



## TRANSFORMATION OF DIGITAL LIBRARIES AND EFFORTS TO INCREASE INFORMATION LITERACY

Irva Yunita<sup>1</sup>, Zahwa Tara Fadhila<sup>2</sup>, Hardi Wahono<sup>3</sup>

<sup>1,2</sup>UIN Raden Intan Lampung

<sup>3</sup>Penggerak Literasi Lampung

)\* Corresponding Author, Email: [irva@radenintan.ac.id](mailto:irva@radenintan.ac.id);

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### Abstract

Digital libraries have been transformed into gateways to boundless information. Physical book collections now exist in digital format, opening wider and more accessible avenues to knowledge. Their role goes beyond simply providing books, extending to enhancing the digital information. Users can now easily search for and evaluate information, develop critical thinking skills, understand online safety, and even embark on flexible, self-directed learning journeys. Digital libraries act as windows opening new opportunities in the digital age. However, gaps remain to be bridged, such as uneven internet access and suboptimal digital literacy levels. Collaboration among various stakeholders, including government, libraries, academics, and the public, is key to maximizing the potential of digital libraries and empowering communities in this information-rich era.

Keywords: Digital library, information literacy

### Abstrak

Perpustakaan digital telah bertransformasi menjadi gerbang informasi yang tak terbatas. Koleksi buku fisik kini hadir dalam format digital, membuka akses ilmu pengetahuan yang lebih luas dan mudah dijangkau. Perannya pun tak hanya menyediakan buku, tapi juga meningkatkan kemampuan digital masyarakat. Pengguna dapat mencari dan mengevaluasi informasi dengan mudah, belajar kritis, memahami keamanan online, dan bahkan belajar mandiri dengan fleksibel. Perpustakaan digital bagaikan jendela yang membuka peluang baru di era digital. Namun, masih ada celah yang perlu dijembatani, seperti akses internet yang belum merata dan literasi digital yang belum optimal. Kerja sama dari berbagai pihak, seperti pemerintah, perpustakaan, akademisi, dan masyarakat, menjadi kunci untuk memaksimalkan potensi perpustakaan digital dan memberdayakan masyarakat di era penuh informasi ini.

Kata Kunci: Perpustakaan digital, literasi informasi

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## INTRODUCTION

For a long time, libraries have been considered as a repository of knowledge, a place that provides knowledge to various groups of society. The role of libraries has never shifted despite the development of the times, libraries have played an important role in preserving and disseminating knowledge, maintaining intellectual needs, and being a supporter in the world of education. Libraries are repositories of knowledge that have preserved human knowledge for centuries (Nurulita, 2021). They have collected, compiled and preserved numerous books, manuscripts, journals and other materials covering a wide variety of information, science and subjects. These collections have become an important resource for researchers, academics, students and the general public from various circles, because the library is a place that provides many new insights and perspectives.

Libraries are often called heaven by individuals who are thirsty for knowledge, regardless of their socio-economic background or level of education. With the help of libraries, people can discover new knowledge and broaden their horizons throughout life. As time progresses, libraries experience a transition, from conventional libraries to digital libraries. This significant shift was made in response to the digital revolution. With the advent of the internet, digital technology, and the spread of online resources, the way information is created, shared, and distributed has changed. Digital libraries use the power of this technology to make knowledge more accessible, flexible, and inclusive.

Distance and time are often the main problems why users are reluctant to visit the library. Meanwhile, their needs for knowledge and information are available in the library in accordance with the function of the library itself. So the evolution of libraries is very important to make it easier for users to search and find the information and knowledge they need.

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However, today's easy internet access does not always provide positive results for users, so skills are needed digital literacy in order to minimize the negative impacts of the internet. Sorting information correctly and thoroughly is one of the efforts that can be made to prevent the spread of hoaxes (Sari et al., 2021). Therefore, the availability of digital libraries as a source of information really helps efforts to increase digital literacy.

Digital libraries have undergone rapid evolution in recent decades, driven by advances in technology and the evolving needs of society. This evolution ushered in a transformation from traditional physical collections to digital formats, opening up wider and easier access to information (Toya, 2023b).

The role of digital libraries in increasing digital literacy is increasingly important. By providing access to various quality and trusted digital information sources, digital libraries help people to:

- a. Improve the ability to search and evaluate information. Users can easily find relevant information through digital catalogs and powerful search tools.
- b. Develop critical thinking skills. A variety of digital formats, such as e-books, online journals, and multimedia, encourage users to analyze information critically and distinguish fact from opinion.
- c. Increase awareness of information security. Digital libraries often provide education and training on cybersecurity, helping users to avoid online fraud and maintain their privacy.
- d. Strengthening the culture of independent learning. Easy and flexible access to information allows users to learn anytime and anywhere, encouraging independence in seeking knowledge.

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The evolution of digital libraries and their role in increasing digital literacy has had a positive impact on society, opening up new opportunities to learn, innovate and actively participate in the digital era.

However, it should be remembered that there are still challenges in optimizing the benefits of digital libraries, such as gaps in internet access, lack of digital literacy in some communities, and the need to continue to adapt to rapid technological developments.

Collaborative efforts between various parties, including government, libraries, academics and society, are the key to maximizing the potential of digital libraries in increasing digital literacy and empowering society in the digital era.

## **RESEARCH METHODS**

A literature review is an important process for understanding existing research on a particular topic. By reviewing the literature, researchers can learn key concepts, theories, methodologies, and findings in their field, identify research gaps, and position their research in the context of existing knowledge. This process involves searching, evaluating, and synthesizing relevant sources, such as scientific journals, books, and conference proceedings. The quality of a literature review depends on appropriate selection of sources, critical analysis of findings, and the ability to integrate information with one's own research. The benefits of a literature review include gaining a comprehensive understanding of a topic, identifying new research areas, and strengthening a research proposal or manuscript.

## **RESULTS AND DISCUSSION**

Digital libraries were formed due to a transition from conventional libraries, this transition occurred due to increasingly advanced developments. Conventional libraries have an

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important role in maintaining and preserving knowledge because they have a rich history. Therefore, let's look at the background, characteristics and weaknesses of conventional libraries.

#### **A. Conventional library background**

Conventional libraries have been around for thousands of years. The Library of Alexandria is an ancient library in Egypt, founded around the 3rd century BC, one of the most famous examples of a conventional library. It holds many scrolls of interest to scholars in all corners of the world.

Throughout history, libraries have played an important role in preserving and preserving knowledge. In medieval Europe, there were monastic libraries that protected manuscripts, serving as centers of learning. The Renaissance period saw a surge in library development, with renowned collections being established at universities and private institutions. Libraries are very important in the dissemination of scientific discoveries, philosophical ideas and literary works. The change from conventional to digital libraries is not always due to changes in technological advances, but due to changes in the paradigm of library users in how they access and interact with technology. (Kumar & Rao, 2014). In the 19th and 20th centuries, library collections were in the highest position in a library structure, followed by library services. For the community, the role of the library at that time was only as a provider of access and support for print collections (Calhoun, 2014). The focus of conventional libraries is on collections, collection compilation, and dissemination of information. Meanwhile, the orientation of conventional libraries lies in the physical collections available in the library, and users who visit the library physically and then librarians carry out services directly.

#### **B. Characteristics of conventional libraries**

One of the characteristics of a conventional library is its physical existence. The building usually holds a large collection of printed books, journals and periodicals. Here, rows of neatly arranged bookshelves and comfortable reading tables create a tranquil atmosphere ideal for

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studying and reflecting. Far from the hustle and bustle of the outside world, libraries offer a space that is conducive to focusing, deepening knowledge, and expressing creative ideas. Collections are arranged based on a classification system, such as DDC or library of congress classification (Toya, 2023b).

### **C. Librarians and Readers**

Librarians or library staff play an important role in conventional libraries. They serve, organize, maintain and also organize collections carefully so that they can obtain books and resources to build a library with a complete collection. Not only dealing with collection issues, librarians are also responsible for helping users search for and find the books or collections they need. The comfort of the users is also one of the responsibilities carried out by librarians. Librarians are important figures in disseminating information and knowledge (Toya, 2023a).

Librarians or library visitors are also one of the characteristics of conventional libraries. Readers consist of various groups of society. Therefore, the collection provided by the library must be complete in order to realize the function of the library itself as a gateway to information and knowledge.

### **D. Challenges faced**

Traditional libraries, with their abundant book collections and calm atmosphere, indeed store a wealth of knowledge. However, in this digital era, traditional libraries are not free from various challenges. One of the main challenges is limited physical space. Not all books and resources can be stored in a library, so careful selection and destruction of old materials is required to make room for new collections. This of course creates a dilemma for librarians and book lovers.

Another challenge is the preservation of library materials. Books and documents in traditional libraries are susceptible to damage due to frequent use, non-ideal environmental

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conditions, and even natural disasters such as fire or flood. Preservation efforts require careful and ongoing maintenance, including climate control, restoration, and conservation treatments. These challenges require traditional libraries to adapt and innovate. The use of digital technology can be a solution to overcome physical space limitations and increase information accessibility. On the other hand, preserving physical collections remains a top priority, with the application of appropriate methods and technology to preserve scientific treasures for future generations. (Cahyono et al., 2022) It is very appropriate to apply information technology in library activities. This can be seen from conventional library activities which are less efficient and take a long time.

#### **E. Digital library**

Libraries, as sources of information and educational support, play an important role in nation building. As an information center, libraries must provide users with complete, fast and accurate information. Everyone needs information because they are always looking for and getting new information. Changes that occur in library components, such as collection, processing, storage, and use, are known as library transformations, which enable improvements to library processes. Libraries now manage knowledge by managing data simultaneously so that information can be found again more easily. Previously, libraries only managed library materials so that users could use them in traditional ways, known as book management.

This fast-paced digital era, library managers and librarians are required to be more creative and dynamic in facing various changes and a new world dominated by digital media. If in the past people relied on physical media such as books and libraries to search for information, now they are turning to digital media (Vitriana, 2024). This makes distance irrelevant, what is close can feel far and what is far can feel close. These changes require librarians to adapt and innovate. They must be technologically literate, master various digital platforms, and be able to

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use them to provide the best service to users. Creativity and dynamism are the main keys for librarians in the digital era. They must be able to create programs and activities that are interesting and relevant to the needs of society in the digital era.

The role of librarians in the digital era is experiencing a significant transformation. They are no longer just book keepers, but must become reliable data brokers in packaging and managing digital information. Librarians are now required to have digital skills, namely expertise in recognizing, mastering and utilizing digital technology in their lives and routine activities. This includes expertise in using hardware, software and digital operating systems. This capability is important to support library transformation, especially at the university level, both private and public. The birth of a digital library is expected to improve the concept of e-learning, e-research and information literacy to solve emerging problems and open up new opportunities in implementing e-learning, e-research and information literacy at universities. Here are some important roles of librarians in the digital era:

1. Develop and manage digital collections. Librarians must be able to select, process and manage digital collections well, including e-books, electronic journals and databases.
2. Helping users access digital information. Librarians must be able to provide guidance and training to users in using various digital information sources.
3. Developing digital services. Librarians must be able to develop new digital services, such as online reference services, digital lending services and personal information services.
4. Maintain data security and privacy. Librarians must be able to maintain the security and privacy of library data in the digital era.

By having digital skills and continuing to adapt to technological developments, librarians can become valuable assets for libraries and help improve the quality of education in the digital era. Digital librarians are information specialists who can manage digital libraries and use them professionally for planning, data mining, mining, representation, extraction, distribution,

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coordination, internet-based, access and multimedia browsing (Ali, 2015). Libraries, warehouses of knowledge, have not escaped the changing times. In this digital era, libraries must improve themselves so that they remain the main source of information. Changing societal habits and technological advances require libraries to transform. Libraries must be easily accessible via the internet and provide attractive digital services. If they do not adapt, libraries will be left behind and lose their role. But, with the right strategy, libraries can become a source of knowledge that is useful for everyone in the digital era. By transforming, libraries will continue to be a window to knowledge in the digital era.

(Tjiptasari, 2022) Digital libraries can also be defined as libraries that store collections in digital format that can be accessed via computer; This is different from printed media, micro format, and other types of media, where content in digital format can be stored in the library collection database and accessed from anywhere.

Digital libraries have undergone rapid evolution in recent decades, driven by advances in technology and the evolving needs of society. This evolution ushered in a transformation from traditional physical collections to digital formats, opening up wider and easier access to information. (Arum & Marfianti, 2021) The role of digital libraries in increasing digital literacy is increasingly important. By providing access to various quality and trusted digital information sources, digital libraries help people to:

1. Improve the ability to search and evaluate information. Users can easily find relevant information through digital catalogs and powerful search tools.
2. Develop critical thinking skills. A variety of digital formats, such as e-books, online journals, and multimedia, encourage users to analyze information critically and distinguish fact from opinion.

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3. Increase awareness of information security. Digital libraries often provide education and training on cybersecurity, helping users to avoid online fraud and maintain their privacy.
4. Strengthening the culture of independent learning. Easy and flexible access to information allows users to learn anytime and anywhere, encouraging independence in seeking knowledge.

The evolution of digital libraries and their role in increasing digital literacy has had a positive impact on society, opening up new opportunities to learn, innovate and actively participate in the digital era.

## **F. Differences between Conventional Libraries and Digital Libraries**

In this era, there are various types of libraries, two of which are conventional and digital libraries. In this modern era, both offer access to information with their own unique characteristics. Let's explore the main differences between the two:

### 1. Collection:

- a) Conventional Libraries: Physical collections become king. Books, magazines and archives are neatly stored on sturdy shelves, waiting to be explored. Visitors can touch, smell and feel the classic sensation while hunting for knowledge.
- b) Digital Library: A limitless world spreads across the screen. E-books, electronic journals and databases are ready to be accessed with a single click. Digital collections are space-free, enabling intellectual adventure anywhere and at any time.

### 2. Concept:

- a) Conventional Library.

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Heaven for book lovers. The smell of old paper and rows of neatly arranged books provide a calm atmosphere to focus on studying and dive into the ocean of knowledge.

b) Digital Library

A dynamic digital space. The internet and computers are the main gateway to exploring the ocean of information. Flexibility is a key value, allowing access from anywhere and at any time (Zalmi & Zalmi, 2021).

3. Access:

- a) Conventional Libraries: Bound by time and place. Visitors must come to the library location and follow the specified operating hours.
- b) Digital Library: Free of space and time. Users can access digital collections anytime and anywhere, as long as they are connected to the internet. The world of science no longer knows borders.

**G. Disadvantages and Advantages of Digital Libraries**

The advantages of digital libraries are:

- a. Users can access information anytime and anywhere or are not bound by distance and time.
- b. You can search and find information more quickly without using traditional catalogs because there is an online public access catalog (OPAC).
- c. Digital libraries are more profitable than traditional libraries. Chapman and Kenney (in Smith, 2008) put forward four reasons for this: digital collections could be shared between institutions, it could reduce the need for local print materials, it would increase electronic access, and in the long term, it would reduce maintenance and delivery costs. (Subrarta Gatot, 2009).

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d. Security guaranteed.

There are several things that become challenges in managing a digital library, namely:

- a. Not all works can be digitized.
- b. There is still a lack of technological progress in developing countries like Indonesia.
- c. Lack of library staff or librarians who understand how to digitize collections (Rasyid & Rusadi, 2024).

## **H. Digital Preservation**

Preservation is defined by the American Institute for Conservation of Historic and Artistic Work (AIC) as the protection of historic objects through actions that reduce physical and chemical damage and prevent loss of data. Cornell University Libraries says digital preservation is an activity aimed at storing information that can be read again using computer files. Russell (1998) states that digital preservation is the process of providing data in digital form so that digital collections can be used, maintained and integrated with information obtained from the collection. which has been provided previously (Sumarni & Rahmi, 2018). Long-term storage, preservation and accessibility of digital materials is the most appropriate concept of digital preservation. This concept is usually used as a consequence of implementing one or more digital preservation strategies. Technology preservation, technology emulation, or data migration are some examples of these strategies. Maintaining the existence of historical or important objects is the goal of preservation.

There are many advantages of digitalization, for example being able to access the same document simultaneously. Not only that, there are several examples of the advantages of digitalization, namely:

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1. Remote Access. Connects people globally by providing advanced internet access for free.
2. Free Access. One of the most important advantages of digitization is the ability to access various documents for free. If the manuscript is in physical form, only one person can access it at any given time; however, when documents are digital, multiple people can access them at the same time.
3. Preservation and Conservation. Addressing information damage caused by the environment, ignorance, and destruction.
4. Outreach and Promotion. Maintain important information and inform others about the future. The internet has become a phenomenon of the twenty-first century.

As there are advantages, there are obstacles in the digital preservation process, there are several obstacles that often interfere with the digital preservation process, namely:

1. People still feel hesitant to send their manuscripts because of a lack of knowledge about digital preservation.
2. It took a long time, namely ten years to fulfill the pending demand.
3. A process is needed to convince the public about the importance of digital preservation so that documents can still be used by future generations.
4. Digitalization requires large funds.

#### **I. Development of Digital Library Information Systems**

Entering the digital era, library transformation is the main key in improving service quality. This aims to answer the increasingly diverse and dynamic needs of users. The application of cutting-edge technology not only has an impact on smooth internal operations, but also opens up opportunities for wider and deeper interaction between libraries and their users. From a business perspective, digital transformation opens up new opportunities for libraries. By

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optimizing technology, libraries can provide a more memorable user experience, provide faster and more cost-effective services, and expand the reach of information access to a wider community.

In short, digital transformation is a strategic step for libraries to adapt to the times and answer future challenges. With this transformation, libraries can continue to develop and become information centers that are relevant and useful for the community.

The development of digital library information systems has received major attention in efforts to improve the quality of library services. (Rosid & Alvina, 2022) said that management strategies, which include planning, organizing and implementing, are the main factors in improving service quality through the development of digital library information systems. In this digital era, the application of technology in library management is not only limited to the use of information systems. Modern libraries are required to develop more comprehensive strategies to enrich services and provide an optimal user experience. Digital library information systems are no longer just administrative tools. This system is transformed into a platform that enables the provision of diverse digital content, more efficient collection management, and increased meaningful interaction between users and libraries. The digital platform allows access to electronic journals, scientific databases and interactive learning materials.

Users can also take advantage of features such as book recommendations, reviews, and discussion forums to broaden their horizons and connect with fellow users. With strategic and user-focused technology integration, digital libraries can be transformed into dynamic and interactive knowledge centers (Sabitha, 2024). Digital libraries are no longer just a place to store books, but are a space for learning, collaborating and accessing unlimited information. The Digital Library Information System (SIPD) is like a gateway to the unlimited treasures of knowledge. This digital platform is designed to manage, store and provide users with access to

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various collections of information in digital format. Users can explore a variety of e-books, electronic journals, databases and other multimedia materials easily and comfortably. The following are some examples of common functional requirements in digital library information systems(Harsono, 2020):

1. Searching and finding information: The system must provide easy-to-access search facilities so that users can find the information they need, which is relevant to their search.
2. Data collection management: Enables library staff or commonly known as librarians to manage digital collections, including the process of adding, editing and deleting information material.
3. Borrowing and returning: provides facilities for the process of borrowing and returning digital information materials, including managing the status of the loan, the length of time of the loan, and the status of the return.
4. User management: allows librarians to manage user accounts, including registration, authentication, and profile management.
5. Multi-platform availability: provides access to the system from various types of platforms and devices such as computers, cellphones, iPads, so that users can access anytime and anywhere.
6. Reports and analysis: provides facilities to track system usage, create activity reports, and analyze usage patterns for the purpose of evaluation and improvement.
7. Integration with external resources: integrate with external resources such as third-party databases, other digital libraries, or content aggregation services.
8. Security and privacy: provides strong security to guarantee sensitive information and user privacy, as well as preventing unauthorized access or data leaks.

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9. Social interaction: allows users to interact with the platform, such as providing comments, input and assessments on information material, various content or participating in discussion forums.

Functional requirements are an important basis for designing an effective and responsive digital library information system (SIPD). By understanding these needs, SIPD can be optimized to meet the expectations of library users and managers.

## **J. Information Literacy**

Information literacy is an important key in this digital era. However, in schools, implementation is still hampered by several internal challenges (Kurnianingsih et al., 2017), like:

### 1. Insufficient Capabilities of Teachers and Library Staff:

- a. Teachers and librarians do not yet have sufficient knowledge and skills in the field of information literacy.
- b. Teachers are not yet accustomed to integrating information literacy in the teaching and learning process.
- c. Librarians have not been able to manage and provide digital information sources effectively.

### 2. Lack of School Policy on Information Literacy Program:

- a. There is no structured and measurable information literacy program in schools.
- b. Schools have not allocated an adequate budget to support information literacy programs.
- c. The school has not provided sufficient training to teachers and librarians regarding information literacy.

### 3. Absence of Information Literacy Program in School Libraries:

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- a. School libraries do not yet have a complete and up-to-date collection of digital information sources.
- b. School libraries do not yet provide adequate information literacy services for students.
- c. Students do not have easy access to digital information sources and information literacy services.

The impact of internal challenges regarding information literacy in the school environment certainly has an impact on students, such as:

- a. Students do not have sufficient abilities to search, search, process and evaluate information effectively and efficiently.
- b. Students are easily exposed to false and misleading information.
- c. Students cannot utilize information to learn and solve problems optimally.

The solutions offered are related to overcoming these challenges, such as:

- a. Increase training and capacity development of teachers and librarians in the field of information literacy.
- b. Forming school policies regarding information literacy programs.
- c. Developing information literacy programs in school libraries.
- d. Providing easy access to digital information sources and information literacy services for students.

By overcoming these internal challenges, schools can create a conducive environment for increasing students' information literacy (Nugraha, 2022). This will help students become independent, critical and creative learners in the digital era.

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## CONCLUSION

Digital libraries have experienced rapid evolution and have an important role in increasing society's digital literacy. With a digital library, users can easily search and evaluate information, develop critical thinking skills, increase awareness of information security, and strengthen a culture of independent learning. However, there are various challenges that digital libraries still face, such as gaps in internet access and a lack of digital literacy among the public. To overcome this challenge, close collaboration is needed between government, libraries, academics and the community to maximize the potential of digital libraries in increasing digital literacy.

Digitalization has many significant advantages, such as remote access which allows users to access information from anywhere and at any time, free access which expands the reach of information, preservation and conservation of information which can be done more efficiently, as well as dissemination and promotion of information which can be done more efficiently. wider. However, there are also obstacles in the digitalization process, such as a lack of knowledge about digital preservation, the long time required for the digitalization process, the need to convince the public of the benefits of digitalization, and the large amount of funds required. Challenges in digital literacy in schools cannot be ignored, such as inadequate teacher and library staff skills, lack of school policies regarding information literacy programs, and the absence of information literacy programs in school libraries. To overcome this challenge, solutions that can be implemented include improving teacher and librarian training, forming school policies that support information literacy programs, developing information literacy programs in school libraries, and providing easy access to digital information sources for students and teachers.

Traditional libraries are susceptible to damage and require careful preservation. The use of digital technology can help increase the accessibility of information stored in traditional libraries. Librarians in the digital era must have adequate digital skills to manage digital libraries

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well. Digital libraries play an important role in increasing people's digital literacy, however there are significant differences between conventional and digital libraries, both in terms of collections, concepts and information accessibility. The advantages of digital libraries include easier and faster access, but challenges in managing digital libraries include the lack of technological progress in developing countries. Digital preservation is an important process of providing data in digital form so that it can be used, maintained and accessed in the long term. With a better understanding of the challenges and solutions in digital literacy, it is hoped that digital libraries can continue to develop and provide maximum benefits for society.

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