">https://unstats.un.org/unsd/methodology/m49</a>	Geographic names (countries, regions, continents)
Wikidata <a href="https://www.wikidata.org">https://www.wikidata.org</a>	Names of individuals and organizations

creator(s), concepts discussed or examined, and relevant geographic locations. Ultimately, at least one concept term will be required for each entry; names and locations are optional as they may not be applicable.

Concept terms are generally determined through an analysis of the title, an abstract, the actual content of the source material, or a combination of these. Likewise, names and locations are assigned according to a similar evaluation. Terms and names also follow a comparable process, but the formulation of the term is more complex. Concepts and names can be subdivided according to the specificity of the topic covered. For instance, within the MBO, entries that are written by Maria Montessori are assigned the keywords “Maria Montessori - Writings.” In this example, the authorized name “Maria Montessori” includes the general subdivision “Writings.” Similarly, entries that relate to training for Montessori educators are assigned the keywords “Montessori method of education - Teacher training.” In this example, then, the authorized term “Montessori method of education” includes the general subdivision “Teacher training.” This method allows more-specific keywords to be assigned, enabling a more accurate description of the entry, and in turn, leads to more-accurate search results.

One particular nuance of note is the assignment of geographic locations. When an entry is about or related to a particular geographic context, like a specific country, then the entry is assigned the following terms: country name (and alternate country name if applicable), subcontinent name (and alternate subcontinent name if applicable), and continent name. For example, an entry that discusses something in the United States is assigned the following geographic keywords: “United States of America,” “North America,” and “Americas.” The keywords for an entry that relates to England is assigned “England,” “Great Britain,” “United Kingdom,” “Northern Europe,” and “Europe.” Similarly, keywords related to Australia use “Australia,” “Australasia,” “Australia and New Zealand,” and “Oceania.”

This method is a simple way of creating a pseudohierarchy that reflects the taxonomic structure generally used to express the physical relationship between different geographic areas. Through this method, when a user searches for “Europe,” all entries related to Europe are retrieved, including entries related only to specific countries in Europe. Likewise, when a user searches for “Brazil,” all entries related to Brazil are retrieved. Assigning all relevant geographic terms to entries improves searchability and results in more-relevant search results. Users should be

aware that the geographic taxonomy excludes city names and other subcountry names.

### **Data Presentation**

After successfully creating a database for the MBO, the next step I faced was the presentation of the data in a meaningful way on a website via a web application. Initially, the MBO was made available as a working prototype in late 2020 on the Global Montessori Network website.<sup>5</sup> The resulting interface allowed users to perform a basic keyword search across select fields in the database and then see the search results in a structured list. This process proved the basic functionality of the database, but the prototype version was still rough around the edges and, among other things, the search functionality was rudimentary. Regardless, the creation of a working prototype provided the opportunity to share it with others and garner feedback. Ultimately, sharing the prototype with people resulted in an interest from some scholars and organizations, which led to the development of a project proposal outlining the desired specifications. The proposal was presented to the University of Kansas Center for Montessori Research, which solicited a budget and quote for the overall cost of the project from the interdepartmental software-development team at Agile Technology Solutions.<sup>6</sup> Through the generous support of a private donor, the project was fully funded and, with all of the formalities laid out, the web development proceeded.

Through the hard work of the web-development team, the MBO now has a dramatically improved interface with enhanced functionality. The site, hosted by the University of Kansas, now allows users to conduct basic and complex search queries. The search tool accepts select Boolean operators (e.g., AND, OR, NOT) that enable advanced searches (i.e., search queries with greater complexity). Furthermore, MBO users now can custom sort and filter search results according to specific criteria like language or publication date, among others. Search results are presented to the user in a paginated list form that includes select data values and, when available, a link to

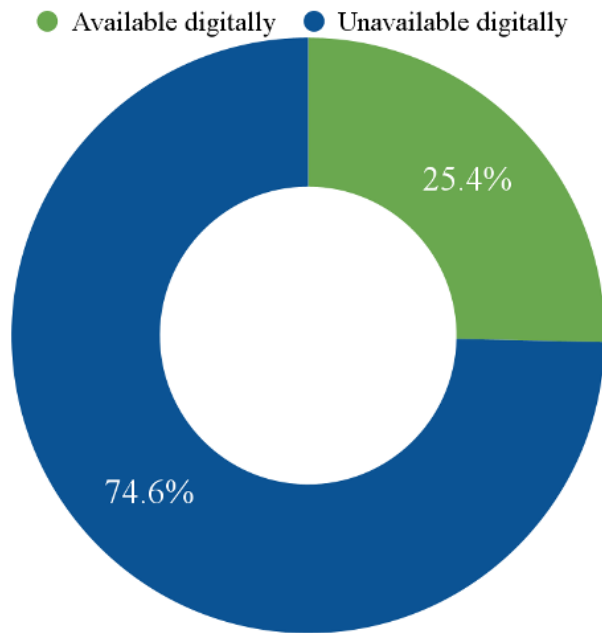
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<sup>5</sup> <https://theglobalmontessorinetwork.org>

<sup>6</sup> Agile Technology Solutions is “a center within the Achievement and Assessment Institute at the University of Kansas, helps public agencies develop high-volume, highly scalable and multidevice-compatible Software as a Service (SaaS) web applications to meet public needs.” (<https://ats.ku.edu/about-agile-technology-solutions>).



**Figure 1**  
Availability of Entries in the Montessori Bibliography Online



*Note.* Available = a digital version of the source material is available online; Unavailable = a digital source of the material has not been located online.

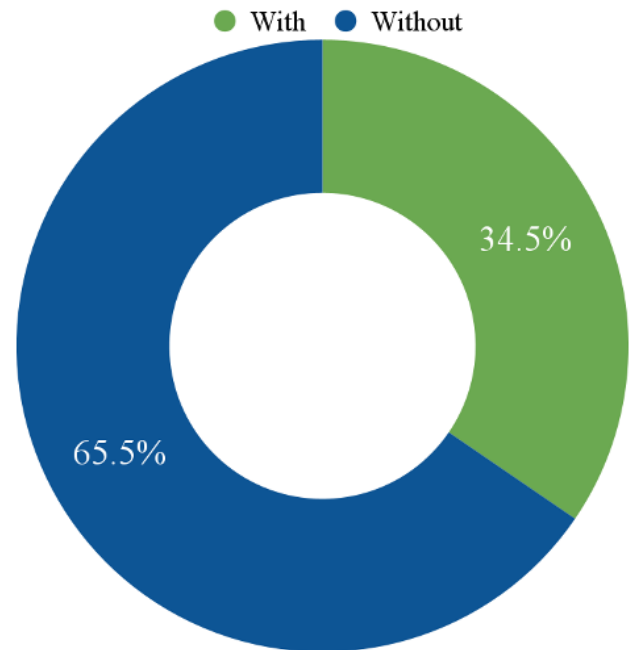
an online version of the source. Currently there is no clear delineation between links that are freely accessible and those that are behind a paywall; I intend to address this shortcoming in the future. Similarly, to address inevitable broken links, I intend for future development to incorporate a tool to ensure links are still valid. Meanwhile, the compilation of sources continues.

### Conclusion and Future Directions

The MBO is a freely available online resource that enables search, retrieval, and discovery of information related to Montessori education. It can be accessed at <https://montessoribib.ku.edu> and serves as a portal to information concerning Montessori education, Maria Montessori, and the international Montessori movement. The resource is international in scope, including citations to source materials in languages as varied as Afrikaans, Arabic, English, Ukrainian, and Vietnamese.<sup>7</sup> The content covers Montessori activities across the globe. Source ma-

<sup>7</sup> Google Translate has been used in some cases to include parallel English-language translations of titles and abstracts. Although translations created this way have their shortcomings, the main purpose is to improve searchability across linguistically diverse content.

**Figure 2**  
Entries With and Without Keywords



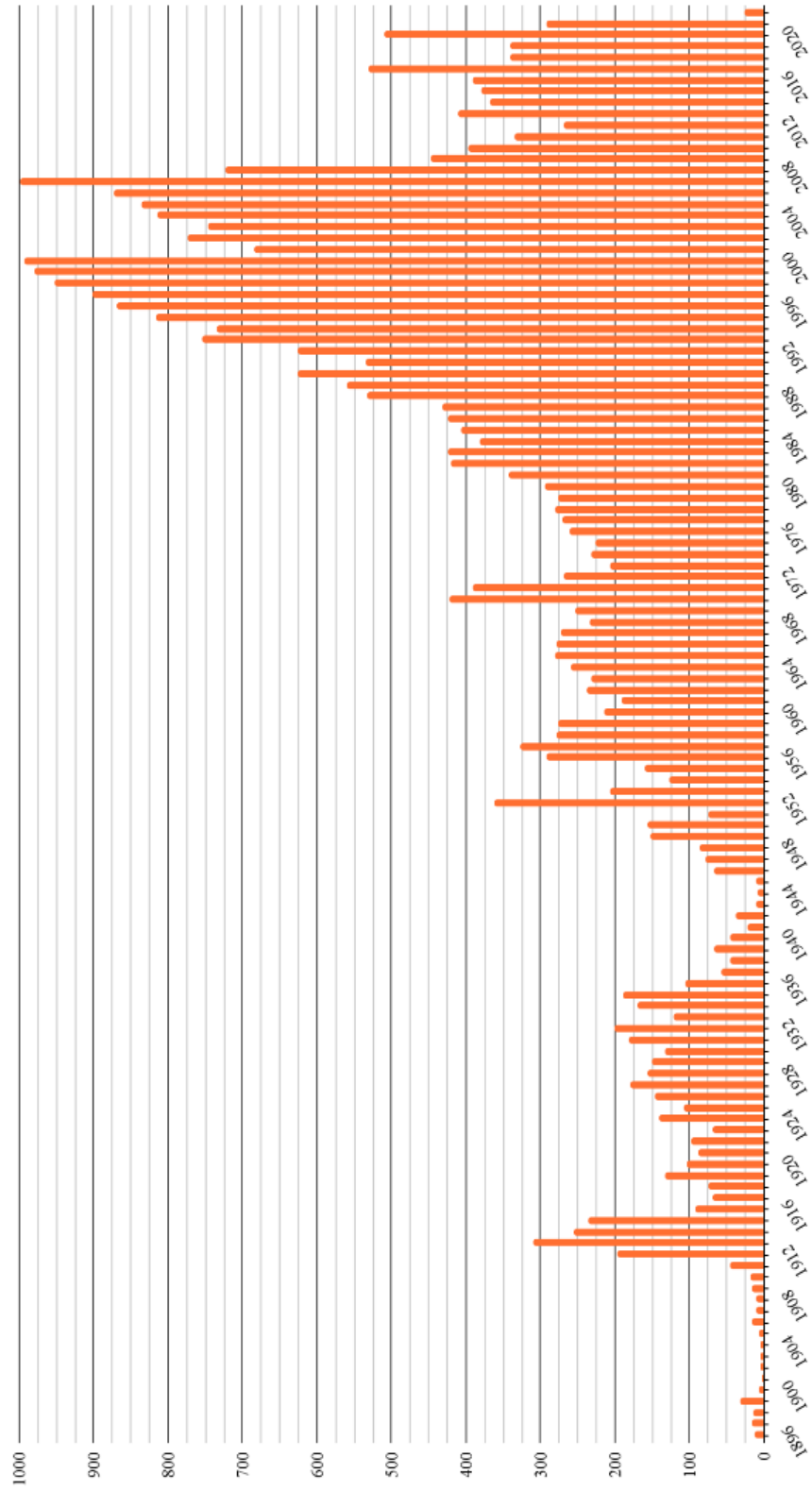
*Note.* The cataloging of content in the Montessori Bibliography Online is an ongoing process. This is the current status, but the goal is to add more content while continuing to add keywords to new and existing entries.

terial types include books; theses and dissertations; journal, newspaper, and magazine articles; book sections (e.g., chapters); reports; interviews; manuscripts, documents, and archival collections; films, video recordings, audio recordings, and radio addresses; encyclopedia articles and dictionary entries; conference papers, presentations, and proceedings; blog posts and web pages; and patents. The content spans from 1896 to the present day.

The MBO continues to grow and mature daily through ongoing cataloging of the entries and the compilation of new sources. Currently, the database contains more than 37,000 unique entries. Figure 1 demonstrates the availability of contents currently included in the MBO.<sup>8</sup> Figure 2 illustrates the extent to which entries have been assigned keywords. Figure 3 provides a graphical representation of the distribution of content by publication year (1896–2022). Table 4 provides an inventory of the languages of content included in the MBO by percentage, while Table 5 is a tabulation of the different types of content included in the MBO.

<sup>8</sup> In observance of intellectual property rights, the MBO does not host any digital versions of source materials referenced in the database. However, links to online versions of the source materials are included when available.

**Figure 3**  
*Distribution of Entries in the Montessori Bibliography Online by Year of Publication, 1896–2022*



Note. 275 entries have unknown dates; nine entries have bulk dates.

**Table 4***Language of Content Included in the Montessori Bibliography Online by Percentage*

Language	%
Dutch	3.06
English	67.76
French	1.35
German	7.01
Italian	15.67
Spanish	1.34
Other (Afrikaans, Arabic, Bosnian, Catalan, Chinese, Croatian, Czech, Danish, Estonian, Finnish, Galician, Greek, Hindi, Hungarian, Indonesian, Japanese, Korean, Lithuanian, Malay, Marathi, Norwegian, Ottoman Turkish, Persian, Polish, Portuguese, Romanian, Russian, Slovak, Slovenian, Swedish, Tamil, Thai, Turkish, Ukrainian, Vietnamese, and unidentified)	3.82

*Note.* Some entries in the Montessori Bibliography Online are available in multilingual formats; thus each of these formats was treated as a separate version for this calculation. Other = a cumulative of languages that represent < 1.0% each.

**Table 5***Format of Content Included in the Montessori Bibliography Online by Percentage*

Format	%
Book	9.12
Book section	6.68
Journal or magazine article	78.83
Newspaper article	1.67
Thesis or dissertation	2.19
Other (Audio recording, blog post, conference paper, dictionary entry, document, encyclopedia article, film, interview, manuscript / archival collection, patent, presentation, report, video recording, and web page)	1.52

*Note.* Other = a cumulative of format types that represent < 1.0% each.

The continued development of this resource currently relies primarily on me, but the hope is that this resource will be embraced by the global Montessori community, and further development can rely on cooperation and collaboration to effectively catalog entries in the database. Additionally, the contributions of citations from individuals and organizations are particularly helpful for the continued development; a form for submitting this information is available on the website.

I hope this effort will contribute to an increased awareness of Montessori education and influence organizations to improve access to archives and libraries containing Montessori-related publications. Only through collaboration and cooperation will this resource be able

to continue to grow and be useful for the Montessori community and beyond.

## Acknowledgments

The author would like to acknowledge the following individuals and organizations who contributed to the development of the MBO. Without their funding, assistance, support, or prior work, the MBO could not have been realized. In no particular order, the author thanks the following: Michael R. Flynn, Rachel Parham, University of Kansas Center for Montessori Research, Opera Nazionale Montessori and Clara Tornar, North American Montessori Teachers' Association, Winfried

Böhm, Splendor Systemy Informacyjnej (Splendor Information Systems), Lead Walnut, Dylan Sognalian, Sharon Caldwell, Angela K. Murray, Mira C. Debs, Angeline S. Lillard, the Agile Technology Solutions team at the University of Kansas, Mark McKenna, Josh Bolick, the Prepared Adult Initiative, and the Global Montessori Network. The author also thanks the anonymous reviewers for their invaluable feedback.

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