The Teaching Reform of English Major Translation Course based on the Analysis of Computer Big Data

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Abstract. At present, in the actual translation process, the English translation work is mostly carried out in the form of teamwork. In the future college English teaching, big data and its related concepts and technologies will become one of the main tools for teachers to find and discover teaching rules, summarize teaching experience and innovate teaching methods, especially in the current English translation courses involving international communication. This paper combines the computer big data technology with the emerging teaching methods such as flipped classroom, and attempts to reform the English translation course for English majors, so as to realize the goal of independent learning and improve the quality of English translation teaching.

Keywords: Teaching Reform; English Translation; Big Data; Teaching Design, computer big data

1. Introduction

English translation work is mostly carried out in the form of teamwork in the current actual translation process. However, in traditional English translation teaching, although students can master a large number of translation skills and theories, they lack practical resources and approaches, with insufficient practical English translation teamwork atmosphere, and can only learn on their own [1]. For a long time, it is not conducive to understanding the theoretical knowledge learned proficiently or using the professional expertise in the future flexibly. With the development of modern science and technology, modern information technologies with the Internet and mobile phones as the primary media have been deeply involved in the study and life of college students [2-3]. Students have even become accustomed to and rely on these electronic devices, and these electronic devices have indeed brought a lot of help to students' study and life. However, in traditional English translation classrooms, teachers mainly rely on explanations to allow students to learn knowledge, without effectively using the convenience brought by modern information technology. In the era of big data, the actual situation of students' mastery of translation knowledge can rely on a variety of data. However, English translation under the traditional
model relies on examinations to measure students' academic performance and lacks an objective evaluation of learning \cite{4}. This mode of teaching and assessment completely does not match the current level of technology, which has reduced the efficiency of teaching. Therefore, this article uses big data technology, combined with emerging teaching methods such as flipped classrooms to try to reform the English major translation courses, to achieve the goal of autonomous learning and improve the quality of English translation teaching.

2. Necessity of flipped classroom teaching for the English translation in the era of big data

2.1 Basic concepts of big data and flipped classroom

1. Big data technology. Big data has become a hot spot in the development of information technology in recent years. Compared with the breakthrough of cloud computing technology in algorithms, big data technology focuses more on the improvement of ideas. Compared with the convenience and speed of traditional small data on micro-end computing, big data technology is better at storing and using data for analysis. It can identify the patterns contained in the data, and the current stage of science and technology on the hardware progress can support massive data operations. Turing Award winner Jim Gray, an American database computing expert, said that big data technology was the fourth stage after “experiment, theory, and calculation”. Therefore, we can regard big data technology as the activity of collecting, sorting, and analyzing probability based on materials and data information, with highly developed hardware as the medium and the network as the channel \cite{5}.

2. Flipped classroom. Flip Classes are from the United States. In 2007, a high school teacher in the United States, Jona-than Bergmann, used self-made videos to help students make up lessons on the Internet. Later, they gradually developed to allow students to learn the basics of self-learning based on the recorded courses and to express the practice of flipped teaching in the classroom. After several years of summary, the theoretical and cognitive unity of “flipped classroom” was finally formed. Compared with online teaching modes such as online schools, flipped classroom is more about exchanging learning initiative, allowing students more time to practice and innovate in the classroom. Teachers are responsible for guiding and evaluating students' learning results and creativity, which enhances Teacher-student interaction. This teaching model has important teaching significance under the current real needs of innovation in China and is conducive to the cultivation of college students with creative thinking \cite{6}.

2.2. Teaching breakthrough based on big data technology flipped classroom

1. Innovation in resource updating and sharing methods. The flipped classroom requires teachers to record and prepare teaching resources in advance and put the teaching resources online for students to learn and download. Under the current mechanism of higher education in China, this approach helps improve the quality of teachers in recording courseware and allows students to freely grasp the basic knowledge of English translation required for classroom practice. Online learning also helps teachers to prepare and update courseware cases timely. With the same teaching content, teachers can place multiple different cases for students to learn, expanding the classroom teaching practice space, and helping resource sharing and teaching method exchange between teachers.

2. Innovation in the teaching process and learning methods. Where big data technology is combined with the flipped classroom teaching model, teachers have more autonomy in the choice of teaching
methods, and students have more learning opportunities, pathways, and options, and can even choose teachers according to their own preferences. In the teaching process, flipped classroom also reverses the original teaching process. It replaces the initial teaching process with the model of learning after class and practicing in class, which can help students make full use of their spare time for preview. Based on big data technology, the scope of the knowledge points in the courseware, the difficulty of the exercises, and the knowledge of the students' grasp of the knowledge are put into the hands of teachers for the first time, and more teaching innovations are introduced into the classroom.

Teacher evaluation and summary methods are innovative[2]. After the combination of big data technology and the concept of the flipped classroom, teachers' evaluation and summary methods of college English translation teaching have made significant progress. The flipped classroom teaching based on big data technology can easily use the Internet to conduct on-the-spot assessment of course teaching and learning results. In the study course, you can use the time period of the video playback to infer the knowledge of the students and the range of difficulty points. Selecting the questions in the question bank is helpful to test the teaching effect. Moreover, the flipped classroom based on big data can implement the networked assessment. The overall scores of students are entered as a part of their daily scores, which are more objective in teaching summary and evaluation.

3. Design of English Major Translation Courses Based on Big Data Technology

3.1. Instructional logic design

The design of English translation flipped classroom in the era of big data requires a strict teaching logic design. The flipped classroom is not a simple process change. It is more of a strictly logical system, including the content that teachers are responsible for and the content that students are responsible for[3]. In addition, flipped classroom must also design a reliable comprehensive teaching platform with the help of big data technology. Many schools use the MOOC platform to provide students with good public course resources. If domestic universities are limited to teaching resource copyright, student information protection, and other factors, they can also design teaching platforms based on big data technology, or multiple universities can jointly design and use them. All in all, the design of teaching logic needs to start from two aspects: preparation before class and classroom teaching, and develop an objective and fair learning, communication, and teamwork system based on the actual situation of English translation.
3.2. Preparation of materials before class

The common problems existing in student learning for the preparation of later courseware and pre-class materials are an important basis for the flipped classroom teaching of the English translation. It is also a core part of the entire teaching system. The difficulty of English translation lies in how to make the basic translation skills in translation compatible with the languages, products, production systems, laws and regulations, and management regulations required in business activities of enterprises. In this regard, taking the English translation activities of financial institutions as an example, teachers in the courseware should use the basic terms of various operations of financial market mergers and acquisitions, commercial bank names, financial regulations, securities, and insurance as the basic accumulation of translation skills, and based on Selected cases are appropriately applied[4]. Combined with the grammatical content required by textbooks, such as the translation skills of English and Chinese language structures, long sentences, attributive clauses, etc., and enrich the structural level of courseware. Several key learning directions for English translation should be highlighted in the courseware: vocabulary with Chinese characteristics, vocabulary sentences for international trade, vocabulary and fixed sentences for contract and law, and vocabulary sentences for finance majors. In the recorded courseware, questions and assignments should be set at the nodes to allow students to combine learning with practice. Finally, the platform database is used to set up after-school practice questions, use the question bank to select questions randomly and prevent cheating, and summarize the common problems in student learning for the improvement and supplement of later courseware and teaching.

3.3. Design of classroom teaching

"English Translation" includes trademark advertising, corporate promotion, product description, e-commerce, business cards, business letters, contract agreements, international commercial law, international settlement, letters of credit, commercial exhibitions, financial securities, insurance business, logistics management, marketing, etc. content. The big data-based platform flips classroom teaching. In the classroom teaching design of the English translation course, it is necessary to select the appropriate teaching situation in accordance with the specific situation of students' early learning. In
classroom teaching, teachers select course cases based on these units, summarize the students' previous results, and match them with students in the study group. For example, 40 students in each class are selected, and 5-6 people are selected as a group to cooperate. Content, query professional reference books based on the summarized questions, analyze, and resolve problems in translation. Teachers can also act as consultants to guide students' translation activities, but the overall decision is in the hands of the students. With two to three lessons as a learning cycle, they master the theoretical skills of translation and provide the final results of translation cases, which are graded and evaluated by teachers and included in the overall academic performance of the students[5].

The evaluation of classroom teaching is as follows:

There is a multi-index evaluation system composed of n evaluated objects \( u_1, u_2, \cdots, u_n \) and m indicators \( x_{1i}, x_{2i}, \cdots, x_{mi} \). \( x_{ji} = x_j (x_i) (i = 1, 2, \cdots, n; j = 1, 2, \cdots, m) \) is the evaluation data matrix (decision matrix) of the evaluation object \( u_i \) about the index \( x_j \) can be expressed as formula (1):

\[
A = \left[ \begin{array}{cccc}
  x_{11} & x_{12} & \cdots & x_{1m} \\
  x_{21} & x_{22} & \cdots & x_{2m} \\
  \vdots & \vdots & \ddots & \vdots \\
  x_{ni} & x_{n2} & \cdots & x_{nm}
\end{array} \right]
\]

Among them, the data in \( m, n \geq 3 \) and A are normalized data after preprocessing.

We describe the physical education evaluation process as a general transformation (2)

\[
y_i = f (x_{i1}, x_{i2}, \cdots, x_{im}), i \in N
\]

Where \( f \) is a positive transformation function; \( y_i \) is the comprehensive evaluation value of the evaluated object \( u_i \). Sort \( u_1, u_2, \cdots, u_n \) according to the value of \( y_1, y_2, \cdots, y_n \) from large to small, and you can complete the comparison of \( u_1, u_2, \cdots, u_n \).

If there are two evaluation objects \( u_i', u_i^* (i', i^* \in N, i' \neq i^*) \), let \( w_j^* (i', i^*) \) be a random variable that obeys a distribution on the interval \( \left[ \min (w_{ij}, w_{ij'}), \max (w_{ij}, w_{ij'}) \right] \), and call \( s(u_i' > u_i^*) \) the superiority of \( u_i' \) to \( u_i^* \), as shown in equation (3):

\[
s(u_i' > u_i^*) = p \left( f \left( u_i' \right) > f \left( u_i^* \right) \right) + 0.5 p \left( f \left( u_i' \right) = f \left( u_i^* \right) \right)
\]

Where the aggregate function indicates the event probability, as shown in formulas (4) and (5):

\[
f(u_i') = \sum_{j=1}^{m} \lambda_j^i w_j^* (i', i^*)
\]

\[
f(u_i^*) = \sum_{j=1}^{m} \lambda_j^i w_j^* (i', i^*)
\]
In addition, in the after-school guidance link, during the teaching cycle, students can learn and cooperate through various channels to seek guidance from teachers. For example, the WeChat groups, QQ groups, etc. can be established, and the learning platform can also be sued for online cooperation. Various ways are combined to improve the translation level, carry out sufficient exercise and practice, understand and memorize English translation knowledge in the actual translation process for flexible mastery, instead of memorizing various theories and rigidly learning English translation knowledge.

4. Conclusions

With the continuous development of electronic information technology, data application technologies mainly based on big data and cloud computing have been rapidly developed and popularized in various industries. China's higher education has been committed to combining with new technology practice, striving to innovate teaching methods and improve teaching effectiveness and quality. It is believed that with the continuous improvement of the flipped classroom teaching model, this technology will undoubtedly become a new channel of teaching practice in colleges and universities[6]. Currently, in the English translation teaching combined with the growing big data technology, breakthroughs have been made in class preparation resources for the flipped classroom, providing schools and teachers more data analysis support to improve the evaluation and quality of teaching results. Finally, the English translation teaching can match the market demand, and the application of modern teaching technology can be maximized to cultivate a new generation of college students with excellent professional quality and innovative spirit, boosting China’s higher education to achieve new glories based on the big data technology.

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