

Application research on English Translation Teaching Quality based on Data mining

Peiyun Li, Chana Xiao

Hohhot Minzu College

yoyokaka100@126.com

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Abstract. In the development of education informatization, in order to improve the quality of English translation teaching, universities and colleges, based on the accumulated experience of practical teaching, put forward the use of data mining technology to deal with massive data information, and dig out the main contents affecting the quality of college English translation teaching from a variety of influencing factors, in order to provide effective basis for the innovation and development of modern education. After understanding the basic concepts of data mining and decision tree algorithm, this paper deeply discusses the quality evaluation system of English translation teaching based on data mining according to the research status of English translation teaching in colleges and universities, and verifies and analyzes the system application combined with practical cases. The final results show that data mining plays an important role in the application research of English translation teaching quality in colleges and universities.

Keywords: Data mining; Decision tree algorithm; College English translation teaching; Teaching quality.

1. Introduction

In the context of the transition from meritocracy to mass education, the number of college graduates has been increasing year by year at a year-on-year growth rate of 2% to 5%. In 2018, the number of college graduates nationwide reached 8.2 million, a new high in the past decade. The number of college graduates reached 8.34 million in 2019, and the market for employment and entrepreneurship has become increasingly severe. The number of college graduates in 2020 reached 8.74 million, an increase of 400,000. In 2021, the total number of college graduates in China is 9.09 million, an increase of 350,000 compared with last year. The national economy shows a steady recovery trend, but under the deep influence of internal and external factors, the employment and entrepreneurship situation of college graduates is still complex and severe. In 2022, the total number of graduates from colleges and universities in China is about 1,076. From the perspective of market employment, the unemployment rate of young people aged 16 to 24 can reach about 20%. The change of employment mentality and the acceleration of college enrollment have jointly pushed up the number of graduates, and the personal ability of students is closely related to employment and entrepreneurship. [1-4]Especially under the development trend of economic globalization, many professional positions require students to have the ability of English expression and translation. Therefore, colleges and universities should continuously optimize the content of English translation teaching and improve the quality of classroom teaching according to the requirements of modern talent training.

As the basic content of the integrated development of modern science and technology and education field, data mining can find the useful information and value hidden in a large number of random databases, truly meet the needs of data integration and analysis in the era of big data, and provide support services for education management decision-making. According to the practical survey and research, the application of data mining method in the field of education will

comprehensively analyze the data information contained in the education system, and the information can better serve the groups of teachers, students, researchers, administrators, software developers and so on, so that they can grasp more quality content during the period of education innovation. Decision tree algorithm is one of the most common content in the classification of data mining technology, which can complete the prediction according to the mining target as soon as possible. The purpose of this kind of algorithm is to integrate n samples with P -dimension characteristics into c categories respectively, which is equivalent to making a projection, $c=f(n)$, and endow the samples with a category label through a transformation. In the rapid development of artificial intelligence technology, data mining technology has a wide range of application prospects and unique value. Although the research topic proposed based on data mining is relatively late and has not formed the overall development force, but with the continuous improvement of social economy and technological level, while cultivating a large number of experts and scholars, data mining research in the field of education becomes more and more perfect.[5-9]

A systematic study of English translation teaching in colleges and universities shows that, as a comprehensive applied skill, translation can build a good communication bridge between different cultures and languages, and is one of the basic skills that every student must master. From basic education to higher education in our country, English translation teaching does not get widespread attention from teachers and students. Listening, writing, reading and writing occupy the major parts of English classes, and most people think that only to do translation work needs to master this skill. Under the influence of these misconceptions, English translation teaching has never received the attention of teachers and students. Therefore, in order to improve the quality of English translation teaching in the new era and improve the traditional classroom teaching model, education scholars proposed to use data mining to build an English translation teaching quality evaluation system, so as to master more valuable data information. Convenient for teachers and scholars to optimize innovation.

2. Method

2.1 Requirement Analysis

In order to improve the quality of English translation teaching and to continuously improve modern teaching methods, most colleges and universities will issue teaching quality questionnaires to teachers and students every year, which are mainly used to collect teaching quality evaluation information and are regarded as the main basis for educational innovation. However, from the perspective of practical education management, this method can not directly reflect the teaching problems. The school should consider the requirements of system design from the following points: first, whether the teachers are reasonable. Under the background of the continuous enrollment expansion of colleges and universities, the number of students is increasing and the class size is increasing, but the teacher team cannot be timely expanded. From the perspective of English translation teaching quality in colleges and universities, teachers' majors, teaching time, teaching scores and other factors will directly affect teaching quality. Secondly, students' learning basis is different. Due to the uneven learning ability and basic level of students and their subjective awareness of professional courses and teachers, it is difficult to select a few students at random to evaluate the teaching quality of English translation courses to ensure the objectivity and fairness of the final result. Therefore, it is necessary to adjust the forms and methods of students' evaluation of classroom teaching quality. Finally, teaching curriculum design material selection. Students' learning tasks are put forward step by step, especially for specialized courses, which are interrelated and sequential. Therefore, in English translation teaching, teachers should pay attention to the selection of teaching materials and course design, so as to further improve the quality of classroom teaching.[10-13]

2.2 Solution

Due to the accumulation of a large amount of data information in the implementation of English translation teaching in colleges and universities, this kind of data processing is still at the primary backup and statistical query stage. Take the scores of students in English translation courses as an example, teachers usually classify students according to the grades of "excellent", "good", "pass" and "fail" after analyzing the scores of students, without deeply considering the main reasons for students to obtain these scores, leading to the failure of these data to play its due role. If the main information elements such as students' individual attributes, course test scores, teachers' teaching ability and subject textbooks are integrated and analyzed, the decision tree classification technology in data mining can be used to master more data and rules in the massive data, and finally identify the main factors affecting students' course scores and teaching quality, so as to develop a perfect solution for improving the level of classroom teaching. Therefore, this paper proposes to use the decision tree classification algorithm in data mining to build an English translation teaching quality assessment system in colleges and universities. The data model is built by combining the ID3 algorithm in the classification algorithm, and the concept of information gain is used in the selection of attributes. Each branch of the decision tree will have corresponding classification rules. In this way, the classification operation is easier and easier to understand, and the overall operation accuracy and speed are higher.

2.3 System Functions

The evaluation system of English translation teaching quality in colleges and universities will jointly explore the main factors affecting teaching quality according to the contents of network questionnaire survey, students' independent evaluation, college stored information and so on. The overall system is windows XP operating system, and the Server mode of SQLserver2005 database management system will be used. The specific function design is shown in Figure 1 below:

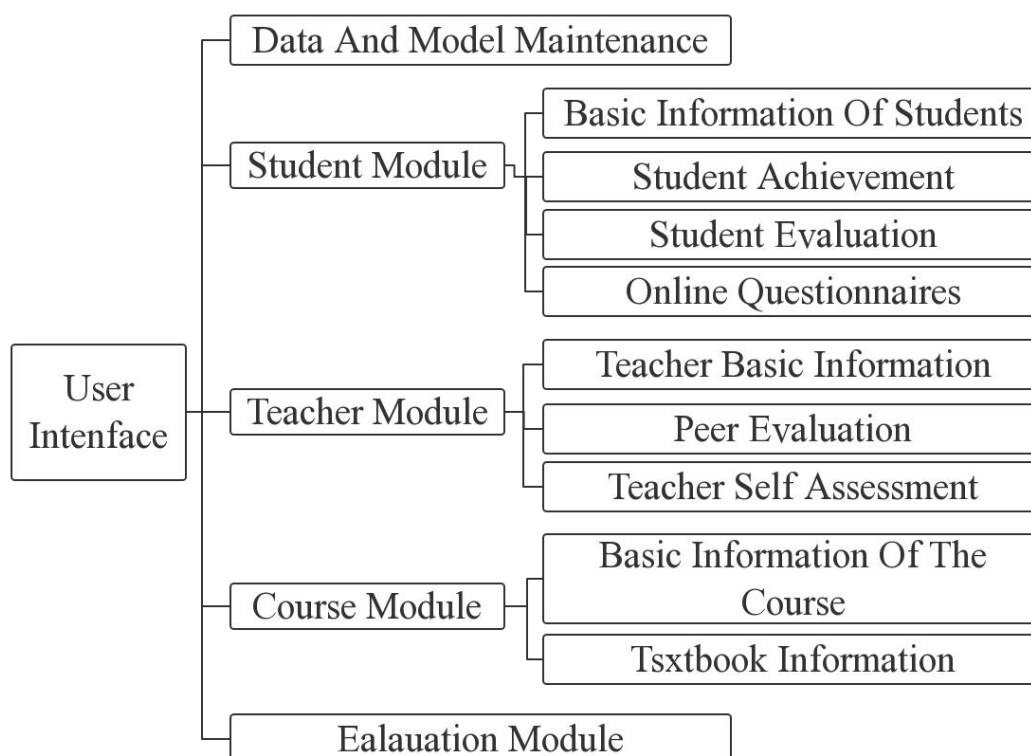


Figure 1. Functional structure of the system

According to the above analysis, the overall system design includes the following modules: First, the user interface. It is an effective meeting for the evaluator to enter the system, which is mainly

used to receive the instructions issued by the decision maker and provide the final results to the decision maker. Second, the student module, mainly records the basic information of students, classroom results, student evaluation, and then to the questionnaire module; Third, the teacher module, mainly includes the basic information of teachers, independent evaluation, peer evaluation module; Fourth, the curriculum module, mainly contains the basic information of the course, basic information of the textbook and so on; Fifth, data model maintenance, before data mining to do a good job of data preprocessing, the data information into more suitable for mining target data combination, the specific operation includes data integration, data cleaning, data transformation and other content.

2.4 Evaluation module

Combined with the flow chart of system evaluation module shown in Figure 2 below, it can be seen that the user will obtain the required data information from multiple modules, obtain the rules through the mining engine after effective processing, and store the content in the database. After specifying specific rules, users can enter test data that needs to be predicted or described to predict results or describe relationships between data based on the rules that have been produced.

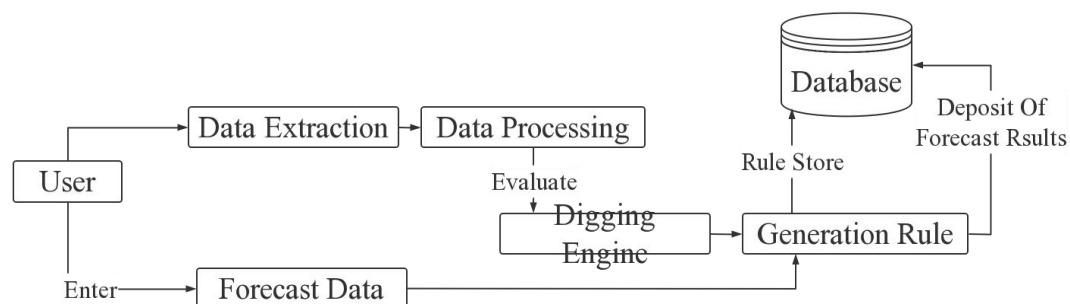


Figure 2. Flow chart of system evaluation module

2.5 Classifier

Data mining is a key link in the quality evaluation of English translation teaching. In the collection and processing of students' online questionnaire data, ID3 algorithm should be used to develop a simple decision tree classifier system. The specific architecture is shown in Figure 3 below. To find out the main reasons affecting students' grades, and based on this, to predict the final grades of students who have not taken the exam.[14-15]

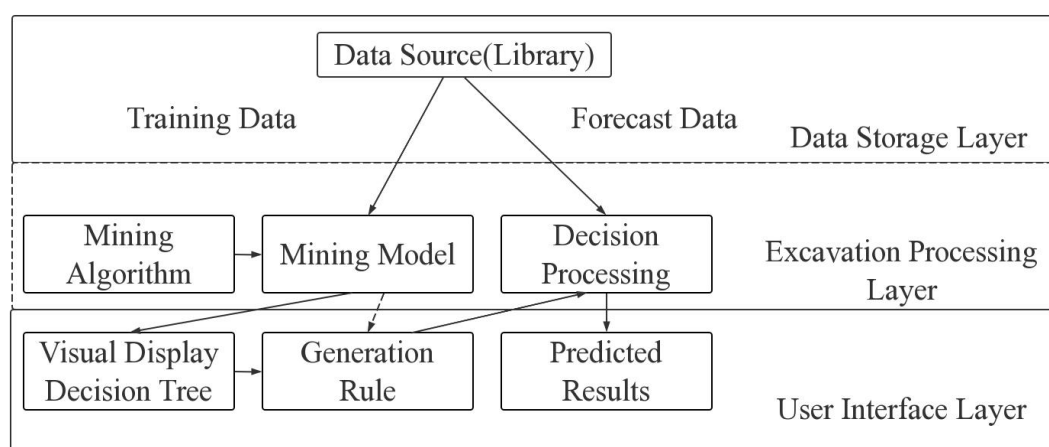


Figure 3. Structure diagram of decision tree classifier

Based on the analysis of the figure above, it can be seen that this classifier belongs to a general technical structure, and its practical operation includes multiple steps such as data storage, data

processing, generation rules, and prediction results. In addition to mining student questionnaire data, it can also be used for other data classification and processing.

3. Result analysis

Combined with the evaluation system proposed above, this paper defines the data mining objects and research objectives, and according to the main problems faced by traditional teaching evaluation and the requirements of teaching quality in the new era, takes the four factors of teachers' gender, age, educational background, professional title, student evaluation, peer evaluation and distant teaching evaluation as the main contents affecting teaching quality. And perform operation analysis according to the flow chart shown in Figure 4 below:

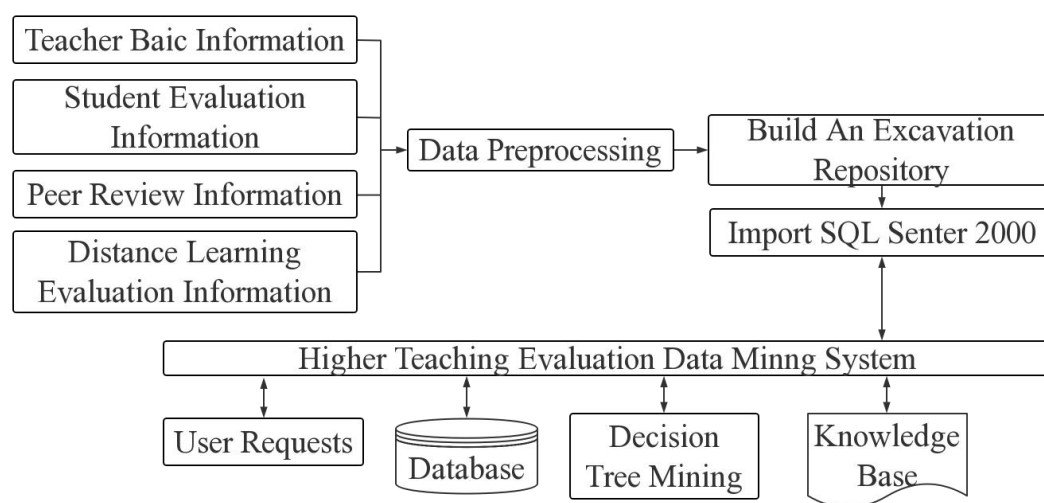


Figure 4. System operation flow chart

Meanwhile, teachers' teaching evaluation data should be collected according to the coverage of English translation teaching in colleges and universities, and the evaluation database as shown in Figure 5 below should be formed:

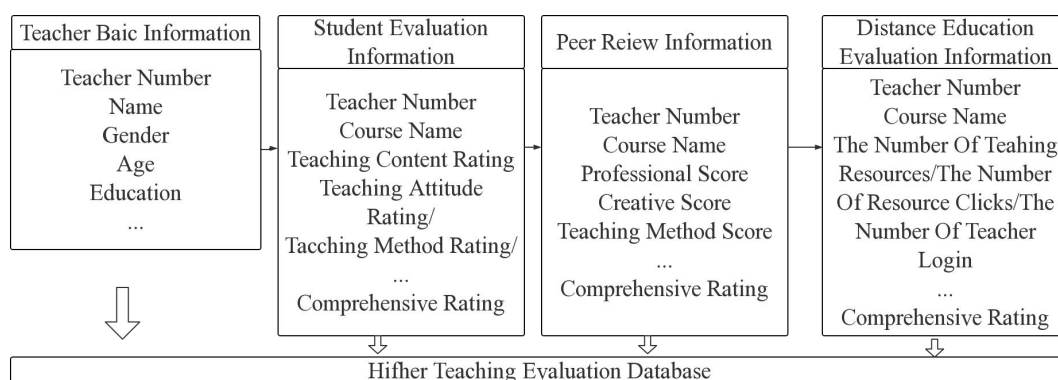


Figure 5. Structure diagram of evaluation database

It can be seen from the results of final data classification mining and classification rules generation that student evaluation directly affects the overall evaluation of teachers' teaching quality, and teachers who can obtain students' recognition ultimately obtain higher comprehensive evaluation quality. There is no direct correlation between the age of teachers and the overall evaluation of the teaching quality, which proves that young teachers and middle-aged and old teachers have their own advantages and disadvantages during the teaching period, and the final quality of English translation teaching cannot be evaluated by their age. The higher the teacher's education, the better the evaluation of classroom teaching, among which the master's degree,

doctor's degree and the title of associate professor and professor did not have the final evaluation. Therefore, in order to further improve the quality of English translation teaching in colleges and universities, professional teachers should continuously optimize their own professional level and ability quality according to the requirements of The Times. Only in this way can they better cope with various problems arising from the education reform and provide high-quality English translation teaching system for students of different majors.

Conclusion

To sum up, the application of data mining technology in the research and innovation of English translation teaching quality can not only transform the traditional education management mode, but also optimize the overall quality of classroom teaching. It is the core content of modern education innovation and meets the requirements of the educational development of The Times.

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