

# Information and Data Literacy Accomplishment Education in University Library under Big Data Environment

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**Abstract:** With the advent of the era of big data, how to better improve the education practice and innovation reform of library data literacy has become a hot topic of discussion in today's society. Through the analysis and elaboration of the problems in modern data literacy education, this paper puts forward the corresponding methods and strategies for data literacy education and practice innovation. In the era of big data, as one of the literacy education institutions, university libraries have gradually changed from traditional information literacy education to data literacy education. Therefore, this paper expounds in detail how to make use of the convenience and rapidity of network information in the era of big data, so as to strengthen the cultivation of big data awareness and improve the ability.

## 1. Introduction

The emergence of big data has promoted industrial transformation and industrial innovation in society, enhanced the quality of personal life, and changed the researchers' awareness and attitude towards scientific data. Today's scientific research work has a significant increase in the awareness and ability of researchers, specifically for researchers with higher information literacy and data literacy. With the rapid development of the Internet and the background of the development of the modern big data era, the speed of information circulation in our country has been accelerating, and the various educational trends in our country have also appeared. The practical functions of the major university libraries have also undergone great changes, so the development of the library has become more digital and networking. Among them, the education and practice innovation of data literacy have undergone tremendous changes with the continuous improvement of major university libraries. Based on the contemporary reality and through the analysis and exploration of the modern big data era, this paper puts forward some feasible development strategies for the practice and innovation of modern data literacy education, and provides a more complete structure of education system for colleges and universities to carry out data literacy education [1].

## 2. The significance of data literacy education

Data literacy, also known as data information literacy, refers to the ability of researchers to collect, organize and manage, process and analyze scientific data, share and collaborate on innovation and utilization, as well as the process of data production, management and dissemination. Morality and behavior norms. Data literacy is a concept with inheritance, which is based on quantitative literacy, statistical literacy, digital literacy developed similar to the concept of information literacy used to describe people's large data environment adaptability, but also on the basis of statistical literacy, digital literacy, information literacy. In the big data era, facing the data-intensive knowledge environment, the ability of statistics and data analysis will become an important part of the necessary knowledge framework for teachers and students. Therefore, data literacy education should be brought into the higher education reform plan of our country as soon as possible, and should be promoted and implemented in an all-round way. It is related to the growth of talents and the whole nation. With the improvement of knowledge level, university libraries should continue to assume the important task of data literacy education. For colleges and universities, data literacy education is to

cultivate college students' ability to perceive, collect, process and use data in the era of big data.

In the information age, people need to have information literacy based on computer operation and Internet application, which is mainly represented by information retrieval and information organization. In the big data age, information literacy is still the basic literacy of people, but the ever-developing big data environment requires people to have a certain amount of data. Data literacy characterized by organization, data analysis and data transformation ability can further adapt to the development of social environment. Therefore, some people believe that data literacy stems from information literacy, quantitative literacy, statistical literacy and other concepts.

Data literacy is closely related to the concept of information literacy. "Information literacy" usually refers to the ability of an individual to recognize the need for information and to retrieve, evaluate and utilize it effectively. Among them, the most basic information literacy is information ability. Data literacy, also known as data information literacy, usually refers to the knowledge and ability to collect, process, manage, evaluate and utilize data in scientific research, as well as the ethics and behavioral norms in the process of data production, management and publication [2].

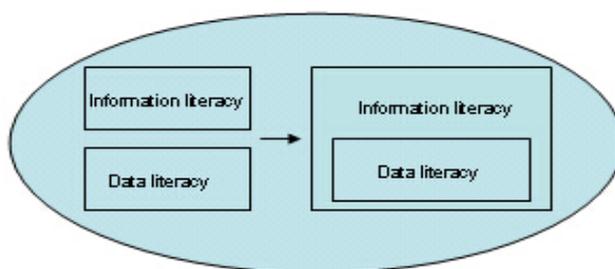


Figure 1. Data literacy and information literacy

### 3. Data literacy education contents in the age of big data

#### 3.1 Awareness education of data literacy

Data awareness is the premise, refers to the sensitivity of the relevant data in learning and life, and can discover the value and significance of the relevant data. Through long-term accumulation and deliberate exercise, people can gradually develop the awareness and interest of paying attention to and discovering relevant data.

Although data literacy will be known and understood by more and more people with the arrival of the big data era, the dialectical acceptance of the basic awareness of data literacy has to undergo a process of development. Therefore, for the big data era, the public data literacy education should first be awareness education, that is, to let the public know what is clear. What is big data, what big data can do, how to generate the big data around, how to protect the privacy of big data, and so on [3].

#### 3.2 Skills education in data literacy

The ability to use big data determines the application level of big data. Therefore, the library's training of the people's big data-related skills, such as data management and analysis, will also become the main content of data literacy education. The education and training of these contents need not only theoretical study, but also certain theoretical study.

Data application is the purpose, including data analysis and data utilization two processes. Data analysis refers to the interpretation of problems from data, summary of patterns and laws, which requires the accuracy of the data evaluation, understanding of the true meaning of the data, mastering the basic data statistics and analysis methods, can use data analysis tools to make themselves abstract data "translator". And know how to share data, data-based support, combined with the expertise learned, decision-making judgment to serve the community.

Data processing skills are the foundation, which include data acquisition skills and data management skills. Data acquisition skills include the understanding of data types and data formats in data sources and the mastery of data acquisition methods. Data management skills mainly refer to

data description, identification, storage, update, and query and so on [4].

### **3.3 Critical spirit and data ethics education**

Criticism and data ethics are guarantees, and data are objective, but not necessarily credible, true and effective. Using data to get the results are not necessarily correct, data reflects the reality itself has limitations, so do not blindly believe in data, to reflect on the results obtained through data. We should abide by the data ethics of intellectual property protection, sharing rules, privacy and security involved in the process of data acquisition, generation and use.

### **3.4 The ultimate pursuit of literacy**

In the process of cultivating the data literacy of the library, the library needs to embed the library data librarian into the real demand environment of the users, and provide decision-making reference and guidance for the ultimate application of large data. And enhance users' interest in data literacy [5].

## **4. Overview of data literacy education in University Libraries at home and abroad overseas survey**

In recent years, the research of data literacy education in some foreign university libraries has entered the stage of practical exploration. There are two specific ways of training services. One is to develop data resources navigation services, that is, through the establishment of data resources navigation, data acquisition tools, data management methods, data application platform and combing available data resources, improve the reader's data awareness, teach data utilization skills. Secondly, data literacy education should be carried out in the form of elective courses, special discussions, online courses, etc. The contents mainly involve basic concepts, skills training, platform tools, and data literacy education in various subjects [6].

At present, the research and practice of data literacy training in China is still in its infancy. Researchers mostly discuss data literacy macroscopically from the perspectives of the concept of data literacy, the transformation of Library functions, and the coping strategies in the era of large data. Some university libraries only attempt the data literacy education from the adjustment of lecture content.

In the environment of large data, teaching activities, scientific research, social information publishing and so on are more or less affected by big data. Especially in the process of scientific research, the data literacy of researchers has a great impact on the direction, depth, and convertibility of research results. In addition, all kinds of data literacy are based on data literacy. The practice of education and data management services is also gradually emerging [7].

## **5. Measures and methods of library data literacy education in big data Era**

### **5.1 Differentiate user groups and work out training plans that are close to user needs.**

Constructing the curriculum system of data literacy for university student readers: The curriculum system of information literacy and information retrieval has been perfected, and data literacy education is still a new concept.

Developing data management services: Some foreign research libraries have established data centers, developed data management services and carried out data storage management.

Researchers: Researchers themselves have a certain sense of data, but also can collect, process, express a series of data processing work.

Students: Data literacy has not been put on the agenda of user education for a long time, but as its forerunner, information literacy education has always been one of the main contents of user education in University libraries, and has long been valued by the University Library industry.

Data Service Librarian: With the popularization of the knowledge and application of large data, the user education content of University Library gradually includes the cultivation of data awareness

and data ability [8].

## **5.2 Embedding data literacy education into service and related courses.**

Self help data resource utilization mode: With the advent of the big data era, the resource service model with librarians as the intermediary has gradually changed to the reader self-service resource service model.

Integrate into related courses: In the United States, the inclusion of data literacy modules in higher education curriculum systems has been advocated and supported by higher education associations, universities and Research Libraries associations.

Data literacy education is closely integrated with student education: At present, both college education and primary and secondary education emphasizes practice and hands-on ability.

Interactive training of data literacy tools and student readers: If a worker wants to do well, he must first use his tools. After students have the awareness of data literacy and the corresponding quality, mastering the corresponding data literacy tools has become an inevitable requirement. These tools can greatly improve their data analysis ability, can dig out the association between data, and play a multiplier effect with half the effort.

Multi-party collaborative data literacy education mode for student readers: College libraries must cooperate with other departments of the school, with technical database providers to carry out data literacy education.[9]

## **5.3 Developing data literacy education activities.**

Strengthen publicity and promotion: Before carrying out data literacy education, we should fully communicate with readers to master their specific needs. Different types of readers have different expectations for their own data literacy, and different groups have different needs for data literacy knowledge and data management services.

Training librarians with data literacy: Data literacy education has just started in China. Most librarians still think about literature retrieval and information literacy education.

Training students' data literacy awareness: Data consciousness includes data subject consciousness, data acquisition consciousness, data sharing consciousness, data update consciousness, data security consciousness and data talent consciousness.

Enhance awareness of responsibility for data literacy education: At present, the research on data literacy education in domestic library circles is still in its infancy. University libraries should inherit their original responsibility to educate readers on information literacy. They should realize clearly that the literacy education for readers can not only stay on how to obtain data resources, but also what are the information resources. What kinds of search terms and retrieval methods are used.

Forming reader's data skills: The ultimate goal of combining data literacy education with student reader curriculum education is to develop the reader's data skills [10].

## **6. Conclusion**

To sum up, in the actual social environment, due to different countries attach different importance to data literacy, the development and implementation of relevant education is also quite different. Foreign university libraries have already carried out relevant courses, lectures and study plans of data literacy education. This paper discusses the practice and innovation strategies of library data literacy education under the background of data era. The emphasis of data education still lies in the strong support of universities for this work, and the introduction of corresponding systems and policies as the implementation criteria. At present, a great deal of work has been done in Information Literacy Education in domestic university libraries, but the special education of data literacy for reference librarians or data service librarians is still insufficient. At the same time, the data awareness, data ability and training ability of librarians should be constantly improved to realize data management support for scientific researchers. Service is also one of the future development directions of university libraries.

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