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*Current status of "Net Resource Subject Guide"  
of Chinese academic libraries*

## 1. Introduction

Chinese Academic Library and Information System (CALIS), one of the most important public service system projects, was authorized and supported financially by the State Council of China. In order to integrate national investment, modern library service and advanced technology, abundant document resources of academic libraries and human resource, CALIS devotes to document guaranteed system construction, with focus on Chinese higher education digital library development. CALIS promotes information resource co-construction, co-communication and sharing among Chinese academic libraries. The long-term objective of CALIS will be concentrated on the service for Chinese higher education and the best usage of national huge investment.

Among all the projects of CALIS, subject collection and navigation are the core. Currently, 46 academic libraries are applying for 204 subjects databases to be mounted on CALIS network. At last only 45 university's 157databasepassed are approved. All the experiences acquired from database construction as well as subject guide design should be summarized and investigated for resource sharing, online survey has been carried out by a group of scholars and this article is the result of the survey. It may be seen as the current report on Chinese academic information resource subject classification system construction.

Methods used in this survey include online sampling. Taking approved databases for granted, data of subject guides and other related aspects are collected and analyzed. The academic libraries surveyed are all connected to China Education and Research Network (CERNET), which is the largest network for Chinese higher education. The geographical areas spread all over the country, excluding Hong Kong and Macao. The time period is limited with 2002-5 -1 to 2002-5-30. Objects of survey refer to distribution of subjects, structure of classification, information records, web page design, information retrieval system, the amount of information records.

## 2. General Status

According to subjects to accumulate and manipulate net resources, CALIS project assigned 204 key subjects to individual university libraries based on university research and education focus. Therefore the database construction all spreads around the subjects selected to collect, evaluate, classify, organize and sort academic resources.

On the homepage of subject guide, brief introduction to content, bibliographic classification, active hyperlink, information retrieval platforms are also needed for users to access to the database. Subject directory for the web information and associated links are also useful and important tools for the exposure of database content.

Investigation on 459 academic databases shows that 46 university libraries (altogether 49) have established the web resource subject navigation system(excluding those can't be visited.), 2 are preparing their subject guides. Among them 12 libraries provide not the real navigation system.

Generally speaking, the web information subject guides could project characteristics and structures of database. Most of them establish their subject guide by Chinese Classification System. More than 20% of guide systems have classified rationally with clear hierarchy of web page and detailed introduction to the contents of database. At the same time the amount of records are large enough to cover the main information resource of the specific discipline. However, some databases only contain limited records, which are categorized into very broad classes. Some even could not provide the introduction to the content.

## 3. Distribution of Subjects

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Subject navigation is organized for the information on various media in certain field. On CALIS, 46 university libraries have built 256 subject guide systems. The subjects are involved in social and natural sciences and humanities. Different libraries have arranged different subject guide structures, which can be categorized into three groups: (1) Based on the first broad subject; (2) Based on the second subdivision; (3) Based on key subjects. Usually CALIS subject guides put the focus on the key subjects of university. The budget for database construction is decided according to the university focus subjects.

### **3.1 Statistics of Subject Database**

Divided by broad subjects, the databases with the content on natural and social sciences, or interdisciplinary and cross-disciplinary databases usually built subject guides for the content of the database. The distribution of subject is as follows:

Natural science (190): 71.70%

social science (75): 28.3%

Among them there are some which have different subjects in one database.

Detailed distribution is as follows:

**Social Science (75)**

Philosophy and Religion (14):

Psychology (2) Aesthetics (2) Ethics (1) Religion (1) Marxism Philosophy (2)

**Politics and Law (13):**

Politics (2) Marxism (2) Science of Law (2) Law (3) International Law (3)

Science of Law and Economy (1)

**Language and Literature (6):**

Chinese linguistics (2) Chinese ancient literature (2) Literature and arts (1),

Literal science and Chinese culture (1)

**Economics (22):**

Business (2) Government finance (2) International Economy (2) Economics (7)

Accounting (1) Finance (4) Others (5)

**History and Geography (7):**

History (2) History of Qing Dynasty (1) Modern history (1)

History of Chinese and foreign civilizations (1) Historical geography (1)

Regional economy (1)

**Education and Journalism (4):**

Pedagogy (1) Theory of Elementary Education and Practice Study (1)

International journalism and Communications (1) journalism (1)

**Sociology and Library and Information Science (9):**

Sociology (2) Demography (2) Management Science (2)

Library and Information science (3)

**Natural Sciences (190)**

**Mathematics and Computer Science (10):**

Mathematics (6) Applied math (1) Computer science (1)

Automatic Control (1) Software and System (1)

**Physics (14):**

Physics (4) Applied physics (1) Mechanics (3) Optics (2)

Electronic Engineering (2) Electronic Magnetism and Circuit (2)

**Chemistry and Chemical industry ( 15 ):**

Chemistry (2) Physical Chemistry and Applied Chemistry (2)  
Polymer Chemistry (1) Chemistry and Chemical Industry (6)  
Chemical Industry (3) Organic Chemical Industry(1)

**Biology ( 21 ):**

Biology (4) Life-Science (3) Zoology (3) Botany (2) Genetics (1)  
Microbiology (3) others (5)

**Medicine ( 15 ):**

Medicine (2) Surgery (2) Stamotology (2) Neurology (1)  
Anatomy and Embryology (1) Toxicology (1) Others (6)

**Agriculture ( 8 ):**

Agricultural Engineering (1) Agricultural Automation (1)  
Mechanism (1) Cultivation and Cropping(3) Penology (1) Storage (1)

**Information and Communication ( 12 ):**

Communication (1) Communication and Electronic Materials (5)  
Information science (1) Computer and Communication (2) Others (3)

**Geology and Oceanography ( 8 ):**

Geology (2) Earth Exploration (1) Earth Materials (1) Oceanography (1)  
Oceanographical Branches (3)

**Environmental science ( 9 ):**

Environmental Science (5) Environmental Engineering (2)  
Environmental Hygiene (1) Residential Environment Science (1)

**Material science ( 11 ):**

Material Science (6) Material Engineering (2)  
Functional Material Science and Technology (1) Inorganic Materials (2)

**Coal and Minerals ( 10 ):**

Coal Resources (2) CoalField Geology (1) Mineral Resources (3)  
Mine (1) Mining Area Environment Survey (1)

**Transportation ( 8 ):**

Vehicles Engineering (1) Shipping (2) Bridge (2) Rolling stock (2)  
Navigation (1)

**Aviation and Aerospace ( 9 ):**

Aeronautics and Aerospace (1) Aeronautics and Aerospace Mechanics(2)

Command and Control (3) Aviation Medicine (1) Technology (2)

**Engineering (12):**

Power Engineering (1) Civil Engineering (2) Garment Engineering (1)  
structure Engineering (2) Energy Resources (2) Rock and Soil (1)  
Petroleum and Gas (3)

**Industry and Technology (28):**

Architecture (5) City and Planning (1) Mechanics (9) Control (1)  
NuclearTechnology (1) Electric Power (4)  
Nondestructive Testing (1) Pressure Process (1) Fiber Material Product (2)  
Sugaring (1) Papermaking (1) Metallurgy (1)

**3.2 Distribution Analysis**

Among branches of science, economics (22), biology (21), chemistry and chemical industry (15) and physics (14) are dominating subject database construction, which reflects the reality of Chinese higher education and research interest of scholars. When CALIS evaluates subdivision focus for database construction, stresses are put on the superiority of university. These subjects form the core of higher education in China. Different libraries work cooperatively in order to avoid duplication and save the resources of labor and materials.

Comparing between different database structures, subject guide plays crucial role in data accumulation and organization.

**Classification Structure**

Navigation depends on efficient classification system. Owing to the characteristics of web information, the classification structure of each database shows different hierarchies for information organization.

On CALIS most library databases usually adopt one of the two subject guide construction methods.

(1) By information resources categories.

From the first level of data organization, users could find basic information about electronic publications, which are usually arranged by certain sequence. The main categories are as follows:

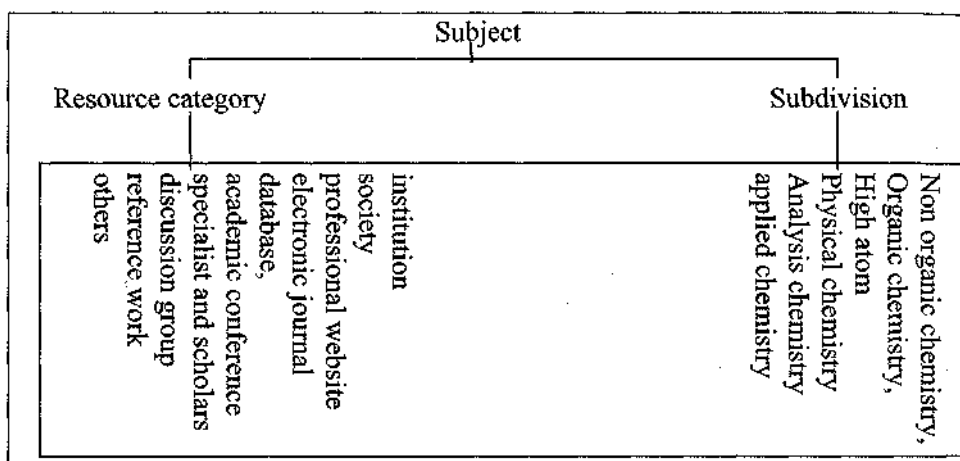
Governmental institution, research institution, social organization, electronic journal, database, professional websites, patent, academic conference, specialist and scholar, discussion group reference works, etc.

Under the first level division, some subject guide systems subdivide resource categories into full- text, abstract, title, internal document, Chinese and foreign language, library inner resources, web resource. Some list dictionary and lexicons, manual, standards terminology, acronym, properties list, specific subject software, etc.

(2) By subject subdivision.

Some databases divide second level of classification into more detailed list. For example, on chemistry database, the subject guide lists organic chemistry, non organic chemistry, physical chemistry, analysis chemistry, and applied chemistry,

The tree of subject looks like this:



Every university library classifies their database subjects with the consideration of need in education and research, at the same time information resource categories have also deeply influenced structure of database subject navigation system.

### Methods of record arrangement

To summarize other database classification systems, the general principles and methods could be categorized into three groups:

- (1) Subject-resource category-record. By this method, publication categories are used under the discipline directly. 89.3% of Chinese academic libraries use this classification system. However, every library works on this aspect a little bit different. Some libraries' classification systems are more rational, some are too broad to be clear for users to understand. Tsinghua University, Wuhan University, Beijing Science and Technology University libraries all organize their database subjects by this way.

(2) Subject resource-category paralleled with resources category-record. About 8.7%

libraries take this classification method. Fudan University Library's mathematics database, Beijing University's Mathematics and History database use method to classify their materials in the database.

(3) Subject-resource category, subdivision paralleled with reference works-record. Only Shenzheng University Library uses it. However this method is more rational and detailed than other two methods. It can be predicted that in the near future, more databases will organize their subject guide this way because it could provide users more clear and logical classification system.

#### 4 Amounts of Information Records

Sampling from 16 university's 94 subject guide databases, the statistics of linked databases show as Table 2

| Amount   | 0-50  | 51-100 | 101-200 | 201-300 | 301-500 | 501-1000 | >1000 |
|----------|-------|--------|---------|---------|---------|----------|-------|
| Database | 32    | 19     | 17      | 12      | 6       | 5        | 3     |
| Percent  | 34.43 | 20.21  | 18.85   | 12.77   | 6.38    | 5.32     | 3.19  |

Generally speaking, the records in subject guide databases can only provide limited amount linkage. 51 databases only link less than 100 websites, that is to say more than half of surveyed databases could not provide enough records for users to search. That is to say, they only own little value for the real use. In 14 subject fields, more than 300 linked subject guides can provide even less navigation, only 2 databases could link more than 1000 websites. Electronic Science and Technology University Library's General Subject navigation database is the largest one which could provide over 10,000 records toward certain subject websites. The amount of information records is decided by information amount and workload of constructors. Actually, related subject, interdisciplinary subject and cross subject could produce large amount of information on the web for academic librarians to accumulate, collect and organize. Therefore most of subject guide databases need to expand their linkage to a broad world on the Internet.

#### 4. Recording Information

In most subject guide systems, every record includes fields of title, URLs, brief introduction to resource, variety of languages, geographical location of websites, etc. The sequence of record is arranged as this: identifier-URL-resource name-introduction. Among 46 universities' subject guide databases, 5 of them provide title only, 36 record title, URLs and introduction (78.26% of total), the other 5 subject guide databases provide a whole

pages to record detailed information about databases. Tsinghua University Library's records include title-author-category (www, ftp)-language-distributor-date of publication-introduction. Detailed record could provide users more information on the contents of database. However, too much data would waste users'time of searching and occupy too much space.

A complete record should have such information as: identifier-resource name-introduction-language-keyword- availability. "Availability" refers to the resources can be only used on campus, free public or international channel, etc. After reading the records users from different accesses to the Internet will be sure if they could obtain or from where they can get the information.

## 5. Webpage Design

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Every subject guide system web page creates its own characteristics. The structure of web pages are usually designed according to graphics and separate frames, which can help to expose contents with clear glue and style transformation.

## 6. Information Retrieval System

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22 universities have established information retrieval interface among which 3 databases can be searched. Therefore only 19 have real retrieval system for their subject guide databases. That is 41.30% of databases own efficient retrieval system. They all could be searched through keywords. 17 databases(89.14%) could be searched through choices between controlled fields or fields. Other databases use different methods to store and retrieve data, which include full text retrieval, Boolean logic, ISBN, robot, property, etc.

## 7. Conclusion

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- (.1) Chinese university subject guide database construction is at the beginning stage. The availability of linked websites should be enlarged more. Every subject should have more than 200 linked websites.
- (2) Standardization of database subject guide should be studied more. The current construction just stays at local level. The standards of collection, description of content, evaluation of content, rationality of classification, standardization of web page design all need authority organization to study and promote.
- (3) Characteristics and Sustainability. Characteristics are the radical factor to influence subject guide database development. Especially for academic libraries, every university must give prominence to certain subject fields in education and research. Subject guide system will be easy to extend and promote.



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