# Analysis on the Application of Legal Database in Legal Education

## —From the Perspective of Legal Data Dynamics

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**Abstract:** Legal database is an important resource for legal education. In recent years, many legal databases have been applied in legal education, but most of them are used as a static database. Therefore, the knowledge graph of legal education is composed of textbooks, regulations and cases, which can no longer meet the requirements of The Times for legal education. The concept of dynamic database and its application should be introduced into legal education activities. The multi-dimensional, real-time updated and dynamic knowledge graph provided by dynamic database can improve the quality and effectiveness of legal education in theoretical teaching, practical training and academic research, and help students to learn legal theory and practical skills in a holistic and systematic way.

## 1. Introduction

In the tide of digital age, the rapid change of legal information poses an unprecedented challenge to legal education. A large number of judgment documents and new laws and regulations are added to the legal database every day, and the traditional legal education method is faced with the dilemma that it cannot incorporate real-time updating of legal information into the teaching system. In addition, the inherent lag of paper textbooks makes it difficult for students to access real-time updated legal information, which affects their sensitivity to legal changes and the cultivation of innovation ability. The penetration and influence of big data on legal education requires the mode of legal education to adapt to the new knowledge and new tools brought by the development of science and technology, the legal education research to innovate the legal thinking of big data, the construction of legal disciplines to integrate interdisciplinary education, and the cultivation of legal talents to practice in more fields of legal industry.[1]

Dynamic database, as an information resource that can reflect the changes of legal information in real time, provides the possibility to solve the problems faced by the traditional legal education. It can not only update cases and regulations in a timely manner, but also show the context of legal evolution through historical data. Through the dynamic database, students can directly access the latest legal information and case analysis, so as to understand and respond to changes and challenges in legal practice in a more timely manner. At the same time, the dynamic database also provides teachers with a more flexible and efficient teaching tool, enabling them to adjust the teaching content and methods according to the latest legal developments, ensuring the timeliness and practicality of teaching.

Therefore, it is of great significance to study the application of dynamic database in law education to improve the quality and efficiency of law teaching. It can not only make up for the shortcomings of traditional teaching methods, but also promote students' in-depth understanding and application of legal practice, cultivate their practical ability and innovative spirit, and lay a solid foundation for their future legal career development.

## 2. Legal database and its functions

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### 2.1. The meaning and definition of legal database

The legal database mentioned in this paper mainly refers to the electronic information database which collects, collates, stores and provides laws and regulations, cases and other legal information. The construction and utilization of these databases play an extremely important role in promoting the modernization of legal education in our country. By computing laws, regulations, cases and other legal information, the law database greatly improves the efficiency of obtaining legal information, makes it possible to learn and use these legal resources, and provides a convenient way for legal research, education and practice.

In the field of law, legal databases are usually divided into two levels: broad and narrow. The broad legal database covers all types of databases that collect laws, regulations, judicial views, cases, judicial guidance documents, academic papers and other legal resources, with the purpose of providing comprehensive legal information services for law students, teachers, judges, prosecutors, lawyers, corporate legal professionals and other legal communities. In the narrow sense, the legal database refers to specialized databases that mainly provide specific services such as legal and regulatory text retrieval and case analysis. Its characteristics are that the content is mainly limited to legislative and judicial data such as laws and regulations and case documents, and its functions focus on the query and retrieval of legal information.

### 2.2. Databases of legal professions by country

With the rapid development of computer and network technology, law database has gradually become an important document resource of law profession. These databases not only collect legal information such as legal articles, cases and works, but also rely on Internet technology to provide convenient information services for legal education and practice.

| common law system | | civil law system | | Chinese mainland | |
|---|---|---|---|---|---|
| Country and region | legal database | Country and region | legal database | Country and region | legal database |
| United Kingdom, United States | He in Online、Lexis.com 、West Law 、BNA、Kluwer | Germany | Beck Online、 Juris Online | China | Alpha, Peking University Magic Weapon, Wolters First, Law business, Law trust, no litigation, etc |
| | | Japan | Lexis Japan、 West Japan | | |
| | | France | Dallorz、 Juris Classeur | | |
| | | Taiwan, China | Law source, month Denier | | |

Figure 1 Law database by country.

As shown in the figure 1 above, the above countries and regions have multiple legal databases, which cover a wide range of legal resources, including legal articles, cases, academic articles, etc. These databases not only provide professional and up-to-date legal data for legal professionals, but also become the development of connecting different legal systems and provisions. In the context of globalization and informatization, the importance of legal databases has become increasingly prominent, becoming a bridge connecting different legal systems and cultures, and promoting the global circulation and sharing of legal information, enabling legal professionals and scholars to access and utilize legal resources around the world across geographical and linguistic barriers. In

China, since 1985, the construction of legal databases has shown a blossoming situation, including comprehensive legal databases and professional legal databases, both through the CD to provide retrieval services, but also through the Internet to provide retrieval services.

## 2.3. The scale and retrieval function of law database

The scale of a legal database is an important index to measure the richness of its resources, which not only reflects the total amount of legal literature contained in the database, but also involves the diversity of literature types. For example, the Alpha legal intelligent operating system, which is widely used by domestic lawyers, has contained 150 million judgment documents as of December 2023, and the number of documents is added at a rate of about 20,000 per day. Among them, more than 4 million laws and regulations are also kept updated in real time. In addition, Peking University magic weapon and Peking University Law and Italy, both have relatively large literature resources. Since its establishment in 1985, Peking University Talisman has collected more than 4 million legal documents, including laws and regulations, judicial interpretations, cases, judgment documents and other types. Although the database of PKU was established late (2001),[2] its literature volume and update speed also have a good performance in the industry, especially in the case database and the construction of law databases in specific fields.

Retrieval function is one of the core values of law database, which is directly related to whether users can find the required information quickly and accurately. In terms of search methods, modern legal databases usually provide keyword search, classified positioning, advanced search and other search modes to meet the needs of different users. Most Chinese legal databases can provide multiple search methods and dimensions. For example, the advanced search function of Alpha database provides up to 32 search dimensions. Its "intelligent search" function, using advanced technology and algorithms, carefully designed label generation rules, to realize the automation of the search process, providing an innovative search method for legal professionals. In the search function of Peking University Talisman, two-way hypertext link technology is adopted, so that users can easily link to relevant regulations, cases and documents when querying a certain legal provision, which greatly improves the efficiency and accuracy of search. [3]PKU provides a variety of search services, such as court case database, law and regulation database, legal literature database, etc., to support more accurate thematic search.

## 3. The application of database in legal education in China and the main problems

### 3.1. The history and present situation of database in legal education in China

The application of electronic database in legal education in China began in the late 1980s and has a history of 50 years.

In the early stage of reform and opening up, China's legal education resources are relatively scarce, there is no electronic database, students learn legal knowledge mainly rely on textbooks and teachers' handouts, as well as library related professional books, students learn legal knowledge materials are basically in paper form. Although this kind of legal education activities with paper as the main knowledge carrier can solve the problem of systematic theoretical teaching, due to the lack of real-time updated dynamic information, legal education can not quickly obtain materials from practice, and it is easy to disconnect classroom teaching from legal practice.

In the 1990s, with the gradual popularization of computer technology, some embryonic legal information databases began to appear in China, but the scale is small, the content is limited, and the main form is issued in the form of CD-ROM, such as the "Full database of Legal Affairs" and so on.

In the 21st century, with the rapid development of information technology, China's legal education database began to usher in a stage of rapid development, and many universities and research institutions began to build and launch online legal databases to serve the teaching and research of legal majors. At this stage, the database mainly exists in the form of electronic, including Peking University Magic weapon, China laws and regulations database.

In recent years, the legal database which can be applied in legal education of our country has entered a stage of rapid development. First, the electronic database resources are becoming more and more abundant, and the categories and magnitude of legal data information disclosed by legislative and judicial organs and government departments have increased significantly, such as the National laws and regulations database of the National People's Congress, the Supreme People's Court's China Judgment Document Network, the national procuratorial system 12309 China Procuratorial network, and the enterprise credit information publicity system of market supervision departments. In addition, there are some legal databases developed by technology companies, such as Alpha legal database, Peking University Magic Weapon, Wolters First, Huayu Yuandian and so on. Second[4], these databases are developing to the Internet online, and their storage, analysis, update capabilities, query and retrieval speed and accuracy have been greatly improved, which can basically achieve online instant access.

It is worth mentioning that, affected by the epidemic, legal education has moved to the Internet either actively or passively, so the online state of classroom teaching makes the teaching plans, handouts, courseware of legal courses can be linked with the electronic database at any time, and the fresh judgment documents, trial process (trial video), lawyers' practice and other information can be implanted in classroom teaching. The important value of law professional database in legal education has been recognized by more and more teachers and students.

### 3.2. The main problems in the application of database in legal education

At present, China's legal database resources are mainly the websites of state organs and Internet applications developed by some technology companies. Some of these databases are integrated legal databases, including laws and regulations, case documents, theoretical and practical articles, etc., and some are specialized or professional databases, such as intellectual property databases, foreign-related law databases, and contract model databases. These databases provide teachers and students with abundant legal data resources, making them more convenient to obtain legal law related digital information, and improving the efficiency of legal education and scientific research. However, there are also some problems in the legal education of database, mainly in the aspects of ease of use, accuracy, pertinence and timeliness of database.

The first is ease of use. The main performance is slow database link opening, less search dimension, complex interaction design, low intelligence degree, these problems are more prominent in the public free database. There are two reasons, one is the lack of development capacity, the technical update is not timely, the lack of effective cooperation between technical developers and professional content personnel, resulting in difficult to meet user needs. The second is the large scale of public users, coupled with the data collection of some institutions, resulting in the concurrent volume exceeding the limit of the system, and the phenomenon of ordinary users failing to log on, link failure, and system crash. It is often difficult for teachers and students of law majors to solve these problems, which will affect their willingness to apply the database in law education.

The second is accuracy. Accurate data information is the lifeline of the database. On the whole, China's legal databases, especially the official databases, have made great progress in accuracy in recent years, but there are still some deficiencies. It is mainly reflected in the following aspects: first, some laws and regulations included in the database have misrepresentation or even incorrect provisions. A so-called judicial interpretation text of construction project construction that was circulated on the Internet a few years ago has been verified that the text is not formulated by the judicial organ, but is uploaded to the Internet by someone and included by search engines. Even the judicial staff thought it was a judicial interpretation. Some judgment documents also invoke the "judicial interpretation" clause as the basis for judgment. Second, the limitation of legal data information is deviated. For example, some laws and regulations included in the database have been repealed, but the database does not mark the statute of limitations that is repealed, may be mistaken for the current effective laws and regulations. In addition, in some execution instruments, the parties have performed or been forced to complete the responsibilities or obligations stipulated in the instrument, and the database receiving the execution instrument may not mark the validity of the

instrument in time, which may affect the credit of the person subjected to execution in the instrument. The third is the accuracy problem caused by insufficient data information. For example, in a case of second instance or retrial, the database only includes the successful judgment documents of the winning party in the first instance, and does not include the judgment documents of the second instance or retrial. If the problem of database accuracy is not identified in legal education, the inaccurate data information provided to students will mislead teachers and students.

Finally, the pertinence aspect. At present, no matter the database built by state organs or the database developed by commercial companies, its target users are either the public, or lawyers, judges, prosecutors, and legal affairs groups in the legal profession community, and there are few databases dedicated to the education and teaching of law majors in schools. Although some databases have also developed the university version database, most of them are structural adjustments of the original database, and few legal education databases are developed according to the training program and teaching plan of legal education and the teaching law of legal education.

## 4. Improving the application quality and efficiency of legal education database: using dynamic data knowledge graph as the engine

It is an important task to strengthen the application of legal database in legal education and improve the quality and efficiency of the application of the database. [5]To accomplish this task requires many efforts, such as the construction of Internet infrastructure, the upgrading of database development technology, and the change of the concept of teachers and students applying database teaching and learning. This paper is limited in length, mainly according to the dynamic nature of legal data, advocate the dynamic legal data to build the knowledge graph of legal education, and use this as an engine to promote the application of database in legal education.

### 4.1. Establish the idea that legal data is dynamic data

Legal data has obvious time characteristics, and the contents of legal provisions, regulations and adjudication rules often change. In order to maintain the timeliness of teaching and research, a dynamic database is needed to keep the latest legal information up to date, ensuring that the information available to students and researchers is current, accurate, and comprehensive.

The evolution of Article 504 of the Civil Code:



2020-05-28 — The Civil Code of the People's Republic of China
Article 504: If the legal representative of a legal person or the person in charge of an unincorporated organization enters into a contract beyond their authority, the act of the representative shall be valid, and the contract concluded shall be effective for the legal person or unincorporated organization, unless the other party knew or should have known that the act exceeded their authority.

2000-09-29 — Interpretation of the Supreme People's Court on Several Issues Concerning the Application of the Guarantee Law of the People's Republic of China
Article 11: If the legal representative or person in charge of a legal person or other organization enters into a guarantee contract beyond their authority, the act of representation shall be valid unless the other party knows or should know that they have exceeded their authority.

1999-03-15 — Contract Law of the People's Republic of China
Article 50: If the legal representative or person in charge of a legal person or other organization enters into a contract beyond their authority, the representative act shall be valid unless the other party knew or should have known that they had exceeded their authority.
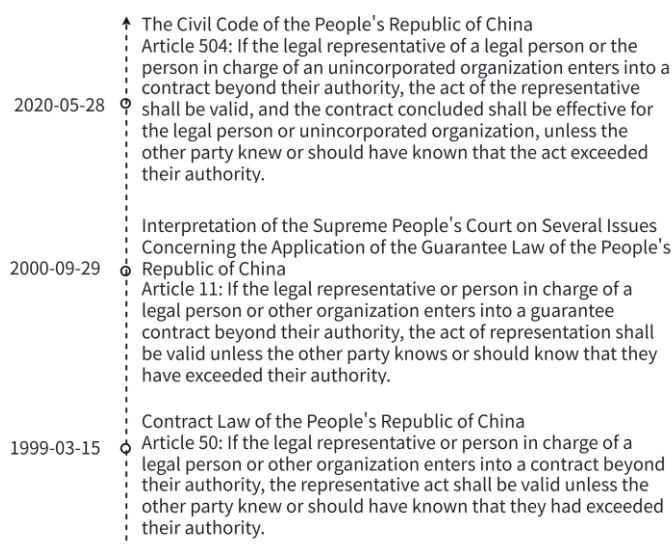
Figure 2 Examples of dynamic law evolution.

Figure 2 takes Article 504 of the Civil Code as an example of the evolution of legal articles that have not been carried out. It is not difficult to see that dynamic data is a kind of data that records the continuity and real-time changes of the process and the results at each stage. Compared with static data, its content constantly changes over time. Legal dynamic data, specifically, is the data that

records the continuity and all timeliness of legislation, judicature and scientific research processes and results. This kind of data contains various types of information, such as laws and regulations, case documents, scientific research literature, etc., which is not static but dynamically changing.

It is important to note that the dynamic nature or timeliness of legal data does not mean that the database only needs to provide the latest regulations and cases. From the perspective of law application, the repealed law is not completely invalid law, if the facts of the case occurred during the implementation of the repealed law, after the law is repealed through litigation or arbitration to resolve the dispute of the case, the repealed law may still be invoked and applied according to law. The second paragraph of Article 1 of Several Provisions of the Supreme People's Court on the Application of the Time Effect of the Civil Code of the People's Republic of China is an example, which stipulates that "civil disputes arising from legal facts before the implementation of the Civil Code shall be governed by the provisions of the laws and judicial interpretations at that time, except as otherwise provided by the laws and judicial interpretations". Repealed laws and regulations, judicial interpretations, and case documents are also important components of the database.

From the perspective of legal education and scientific research, the repealed laws and regulations and judicial interpretation are also the objects of study and research. To deeply understand the current laws and regulations and judicial interpretation, it is often necessary to sort out the historical context of laws and regulations and judicial interpretation. Even those old miscarriages are good research materials and legal data included in the database.

## 4.2. Constructing a dynamic data knowledge graph that meets the needs of legal education

Legal education is a process of teaching and learning between teachers and students, and an interactive activity centering on legal knowledge. Legal knowledge includes theories such as general legal relations, constitutive elements, basis of claim right, rights and obligations, principle of liability, and practical elements such as legal norms, systems, procedures, experience and skills. If the dynamic data involved in these theoretical and practical elements are constructed into a knowledge map serving legal education, the knowledge map should include the following aspects:

One is the theme content map. According to the teaching theme, determine the basic category, connotation and extension, characteristics, status, classification, key points, difficulties, significance, references and other theoretical knowledge related to the theme. At the same time, it links the relevant laws and regulations, legislative interpretation, judicial interpretation, judicial guidance documents, guiding cases, case rules, process standards, case handling experience, customs and practices, strategy and other practical data. Theoretical knowledge and practical data echo and interact to form a systematic and three-dimensional knowledge map.

The second is the time evolution diagram. The time evolution chart mainly uses the time axis dimension to sort out and present the historical context and relevant information data of theoretical and practical elements. For example, the three theories of the principle of liability for intellectual property infringement liability are fault liability, mixed liability and no-fault liability. Each theory has its own historical background and can be dynamically observed on the time axis. As mentioned above, laws and regulations, judicial interpretations, and case rules are almost all dynamic data, which can also be dynamically observed on the timeline, and students can also try to do a moot court of "new regulations judge old cases, old regulations judge new cases" to better understand the changes of the legal system.

The third is the subject classification map. The subject classification map mainly describes the knowledge and experience of different group roles of judicial practice participants. Due to the difference of duties and positions, the knowledge and experience demonstrated by judicial practice participants are significantly different, and legal education should pay enough attention to it. The knowledge and experience of judges and arbitrators are characterized by neutral rationality. The lawyer dutifully safeguard the legal rights and interests of the client, and its knowledge and experience have the service characteristics of being entrusted by others and loyal to others; Let's wait. This knowledge graph classified by agent helps to understand the different ways of thinking and behavior of different.

## 4.3. The application of dynamic data knowledge graph is discussed

The dynamic knowledge graph of legal data can be used in almost all teaching activities of law courses. It can be said that mastering the method of constructing dynamic legal data knowledge graph is just like mastering the engine of legal data in legal education.

Taking the teaching of "Adjustment of Liquidated Damages by contract" as an example, the theoretical dimensions of the knowledge graph subject content graph include the concept of liquidated damages by contract, the classification comparison and characteristics of liquidated damages by contract and statutory damages for breach of contract, the conditions and ways of adjustment of liquidated damages by contract, and several theories of adjustment of liquidated damages by contract. The practical dimension includes the legal provisions involved in the system, judicial interpretation, judicial guidance documents, adjudication rules of class cases, interpretation and application of provisions, and so on.

According to the time evolution diagram of the knowledge graph of "Agreed liquidated damages Adjustment", at least the following dynamic legal data can be summarized: Article 114 of the Contract Law of the People's Republic of China in 1999 stipulates that parties can agree liquidated damages, and clarifies the adjustment conditions and methods when the liquidated damages are too high or lower than the actual loss; The interpretation of the Supreme People's Court on Several Issues concerning the application of the Contract Law of the People's Republic of China in 2009 (2) Articles 28 and 29 stipulate the limits and principles for the increase and decrease of liquidated damages; In 2012, the Interpretation of the Supreme People's Court on the Application of Law in the Trial of Cases involving Disputes over sales Contracts stipulated the handling principles of liquidated damages stipulated in sales contracts and the judgment criteria for liquidated damages that are excessively higher than the actual loss. [6]Article 30 of the Provisions of the Supreme People's Court on Several Issues concerning the Application of Law in the Trial of Private Lending Cases in 2015 stipulates the handling principles when the total amount of liquidated damages and overdue interest exceeds 24% of the annual interest rate; Article 585 of the 2020 Civil Code of the People's Republic of China further clarifies the principles and adjustment methods of liquidated damages agreed by the parties, as well as the handling rules for delay in performing the agreed liquidated damages. In addition, there are a large number of cases involving the adjustment of liquidated damages, including 10 cases of the bulletin issued by the Supreme People's Court for the adjustment of liquidated damages because of excessive liquidated damages since 2003, 13 typical cases, 81 excellent cases written by judges and analyzed, and more than 600,000 related cases disclosed by the people's Court (the above data is from the Alpha law database, Retrieved March 8, 2024).

The subject classification diagram of the knowledge graph of "agreed liquidated damages adjustment" is mainly separated from the judgment documents by the plaintiff's lawyer's claim, facts, reasons, etc., the defendant's lawyer's rebuttal, facts, reasons, and the judge's support and rejection of the claim results and reasoning.

After constructing the dynamic data knowledge graph of "contract penalty adjustment", teachers can obtain dynamic legal data at any time when teaching the key points of theoretical knowledge, and closely connect with legislative and judicial practice. At the same time, they can also organize a mock court, allowing students to play the role of judge, plaintiff and defendant agent, so that students can experience different roles and also use dynamic legal data and knowledge. Determine whether the liquidated damages are too high, and explain the facts and reasons for adjustment. The knowledge graph constructed by dynamic legal data is used to train students' ability of analyzing and solving problems in law.

## 5. Conclusion

The era of big data has come, and legal education is facing an unprecedented change, which is both an opportunity and a challenge.

The disclosure of China's legislative and judicial data through the Internet is a great initiative that

has attracted worldwide attention. Up to now, China has published 150 million judgment documents and more than 4 million legal and regulatory documents on the Internet, all of which are being updated in real time. There are also numerous specialized databases on the Internet. As a new resource of legal education, these legal databases will have a profound impact on legal education in our country. To really make good use of these databases and give full play to the important role of databases in legal education, the government needs to strengthen the construction of Internet infrastructure, state organs need to further do a good job of legal data disclosure, more scientific and technological institutions need to develop legal databases suitable for legal education, and legal education administrators and teachers and students need to change their views. Make good use of legal database in law teaching and scientific research to maximize the value of legal data.

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