Closing the gap: Addressing missing standards in small academic libraries through the implementation of the ANSI/NISO Z39.87-2006 (R2017) data dictionary

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Abstract. This paper presents a case study highlighting the significance of adopting the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard to small academic libraries, using Goldey-Beacom College Library in Wilmington, Delaware, as an example. The study focuses on the impact of the standard's absence on the institution's archival collection and emphasizes the benefits of implementing the standard for small libraries with similar digital collections. Additionally, the paper addresses the challenges faced by small libraries in adopting standards and provides recommendations for overcoming these challenges. The findings emphasize the need for increased awareness and the advantages of adopting the Data Dictionary standard to improve access and management of digital assets.

Keywords: ANSI/NISO Z39.87-2006, data dictionary standard, digitizing still images, metadata, digital image archives, library challenges

1. Introduction

In the rapidly evolving landscape of digital information management, the adoption of standardized metadata practices plays a crucial role in facilitating efficient organization, discovery, and access to digital assets. Small academic libraries, often facing resource constraints and limited technical expertise (Michalak & Rysavy, 2022) [1], must navigate these challenges while striving to meet the expectations of their community stakeholders. This paper presents a case study focused on Goldey-Beacom College, an academic institution located in Wilmington, Delaware, exploring the impact of the absence of the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard on their institutional archives collection. Furthermore, it highlights the necessity and benefits of adopting this standard for small academic libraries with similar collections.

The exponential growth of digital resources has significantly transformed the landscape of academic libraries, necessitating the development of standards to ensure consistency, interoperability, and effective management of digital assets. The ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard [2] offers

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a comprehensive set of metadata elements and definitions specifically tailored for describing digital still images. By adhering to this standard, libraries can streamline the creation, management, and exchange of technical metadata, thereby enhancing the discoverability and accessibility of their digital collections.

At Goldey-Beacom College, the absence of the Data Dictionary standard has posed considerable challenges for the management of their institutional archives collection. Despite the availability of digitized still images, the lack of associated metadata has hindered stakeholders' ability to locate and access these valuable artifacts. Compounded by limited staffing resources and reliance on student workers for metadata creation, the absence of standardized guidelines has resulted in inconsistent and incomplete metadata records. The subsequent departure of student workers upon graduation further exacerbates the challenge of maintaining accurate and up-to-date metadata.

This case study emphasizes the importance of adopting the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard for small academic libraries with similar challenges and collections. While small libraries may face unique obstacles in implementing standards, such as resource limitations, technical expertise constraints, and integration complexities, the benefits of adopting the Data Dictionary standard far outweigh these challenges. Improved access to collections, enhanced metadata interoperability, and streamlined asset management are among the significant advantages that small libraries can achieve by embracing this standard.

In the subsequent sections of this paper, I will delve into the specifics of the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard, its relevance to small academic libraries, and the challenges that these libraries encounter in its implementation. Moreover, we will provide recommendations and strategies for overcoming these challenges and successfully integrating the standard into small library environments. By highlighting the experiences and lessons learned at Goldey-Beacom College, this paper aims to encourage and guide small academic libraries in adopting the Data Dictionary standard, ultimately improving their digital asset management practices, and meeting the expectations of their community stakeholders.

2. The impact of missing the ANSI/NISO Z39.87-2006 (R2017) data dictionary standard

2.1. Institutional archives collection

Goldey-Beacom College maintains a valuable institutional archives collection comprising a wide array of still images, capturing the rich history and heritage of the college. A few years ago, a significant milestone was achieved when a large number of these still images were digitized through a partnership with Gale, a leading provider of library resources. However, a critical oversight became apparent - none of the digitized images were associated with the necessary metadata, rendering them difficult to locate and access within the collection.

The absence of standardized metadata elements for describing the digital still images in the institutional archives collection has created substantial challenges for users. The lack of consistent metadata makes it arduous for stakeholders, including faculty, students, researchers, and community members, to discover and access specific images of interest. Without the vital descriptive information, these digital artifacts become isolated, hindering the exploration and utilization of the college's historical resources.

2.2. *Challenges faced by Goldey-Beacom college*

Goldey-Beacom College encountered several challenges in addressing the absence of the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard. One of the primary challenges stemmed from the scarcity of dedicated staff members specifically assigned to work in the archives. The responsibility for metadata creation and management largely fell upon a rotating group of student workers, whose involvement was limited by their academic schedules and eventual graduation.

Relying on student workers for metadata creation posed additional challenges. Onboarding and training these workers consumed valuable time and resources, diverting attention from other critical library functions. Moreover, the turnover rate resulting from students graduating posed a continuous obstacle to maintaining consistent and accurate metadata records. As each student worker left, a gap was left in institutional knowledge, and subsequent hires required time to familiarize themselves with the metadata creation process, perpetuating inconsistencies and delays.

2.3. *Stakeholder frustration and expectations*

The absence of standardized metadata in Goldey-Beacom College's institutional archives collection has led to growing frustration among stakeholders who rely on the availability and accessibility of digital resources. Community members, including alumni, local historians, and researchers, have expressed disappointment and dissatisfaction with the limited ability to discover and explore the digitized still images. The lack of associated metadata impedes their research endeavors and limits their understanding and engagement with the college's history.

Stakeholders' expectations for seamless access and comprehensive metadata are rooted in the digital age's convenience and the prevalence of well-curated online collections. In an era where information retrieval is increasingly reliant on efficient search algorithms and standardized metadata practices, stakeholders anticipate the same level of access and discoverability for Goldey-Beacom College's digital archives. The absence of the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard has resulted in unmet expectations and hindered stakeholders' ability to fully utilize and appreciate the college's archival resources.

The subsequent sections of this paper will delve into the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard, exploring its features and benefits, while addressing the challenges faced by small academic libraries in its adoption. By identifying and analyzing these challenges, we aim to provide recommendations and strategies for successfully implementing the standard at Goldey-Beacom College and other small academic libraries with similar circumstances.

3. The ANSI/NISO Z39.87-2006 (R2017) data dictionary standard

3.1. *Overview of the standard*

The ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard is a comprehensive framework that provides guidelines and specifications for creating, managing, and exchanging technical metadata related to digital still images. It establishes a consistent set of metadata elements and definitions, ensuring interoperability and facilitating efficient access and discovery of digital assets within libraries and information systems.

The standard defines essential elements such as title, description, creator, subject, and date, among others, which collectively contribute to a comprehensive and standardized metadata record for digital still images. By adhering to this standard, libraries can ensure the consistency, accuracy, and completeness of metadata, enabling efficient search and retrieval of specific images or related resources.

3.2. *Benefits for small academic libraries*

For small academic libraries like Goldey-Beacom College, the adoption of the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard can bring about significant benefits in managing their digital still image collections.

First, the standard offers a unified and consistent approach to metadata creation, ensuring that all digital still images within the library's collection are described using a shared vocabulary and structure. This consistency facilitates seamless integration and interoperability with other libraries, digital repositories, and information systems, expanding the potential for collaboration and resource sharing.

Second, the standard provides guidelines for maintaining metadata records, enabling libraries to establish best practices for ongoing metadata management. This includes strategies for metadata maintenance, updates, and quality control, ensuring that the metadata remains accurate, current, and reliable over time. By implementing these guidelines, libraries can mitigate the challenges of staff turnover and ensure the continuity and integrity of their metadata records.

Furthermore, the Data Dictionary standard facilitates improved discoverability and access to digital still images for stakeholders. With consistent and comprehensive metadata, users can easily search and retrieve specific images based on various criteria, such as keywords, subjects, dates, or creators. This enhanced discoverability enhances the value and utility of the library's collections, supporting research, education, and community engagement.

3.3. *Guidelines for metadata creation and maintenance*

In addition to defining metadata elements and their definitions, the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard also provides guidelines for metadata creation and maintenance. These guidelines assist libraries in effectively implementing the standard and optimizing their metadata workflows.

The standard recommends specific practices for capturing metadata during the digitization process, ensuring that critical descriptive information is associated with each digital still image. It outlines recommended procedures for metadata entry, including guidelines for standardizing terms, formatting dates, and structuring complex metadata fields. These guidelines contribute to the creation of accurate, consistent, and meaningful metadata records that align with industry best practices.

Moreover, the standard emphasizes the importance of ongoing metadata maintenance. It highlights the need for periodic reviews and updates to ensure the accuracy and relevance of metadata records as new information becomes available or existing information requires revision. By following these maintenance guidelines, libraries can enhance the longevity and usability of their metadata, accommodating evolving user needs and research requirements.

By adopting and implementing the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard, small academic libraries such as Goldey-Beacom College can overcome the challenges posed by the absence of standardized metadata for their digital still image collections. The subsequent sections of this paper will address the specific challenges faced by small libraries and provide recommendations for successfully adopting and integrating the Data Dictionary standard within their environments.

4. Challenges and areas of improvement for small libraries

Small libraries face unique challenges in adopting and implementing standards such as the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary. The following sections highlight key areas of improvement and challenges that small libraries may encounter:

4.1. Resource limitations

Resource limitations, including constraints on staff time, funding, and technological infrastructure, pose significant challenges for small libraries. Allocating dedicated staff time for the implementation of a standard can be particularly demanding, considering the multitude of other responsibilities that staff members of small libraries often shoulder. Limited funding may restrict the acquisition of the necessary tools, software, or training programs required for successful adoption. Overcoming resource limitations necessitates careful planning, prioritization, and leveraging partnerships and collaborations to share resources and expertise.

4.2. Limited technical expertise

Small libraries may have limited access to specialized technical expertise required for understanding and implementing complex standards such as the Data Dictionary. Technical knowledge and skills related to metadata management, information systems, and digital asset management may be scarce among the library's staff members. This can hinder the library's ability to comprehend the intricacies of the standard and impede its effective implementation. Small libraries can address this challenge by investing in staff training and professional development opportunities, collaborating with external experts or consultants, or seeking guidance from regional or national library associations.

4.3. Integration with existing systems

Integrating the Data Dictionary standard into existing systems and workflows can be a formidable challenge for small libraries. Legacy systems or limited technological infrastructure may pose compatibility issues or require substantial modifications to accommodate the standard's requirements. Seamless integration necessitates a thorough assessment of existing systems, identification of potential areas of conflict or improvement, and planning for necessary system upgrades or data migrations. Collaborating with IT professionals, leveraging open-source tools, or adopting interoperability standards can facilitate a smoother integration process.

4.4. Staff capacity for metadata maintenance

Maintaining and updating metadata records is an ongoing task that requires dedicated staff capacity. In small libraries, where staffing resources may already be stretched thin, ensuring the continuous maintenance of metadata can be challenging. Staff turnover, limited personnel, and competing priorities contribute to difficulties in sustaining accurate and up-to-date metadata. Small libraries can address this challenge by incorporating metadata maintenance tasks into existing workflows, emphasizing training and documentation for smooth knowledge transfer, and exploring automation tools or workflows to streamline the metadata update process.

Addressing these challenges requires proactive planning, stakeholder engagement, and strategic decision-making. Small libraries can consider collaborating with other institutions to share resources and knowledge, participating in professional networks and communities of practice, and seeking support from library associations or consortia to overcome these obstacles.

In the subsequent sections, I will provide recommendations and strategies to mitigate these challenges and facilitate the successful adoption and implementation of the Data Dictionary standard in small academic libraries. By addressing resource limitations, enhancing technical expertise, promoting system integration, and optimizing staff capacity, small libraries can overcome these challenges and reap the benefits of standardized metadata practices.

5. Overcoming challenges and implementing the data dictionary standard

Implementing a new standard, such as the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary, can be a complex endeavor for small libraries. However, by addressing challenges proactively and implementing effective strategies, small libraries can successfully adopt and integrate the Data Dictionary standard. The following sections outline key approaches for overcoming challenges and facilitating the implementation process:

5.1. Raising awareness and addressing perceived challenges

One of the initial steps in implementing the Data Dictionary standard is raising awareness and addressing perceived challenges among library staff, stakeholders, and decision-makers. Many small libraries may be unaware of the standard or have misconceptions about its complexity or relevance to their specific needs. Therefore, conducting targeted training sessions, workshops, and presentations that highlight the benefits and practical implications of the standard is essential. These activities can dispel misconceptions, build enthusiasm, and foster a shared understanding of the standard's importance and potential impact.

Additionally, it is crucial to engage key stakeholders, such as library directors, administrators, and IT personnel, in conversations about the standard. By involving them early on, libraries can gain their support, secure necessary resources, and foster a collaborative environment conducive to successful implementation. Addressing concerns and involving stakeholders in the decision-making process can help overcome resistance and ensure a smoother adoption process.

5.2. Training and support initiatives

Training and support initiatives play a critical role in equipping library staff with the necessary knowledge and skills to implement the Data Dictionary standard effectively. Libraries can arrange training sessions or workshops conducted by experts in metadata management or collaborate with regional library associations and consortia to offer specialized training programs. These training opportunities should be tailored to the specific needs of small libraries, focusing on practical implementation techniques, troubleshooting common challenges, and maximizing the use of available resources.

In addition to formal training, providing ongoing support and resources is crucial for successful implementation. Libraries can establish internal documentation, including guidelines, workflows, and best practices, to serve as a reference for staff members involved in metadata creation and maintenance.

Furthermore, creating online communities or discussion forums dedicated to the Data Dictionary standard can facilitate knowledge sharing, collaboration, and problem-solving among small library professionals facing similar challenges.

5.3. Collaboration and knowledge sharing

Collaboration and knowledge sharing with other institutions can significantly benefit small libraries in implementing the Data Dictionary standard. Libraries can form partnerships or join consortia to pool resources, share expertise, and collaborate on metadata-related projects. Participating in regional or national library associations and attending conferences, workshops, and webinars related to metadata management can provide opportunities for networking, learning from experienced professionals, and staying updated on emerging trends and best practices.

Libraries can also engage in collaborative initiatives, such as shared metadata projects or data aggregations, where multiple institutions contribute metadata according to the Data Dictionary standard. These initiatives promote data consistency, expand access to resources, and distribute the workload among participating institutions.

By leveraging collaboration and knowledge sharing, small libraries can benefit from shared experiences, gain access to additional resources, and find support in overcoming common challenges associated with implementing the Data Dictionary standard.

6. Conclusion

6.1. Summary of findings

This paper has explored the impact of the absence of the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard on Goldey-Beacom College's institutional archives collection, highlighting the challenges faced by small academic libraries in managing digital still images. The lack of standardized metadata has resulted in limited discoverability and access to resources, frustrating stakeholders who rely on comprehensive and accurate descriptive information. Through the case study, it became evident that resource limitations, limited technical expertise, integration challenges, and staff capacity for metadata maintenance pose significant obstacles for small libraries in adopting and implementing the Data Dictionary standard.

6.2. Importance of adopting the data dictionary standard

The importance of adopting the Data Dictionary standard for small academic libraries cannot be overstated. By adhering to the standard, libraries can ensure consistent metadata practices, improving the accessibility and discoverability of digital assets. The standard provides a unified framework for creating, managing, and exchanging technical metadata, enhancing interoperability, and facilitating collaboration among libraries and information systems. Furthermore, adopting the standard enables small libraries to meet stakeholder expectations for seamless access to and utilization of digital resources.

6.3. Recommendations for small libraries

Based on the findings of this study, several recommendations can be made for small libraries seeking to adopt the Data Dictionary standard:

(1) Raising awareness and addressing perceived challenges: Library staff, stakeholders, and decision-makers should be educated about the benefits and practical implications of the standard. Addressing concerns and involving stakeholders in the decision-making process fosters a supportive environment for adoption.
(2) Providing training and support: Library staff should receive comprehensive training on metadata management and the implementation of the Data Dictionary standard. Ongoing support through internal documentation, online communities, and external training programs is essential for successful adoption.
(3) Collaboration and knowledge sharing: small libraries should actively engage in collaborations and knowledge-sharing initiatives with other institutions, such as partnerships, consortia, and shared metadata projects. Leveraging collective resources, expertise, and experiences facilitates successful implementation.
(4) Allocating resources strategically: Despite resource limitations, libraries should prioritize the allocation of staff time, funding, and technological resources to support the implementation process. Collaboration and creative resource-sharing can help overcome constraints.

6.4. Future directions and further research

Further research is needed to explore the long-term impact of implementing the Data Dictionary standard in small academic libraries. Future studies can investigate the benefits and challenges experienced by libraries after adoption, examining improvements in discoverability, access, and user satisfaction. Additionally, research could focus on evaluating the effectiveness of training and support initiatives, identifying best practices for overcoming resource limitations, and exploring innovative approaches for metadata maintenance and automation.

As the digital landscape continues to evolve, future directions should also consider emerging technologies and standards that complement the Data Dictionary standard. Exploring the integration of artificial intelligence, machine learning, and linked data approaches with the Data Dictionary can enhance metadata management and further improve access to and utilization of digital assets in small academic libraries.

The adoption of the ANSI/NISO Z39.87-2006 (R2017) Data Dictionary standard is crucial for small academic libraries seeking to improve their digital asset management practices. Overcoming challenges through raising awareness, providing training and support, promoting collaboration, and strategic resource allocation can empower small libraries to successfully implement the standard. By embracing the standard, small libraries can enhance discoverability, access, and utilization of their digital collections, meeting the expectations of stakeholders and contributing to the advancement of scholarly research and community engagement.

About the author

Russell Michalak is the Library Director and an Assistant Professor at Goldey-Beacom College in Wilmington, DE, U.S.A. He has twenty years of experience working in special (law & health sciences)

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