

# Research on the Construction of Key Discipline “Mathematics” Literature Support Platform

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**Abstract**—Mathematics literature support platform is the inevitable choice for the construction of key discipline of mathematics. Through the construction of the platform, it can provide a convenient and quick service for the teachers and students of mathematics, so as to better promote the development of key discipline. The construction of mathematical literature support platform is of great significance, including setting goals; resource selection; mathematics exercise library; mathematics teaching reference library ;mathematics electronic teaching plan library. collection and processing. The platform includes four sub libraries, such as mathematics teaching material library;. At the same time, in the construction of the database, we should also pay attention to the next issues: standardization and authenticity; digital indexing and cataloging; law and safety control; results application. At last the future research is suggested.

**Keywords**—*key discipline; literature support platform; Mathematics;set goal;resource selection*

## I. INTRODUCTION

Key disciplines is generally refers to the universities or academic research institutions, the limited resources for some disciplines, in order to achieve a breakthrough in the talent and technology, and the occupied a place in the college construction and development in the fierce competition, these specialist is called "key discipline"[1-6]. Construction of professional literature support platform, deepen the service of library literature information features, are the base that to ensure the key disciplines faster and better development, must closely cooperate with the development of key disciplines in the school, make the key disciplines literature support do implement.

## II. THE SIGNIFICANCE OF THE CONSTRUCTION OF THE KEY DISCIPLINE LITERATURE SUPPORT PLATFORM

The protection of key domain documentation in the platform is around the literature information resource construction of key disciplines in colleges and universities, to achieve the specific needs of documents and the establishment of literature information resource system. Its ultimate goal is to construct the key disciplines literature support platform. This platform is based on the literature information resources network platform, taking the professional document information construction as the goal, the library's collection literature information resources are fully utilized[7].

The construction of key disciplines in universities literature support platform, in terms of the significance of the library itself, which combine the library literature resources construction and key discipline construction of teaching materials, the library at the completion of the construction of library resources at the same time and support the school teaching materials construction, and it can better reflect the library basic function for serving the teaching and scientific research.

Colleges and universities in the country large-scale provide discipline construction of literature support background, key disciplines literature support platform construction, timely replenishment of the specific discipline areas of new literature, new information, new resources can be facilitated teachers and students to use the literature information resources of the library, and can broaden the field of library knowledge service, to enhance the library's status and prestige.

## III. THE CONTENTS AND IDEAS OF THE CONSTRUCTION OF KEY DISCIPLINE LITERATURE SUPPORT PLATFORM

### A. Set Goals

To determine the construction goal is the first step in the construction of key discipline literature support platform. According to the specific circumstances of the school, first consider the level of key disciplines should be in the choice of key disciplines, is the national, provincial or university; and secondly to analyze the discipline category, is the liberal arts or science; the third is to analyze the research direction of key disciplines, is the characteristics discipline or discipline. Through careful analysis of the final construction objectives. Our preferred "key discipline of university mathematics"[8].

### B. Resource Selection

After the construction of the key discipline literature support platform is determined, the selection of the literature information resources should be carried out[9]. To university key disciplines of mathematics as an example, according to the current situation of the use of mathematics and applied mathematics professional textbooks determined, to be included in the protection of key domain documentation in the platform of teaching material, exercises, teaching reference books related to professional literature, and list the detailed bibliography, be incorporated into "a literature support system". On this basis, using the "Citation Index" method, according to the

reference literature search, screening, listing a new bibliography, the inclusion of the "two levels of literature support system"[10]. If you feel that the two levels of literature support system can not cover the entire range of disciplines, can be based on this method to build the third, the fourth level literature support system.

### C. Collection and Processing

Collection and processing is handling all levels of support documents that included in the list, marking the document collection, can be directly into the data acquisition and processing in key disciplines literature database construction; and no collections can be the use of procurement, library interlibrary loan, purchasing electronic resources collection, to ensure the completeness of the literature support platform in the literature and comprehensive[11].

## IV. THE CONCRETE PRACTICE OF KEY DISCIPLINES DATABASE CONSTRUCTION

### A. Construction Platform Selection

Construction of key discipline literature support platform to select the system should set resource processing, classification, cataloging, indexing, storage and retrieval and management, including: the retrieval server, database management system, database connector, front database development tools. Therefore, to do the technical support work is a good focus on key discipline construction[12].

At present, the database construction platform of university library generally includes TPI, TRS, DESi and other management systems. According to their own situation, the library chose DESi as the integration platform of data processing[13]. The choice of software mainly consider the capacity of the key disciplines literature support database and the scale, requirements in terms of retrieval interface and the use of methods such as easy for library staff to accept and master, resource sharing and information exchange should be so. Founder DESi retrieval server can be easy to realize the resource information format conversion, information storage and retrieval, can satisfy the user's different needs and the information resources in a variety of formats released to sharing platform, is very suitable for the protection of key domain documentation in the platform construction[14].

### B. Overall Design Idea

The overall design idea of the mathematics literature support platform is, a unified database name is divided into 4 sub databases. The classification of the sub databases is according to the connotation of the literature resources, so that the organization, integration and management of the literature information resources can be divided. Based on the collection and analysis of mathematics literature information resources, the platform is divided into mathematics teaching material library, mathematics exercise library, mathematics teaching reference library and mathematics electronic teaching plan library[15-18]. Among them, the mathematics teaching material library mainly includes mathematics textbooks currently used in

the university mathematics and applied mathematics professional; the mathematics exercise library mainly includes the mathematics curriculum of problem sets and solutions to the exercises in the data; the mathematics teaching reference library mainly includes mathematics courses related to the famous classical works, teaching reference books and reference; the mathematics electronic teaching plan library included the college and other colleges and universities mathematics curriculum of electronic lesson plans. The relationship is shown in figure 1:

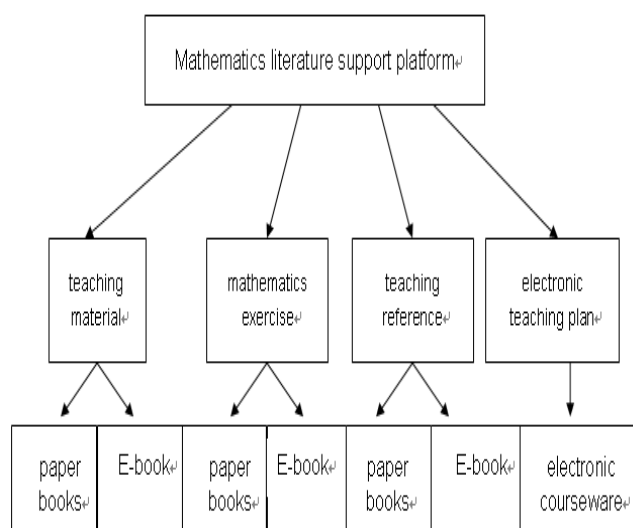


Figure 1 the structure of the mathematics literature support platform

TABLE 1 THE CONTENTS DIVISION OF THE SUB LIBRARY

sub library name	included content	format
mathematics teaching material library	the mathematics teaching material in colleges and universities	text
mathematics exercise library	exercises set of mathematics curriculum and the data of problem solving	text
mathematics teaching reference library	a famous classic book, teaching reference books and reference materials	text
mathematics electronic teaching plan library	mathematics course electronic teaching plan in the college and universities	text

In the structure design of the mathematics literature support platform, it is important to consider the cross database retrieval problem, which requires a unified metadata template to solve the problem[19]. Database system software can provide a variety of metadata template, mathematics teaching material library, mathematics exercise library and mathematics teaching reference library to select a consistent metadata template, both for the convenience of index of metadata, and to provide users with a unified search interface. Mathematics literature support platform metadata template metadata set selection in two ways: one is the reuse of DC metadata set,

the second is the set of custom metadata ,the contents structure particularity of mathematics electronic teaching plan library can select a custom set of metadata[20].

The key problem of this stage is the choice of technical parameters, original information fidelity, clear and accurate is the priority among priorities. At the same time, pay attention to users convenience, digital information should facilitate the transmission, browse, in order to meet the needs of different users[21]. Scanning image specifications are 300dpi, gray or color mode, TIFF format, it can provide online use after turns 300dpi into 150 dpi or 72 dpi. ( Table 2)

TABLE 2. GUIDE FOR THE SELECTION OF TECHNICAL PARAMETERS

technical parameters	original version (save version)	browse version	preview version
image resolution ratio	long side 300 dpi -1600 dpi	150 dpi	72 dpi
size dimension	same with the original	long side 600 pixel	long side 100 pixel -200 pixel
color darker	1 bit monochrome 8 bit gray 24 bit color	1 bit monochrome 8 bit gray 24 bit color	1 bit monochrome 8 bit gray 8 bit index color 24 bit color
file format	TIFF	JPEG	JPEG、GIF
compression	lossless compression	JPEG,Medium quality compression	JPEG,low quality compression

### C. Data Collection and Processing Description

The literature information resources after screening database should process description based on the library collection. In the description of data processing, the reuse of metadata DC 15 core elements as the core element set, metadata design of the title description, the author's description, key words description, ISBN description, electronic book, try to adopt common standards for data description, mathematics literature support platform of each sub Library can provide retrieval, management, sharing trinity one-stop retrieval service[22].

### D. Online Publishing and Use

The literature information resources after screening database should process description based on the library collection. In the description of data processing, the reuse of metadata DC 15 core elements as the core element set, metadata design of the title description, the author's description, key words description, ISBN description, electronic book, try to adopt common standards for data description, mathematics literature support platform of

each sub Library can provide retrieval, management, sharing trinity one-stop retrieval service.

The founder DESi system realize the metadata templates for publishing and data management and maintenance, achieve access to the literature support platform through the realization of the two object, Connection and Record set, focusing on discipline literature support platform construction on the basic idea of the existing construction, add the following content: in the development of the discipline and the latest developments in the textbooks[23].

### E. Need to Pay Attention to the Problem

#### 1) Standardization and Authenticity

The construction of mathematics literature support platform is a long-term and meticulous work, first of all to follow the relevant national standards. In accordance with the national standards organization of literature and information resource data, such as literature information resource file format, cataloging rules. At the same time, according to the particularity of the platform of literature information resources, keep the authenticity and integrity.

#### 2) Digital Indexing and Cataloging

The literature information resources of mathematics discipline should be added to the digital platform and a lot of basic work should be done. To make paper resource digitization, submitted online is a tremendous amount of work, including digital before finishing work, pre recording and indexing work, need professional and technical personnel to operate[24].

#### 3) Law and Safety Control

Mathematics literature support platform should pay attention to law and security issues. First, the collection and management of documentation and information resources requires the legal authority, for example, to provide public privacy issues, the staff to comply with the relevant laws and other information security issues, etc.. At the same time, through the scientific and reasonable technical and management means, the literature information resource utilization is fast and effective, but also has the security support [25].

#### 4) Results Application

The construction of literature support platform for mathematics discipline is to be used, and the simple application is the literature search, and the higher level of application is intelligent search and knowledge discovery. Therefore, in the construction of the platform, it is helpful for the construction and application of the platform[26].

## V. SUMMARY AND THINKING

To carry out the construction of key discipline literature support platform, we can realize the reasonable allocation of document information resources, reduce unnecessary waste, and give full play to the maximum effectiveness of Library collection. Due to the construction of key discipline literature support platform has the general character, a discipline document support platform construction experience can provide a reference for the

construction of other disciplines literature support platform, the future can be based on new ideas and creative thinking.

Of course, there are still many problems in the construction of the key discipline literature support platform. There is a contradiction between the two kinds of the actual needs of the readers and the supply of the documents in the support platform. Analysis of the reasons: the first is library literature information resources and resources repeated rate is too high, small amount of copy, can not meet the actual needs of the discipline construction; the second is taking part in the entrance exams for postgraduate schools mathematics teaching materials and exercises related literature resources, increasing demand. In the construction of the database, it should be according to the needs of the readers to adjust the selection and collection of the discipline literature information resources.

Literature support platform data source has many relates to the problem of copyright protection, the protection scope of the documents in the database is limited, mathematics foreign original teaching materials and classics and entry will is restricted. At the same time, the database construction is a long and huge project relates to human, material and financial resources to each, during the data processing, due to the personnel's quality, including specialty, knowledge level, cognitive level and other reasons, the selection of themes, in metadata and input will appear all sorts of problems, many need to solve after the completion of the follow-up questions.

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