International Journal of Computer Information Systems and Industrial Management Applications
ISSN 2150-7988 Volume 17 (2025) pp. 1-14

https://doi.org/10.70917/ijcisim-2025-0284
Article

Strategies for Improving the Interaction Efficiency of English Translation Classrooms in Higher Vocational Colleges and Universities under the Environment of Big Data Analysis

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Abstract: Educational development has a close relationship with the context of the times, and the teaching mode of higher vocational English should be innovated in the context of the big data era. This topic builds an innovative mode of teaching English translation in higher vocational colleges under the background of big data, and discusses the strategies for improving the interactive efficiency of English translation classrooms in higher vocational colleges. Taking an English translation classroom in a higher vocational college as a research case for comparative teaching experiments, we apply the FIAS interaction analysis system and the classroom teacher-student evaluation system to analyze the effect of the teaching innovation model on the improvement of classroom interaction efficiency. After applying the teaching innovation model, the overall quality of teacher-student interaction in higher vocational English translation classrooms increased by 8.84%, the teacher language ratio decreased by 4.65%, and the student language ratio increased by 4.54%. The results show that the high-vocational English translation teaching model based on big data can build a high-quality English translation classroom, promote the improvement of the interaction efficiency of the English translation classroom, and have a positive significance for the classroom teaching and student development of English translation.

Keywords: FIAS interaction analysis; classroom teacher-student assessment system; teacher-student verbal interaction; higher vocational English

1. Introduction

With the development of globalization, English has become one of the most important languages in the world, and for English translation teaching in higher vocational colleges and universities, how to improve the effectiveness of teaching has become an urgent problem to be solved. In English translation classroom teaching, we generally believe that interactive teaching is the most basic teaching mode and the most effective teaching mode [1-2]. The traditional teaching mode in the past is no longer adapted to the teaching requirements at this stage, and students need to learn the language actively and positively [3-4]. And in order to achieve active and positive language learning, it is necessary to achieve classroom teaching interaction, classroom interaction can mobilize students' enthusiasm for learning, can stimulate students' desire to learn, can focus students' attention in the classroom [5-7].

In this regard, Wang, X and Wang, J [8] proposed an interactive teaching mode and analyzed the effect of this mode on the satisfaction of translation master students, verifying the effectiveness of this mode, which creates an environment that promotes the interaction between teachers and students, and improves the translation ability of translation masters. Lin [9] elaborated that the interactive teaching method plays an important role in language learning, and proposed that the method be used in translation teaching, aiming at solving the current problems in English translation teaching. Wei [10] introduced the

flipped classroom as an application in higher education and examined its impact on student engagement and teacher-student interaction in translation courses, aiming at providing references for those concerned with language teaching in translation studies. Zhang [11] pointed out that there are a lot of problems in English translation teaching in colleges and universities, and emphasized that in the digital era the inevitability of English translation teaching reform, and proposed the application of flipped classroom, aiming to improve the interest of the English translation classroom and the students' learning interest. Wagner et al [12] proposed a strategy for interactive learning of spoken English based on group work methodology, and through experimental tests showed that the students who adopted the interactive teaching methodology showed positive dynamic changes in the performance indicators.

However, nowadays, there are many problems in English translation classroom teaching, and imparting knowledge in a rigid and abstract way causes students to lose interest and become bored, and interactive teaching cannot be realized at all [13-15]. With the development of science and technology, big data analysis technology in English translation teaching in higher vocational colleges and universities not only provides students with better translation services, but also provides technical support to improve the efficiency of classroom interaction [16-18]. Hu [19] pointed out that translation teaching faces many tests in the era of big data, as well as the requirements of the translation industry for talents in this field in the new period, based on which the design of a public automatic English translation platform , discusses the feasibility and advantages of using big data technology for English translation. Zhu [20] creates an English translation learning platform based on big data analysis and Internet of Things, and verifies the effectiveness of the platform in improving students' understanding of English, translation ability, efficiency, etc. Yan [21] emphasizes the necessity of applying the big data platform in the teaching of English translation, and argues that the big data platform can realize personalized teaching mode, meet students' learning needs, and achieve precise teaching goals by analyzing information about students' learning behaviors. Li [22] introduces the development and widespread influence of online media and mobile terminals in the era of big data, as well as new teaching reforms for English translation teaching, and develops a detailed analysis.

The application of big data analysis in English translation classrooms in higher vocational colleges is reflected in the establishment of an interactive platform for teachers and students [23-24]. Teachers can use the network to set up the classroom opening introduction, translation theory, online study guide, translation material library, performance evaluation, teaching reflection, etc., in order to better improve the effectiveness of teaching [25-27]. Li [28] explored the application of big data analytics in the study of the English online learning platform, and based on the literature review, constructed a data mining system for the English online learning platform, and the test results showed the effectiveness of the system. Liu and Wang [29] emphasized the great potential of constructing a university English teaching model based on big data platform and elaborated its possibility in terms of constructing a big data platform, showing that a big data platform can achieve the goals of standardization of English teaching, resource sharing, and personalized learning, which is of great significance in improving the quality and efficiency of English education. Wang, B and Wang, Y [30] proposed English translation teaching based on big data platform, which verified that the platform has the advantages of accurate content pushing and real-time interaction, improving the level of personalized and intelligent teaching. Secondly, a student communication platform can be established. Students can use the communication platform to communicate online in order to be able to correct and comment on translations in time, such as teachers can set up mutual assessment of homework, publication of assignments, resource sharing, etc [31-33]. Finally, an exchange platform for original language authors can be established. Higher vocational colleges and universities can establish a communication and interaction platform integrating original text authors, teachers and students, so that teachers and students can share resources and experiences with modern well-known writers and literature lovers in a free communication space to promote mutual English translation ability and improve the effectiveness of teaching university English translation courses [34-38].

This paper focuses on the teacher-student interaction in the senior English translation classroom and innovatively proposes a senior English translation teaching model based on big data. In order to verify the effectiveness of the strategy, two classes in a higher vocational English translation classroom were selected to conduct a comparison experiment, utilizing Flanders interaction analysis and classroom teacher-student assessment system to gain insights into the verbal interaction of teachers and students and the quality of the interaction in the higher vocational English translation classroom. Through the analysis of the classroom language matrix of the two classes, the dynamic curve analysis of the three dimensions of teacher's language, student's language and the language of silent chaos, as well as the assessment results of the quality of classroom teacher-student interactions, the effect of improving the efficiency of classroom interactions of students in the experimental classes is explored. This study analyzes the characteristics of teacher-student verbal interaction in classroom teaching through a

data-based evaluation approach, enriches the research related to teacher-student verbal interaction in the classroom teaching of higher vocational English translation, and provides more possibilities for the innovation and development of the higher vocational English education model.

2. Higher Vocational English Translation Teaching Model Based on Big Data

In the era of big data, students' learning needs have changed significantly, and teachers must change the teaching mode, innovate teaching activities, optimize teacher-student relationship from the characteristics of students, and adopt reasonable means of English teaching on the basis of continuous supplementation and improvement of resources. This paper starts from the impact of big data technology on higher vocational English translation classroom teaching, explores the effective strategies for improving the interactive efficiency of higher vocational English translation classroom, and focuses on constructing a more high-quality higher vocational English translation teaching innovation mode.

2.1. Using big data to unleash the classroom

In the process of reforming the teaching mode of higher vocational English translation using big data technology, teachers should deeply recognize the functions and roles of big data. When improving the efficiency and quality of the classroom, teachers should first improve their understanding of big data technology and improve their ability and level of operating big data technology, only in this way can they use big data technology to teach in the classroom smoothly. Teachers can utilize big data technology to enrich the teaching content of the classroom and enliven the atmosphere of the classroom. By creating different new teaching situations, students' interest in learning can be increased, and the relationship between teachers and students can be brought closer. Teachers use big data technology to create scenarios related to the classroom content, can stimulate the vitality of the classroom, which can make students quickly into the classroom learning, improve the interactive efficiency of the classroom and teaching efficiency. Teachers can also use big data technology to transform some difficult to understand abstract knowledge into more concrete examples, which can facilitate students' understanding and improve students' understanding and mastery of knowledge.

2.2. Teaching innovations using multimedia

Multimedia technology is a more important teaching tool in the era of big data, teachers can use multimedia technology to carry out teaching innovation, not only can save classroom time, improve classroom teaching efficiency, but also help teachers to explain more abstract theoretical knowledge, help students understand and master the classroom content, improve the quality of teaching and learning. Teachers can use multimedia technology to show some videos and pictures to students, help students understand the classroom content, cause students' emotional resonance, can make students more actively participate in classroom activities, promote the smooth progress of the classroom. And teachers should also be flexible in the use of multimedia technology, should be combined with the actual situation of the classroom and the actual content of the classroom teaching methods and content for timely adjustment, so that the classroom content is more in line with the characteristics of the students' learning, not only to enhance the students' interest in learning and enthusiasm, but also to promote the classroom to carry out effectively.

2.3. Utilizing information technology to improve classroom efficiency

Teachers must focus on improving the efficiency of the classroom in the process of utilizing big data technology to carry out the innovation of higher vocational English translation classroom teaching mode. In the process of lecturing, teachers can use multimedia and other big data technology to save time in the classroom, use more time to explain the key points and difficult points, and avoid the waste of time. So the use of information technology such as big data technology can help teachers save some classroom time.

2.4. Using Big Data to Inspire Students

In the process of teaching English translation in higher vocational education, teachers should pay attention to improving students' interest and enthusiasm in learning, so as to improve students' performance in English translation learning. In the process of teaching, teachers should design the teaching steps needed in the classroom in advance and integrate big data technology into them. Teachers can invite and encourage new students to acquire more knowledge and information by manipulating these technologies in the process of teaching, which is one of the effective ways to improve students'

participation in the classroom. At the same time, this can also improve students' interest in learning, and can also activate the classroom atmosphere, so that more students participate in classroom activities, improve the quality of teaching and interactive efficiency, and promote the smooth progress of classroom teaching.

3. Research on the Effect of Improving Interactive Efficiency in English Translation Classroom

3.1. Research subjects and programs

3.1.1. Subject of the study

In response to the innovative model of English translation teaching based on big data proposed above, two parallel classes with comparable English proficiency in the English translation classroom of a higher vocational college were selected as research objects, in which Class A was taught using the innovative model of English translation teaching based on big data, and Class B was taught using the traditional teaching method, and the two classes were subjected to lesson recording and data analysis. The experiment was designed to test the actual effect of the proposed strategy for improving the interactive efficiency of English translation classroom.

3.1.2. Research program

Evaluation requires scientific evaluation tools and ideas and means of collecting evidence of classroom teaching and learning behaviors, analyzing and judging the various types of information collected, making evaluations based on the evidence, and using the evaluation results to guide the improvement of student learning and teacher teaching. Based on this, this paper utilizes the Flanders (FIAS) interaction analysis and the Classroom Teacher-Student Interaction Assessment System (CLASS) to gain insights into teacher-student verbal interaction in the English translation classroom. The former focuses on the process of teacher-student verbal interaction in English translation classrooms, while the latter focuses on the quality of interaction.

One actual classroom was selected from the classroom videos of each of the two classes for analysis. To improve the accuracy of coding, the video was first turned into text, and after the text conversion was finished, the lesson was coded according to FIAS. During the CLASS assessment, the focus was on observing and recording the occurrence of the target behaviors corresponding to each indicator in the table and filling in the observation notes. The target behaviors included teacher and student verbal behaviors (e.g., teacher questioning content, student questioning, responding, and discussion), nonverbal behaviors (e.g., teacher-student body movements, facial expressions, and physical distance between teacher and student), and the presentation of teacher instructional materials and student work. After each round of 20-minute observation and recording activities, the sample was then scored for each of the secondary indicators. Finally, the assessment data from the video samples were entered into a summary table of the two teachers' scores (with the “negative climate” item reverse scored, summary score = 8 - observation score), so that the data could be further organized and analyzed.

3.2. Flanders Interactive Analysis System

The Flanders Interaction Analysis System (FIAS) is an observational tool that can be used to study the verbal interactions of teachers and students in the classroom.The FIAS consists of three components, a set of coding systems for recording classroom behavior, a set of coding rules for observing and recording, and an analytical matrix for displaying the data and analyzing the interactions.

3.2.1. Coding system

The FIAS coding system consists of three components: teacher language, student language, and silence or confusion; teacher language is coded 1-7, student language is coded 8-9, and silence or confusion is coded 10, and the FIAS coding classification system is shown in Table 1.

Table 1. FIAS coding classification system.

Classification		Coding	Content
Teacher language	Indirect influence	1	Express emotion
		2	Encourage and praise
		3	Adopt opinions
		4	Question

	Direct influence	5	Teaching
		6	Instruction
		7	Criticism and protection
Student language		8	Reactive speaking
		9	Initiative speaking
Silence		10	Silence or confusion

3.2.2. Coding requirements

Based on the classroom teaching process, coding was done every 3 seconds to form an observation record of a lesson. In addition to the coding rules mentioned above, there are also a variety of intricacies in real classroom teaching, and to help observers make more precise judgments about the interactions between teachers and students, there are the following coding principles:

Principle 1: If the type of verbal behavior cannot be determined within 3 seconds, codes 5 (lecture) and 10 (silence) should be avoided.

Principle 2: If multiple types occur within 3 seconds, record all of them, unless time does not permit, then record the infrequent codes. (Codes 4, 5, and 8 are the most frequently occurring codes.)

Principle 3: When a teacher calls a student's name in order to ask the student a question, it is code 4 (question).

Principle 4: When the teacher restates the student's correct answer, it is categorized as code 2 (praise and encouragement).

Principle 5: If the teacher is sarcastic and poking fun at students in the classroom, it is categorized as Code 7 (criticizing or asserting authority), and if the teacher is joking and talking to students, it is categorized as Code 2 (praising and encouraging).

Principle 6: If the observer is unable to determine which category the type of speech belongs to, it should be categorized as Code 10 (Silence).

3.2.3. Analysis matrix

The coded numbers are ordered by adding a 10 to the front of the first coded number and to the back of the last coded number, and each coded number and the front and back coded numbers form a set of ordinal pairs, respectively, so that each code is used 2 times. If these data are arranged according to a certain law can be seen some regularity. We can let the first digit has been encoded to indicate the row, while the second digit has been encoded to indicate the column, so as to form a set of sequential pairs, all the combination will form a 10 × 10 matrix. According to this matrix, you can add the need to be encoded to determine the amount of data.

3.2.4. Ratio analysis

(1) The higher the rate of teacher speech data, the higher the rate of teacher speech. Teacher speech rate:

$$\left[\sum_{i=1}^{7} Row(i)\right] \times 100 \div Total \tag{1}$$

(2) The higher the rate of student speech data, the higher the rate of student speech. Ratio of student speech:

$$\left[\sum_{i=8}^{10} Row(i)\right] \times 100 \div Total \tag{2}$$

(3) The higher the data on quiet or disorganized situations during instructional periods, the lower the amount of spoken interaction between teachers and students. Silence or Disruption Ratio:

$$\left[\sum_{i=11}^{14} Row(i)\right] \times 100 \div Total \tag{3}$$

3.3. Classroom teacher-student interaction assessment system

CLASS Classroom Interaction Assessment System (CLASS) is a classroom teaching assessment system tool developed by the Center for the Advanced Study of Teaching and Learning (CASL) at the University of Virginia, U.S.A. The three main dimensions and the basic framework of CLASS, as shown in Fig. 1, include three major domains of affective support, classroom organization, and pedagogical support, and there are a total of ten dimensions and forty-two behavioral indicators to establish a multilevel assessment framework for the quality of teacher-student interactions.

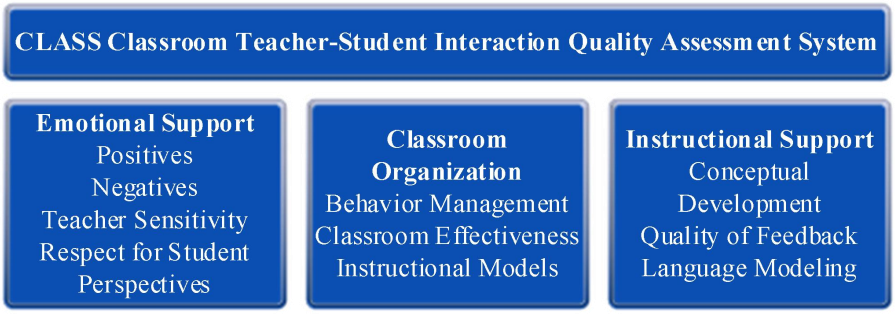

Figure 1. The three dimensions and basic frameworks of CLASS.

3.3.1. Areas of emotional support

In CLASS, the indicators of emotional support domain mainly include the following secondary indicators: first, positive atmosphere. Under the teacher-student interaction behavior, each other can maintain a good and pleasant state. Second, negative atmosphere. It refers to the negative emotions between teachers and students. For example, teachers in the process of implementing disciplinary measures, it is easy to cause students to have negative emotions. Third, teacher sensitivity, mainly refers to the corresponding observation of the teacher's emotional relationship with students. Fourth, the corresponding respect for students' views. Teachers and students respect each other, and then to students' interests, concepts and other comprehensive training.

3.3.2. Class organization areas

In the CLASS framework, the indicators included in the organizational domain of classroom management are: 1) Behavior Management. This mainly refers to the effective monitoring of student behavior by the teacher and the effective guidance of student misbehavior. ② Output. Educational activities need to be carried out to maximize the degree of setting, which includes a variety of aspects such as activity methods, activity time and so on. ③ Educational learning arrangements. Teachers organize effective teaching activities to ensure that students learn to maximize the development needs can be fully met.

3.3.3. Areas of pedagogical support

CLASS pays comprehensive attention to three main indicators of educational support: ① Cognitive development, which mainly refers to the effective development of students' higher-level thinking skills through effective measures taken by teachers in the course of teaching and learning activities. ② Feedback quality, which mainly refers to teachers' request for extended learning activities centered on students' independent ideas. ③ Language modeling, which refers to the teacher's overall promotion of the development of students' language skills. If teachers can give students more space for self-expression and support them to participate in relevant activities, it is bound to play a good role in promoting the development of students' cognitive ability, and also create a good foundation for cognitive ability development.

The assessment criteria of CLASS contains two types of indicators, Level 1 and Level 2, and each Level 2 indicator contains different target behaviors underneath, which are divided into three levels of low, medium and high, namely, low (1, 2 points), medium (3, 4, 5 points) and high (6, 7 points), and the scoring of each indicator is described in more detail.

4. Analysis of the Effect of Improving Interactive Efficiency in English Translation Classroom

4.1. Classroom Language Matrix Analysis

The average matrices of Class A and Class B were analyzed as shown in Tables 2 and 3. The language matrices of the English translation classrooms of the two classes were analyzed as follows:

In terms of the proportion of teachers' language, Class A is smaller than Class B, which is 59.42% and 64.07% respectively, indicating that Class A gives more discourse to students, the main discourse in the English translation classroom is dominated by students, and the students' main position in the classroom is highlighted. In terms of students' language, Class A is higher than Class B, with 17.33% and 12.79%

respectively. Through the video, it can be clearly seen that in Class B's classroom, students answered more questions passively, which took up most of the students' language, and there were very few opportunities for active expression. Whereas, in the classroom of class A, apart from the passive responses of the students, there are also more opportunities for the students to express their views actively, and the students can have the opportunity to actively dominate the classroom, ask questions and express their views. In the silent and chaotic behavior, the proportion of class A is higher than that of class B, which is 23.26% and 23.14%, respectively. Class A leaves enough time for students to practice and explore and discuss, and students have more time and more space to acquire knowledge on their own, and the students' dominance is brought into full play, which is significantly better than that of class B in this aspect.

Overall, in the English translation classroom that adopts the high-level English translation teaching model based on big data, the time for students to participate in the classroom is significantly greater than that of the comparison class, students have the dominant right in the classroom, and students are the main body of the classroom. Teachers gave a lot of time to students for thinking and practicing, and students were also given the opportunity to express their own views, which had a better classroom interaction effect. On the other hand, in the English translation class of Class B, the teacher speaks too much language and is basically in the monotonous lecture of the teacher, who has an obvious tendency of linguistic hegemony, and the classroom indoctrination is obviously characterized by poor classroom interaction.

Table 2. Average matrix analysis of class A.

Class	1	2	3	4	5	6	7	8	9	10	Total
1	3	3	0	6	5	0	0	5	0	4	26
2	3	5	5	14	7	3	0	7	3	3	50
3	0	1	6	12	4	1	0	3	0	1	28
4	5	19	3	58	45	6	0	49	0	8	193
5	9	4	3	54	78	5	0	13	0	13	179
6	0	3	1	5	7	2	0	3	1	5	27
7	3	0	0	0	0	0	0	0	1	1	5
8	5	14	6	28	17	2	0	47	5	7	131
9	0	2	2	5	0	2	0	0	7	1	19
10	3	2	0	14	15	6	0	4	1	157	202
Total	31	53	26	196	178	27	0	131	18	200	860
%	3.60 %	6.16 %	3.02 %	22.79 %	20.70 %	3.14 %	0.00 %	15.23 %	2.09 %	23.26 %	3.60%
	35.58%				23.84%			17.33%		23.26 %	
	Teacher language sum							Student language sum		Silence	

Table 3. Average matrix analysis of class B.

Class	1	2	3	4	5	6	7	8	9	10	Total
1	0	2	1	6	1	0	0	0	0	2	12
2	0	7	6	14	20	11	0	4	1	8	71
3	0	1	3	5	4	2	0	0	0	2	17
4	4	21	3	42	30	13	0	38	2	6	159
5	2	5	2	49	104	19	1	18	0	7	207
6	1	0	1	13	13	22	0	9	0	22	81
7	0	0	0	2	0	1	0	1	0	0	4
8	1	20	5	16	18	7	0	28	2	1	98
9	1	4	1	1	2	0	0	0	6	1	16
10	0	10	0	13	11	10	0	1	0	150	195
Total	9	70	22	161	203	85	1	99	11	199	860
%	1.05 %	8.14 %	2.56 %	18.72 %	23.60 %	9.88 %	0.12 %	11.51 %	1.28 %	23.14 %	100.00 %
	30.47%				33.60%			12.79%		23.14 %	
	Teacher language sum							Student		Silen	

		language sum	ce	

4.2. Comparative analysis of dynamic curves

4.2.1. Analysis of teachers' language

Figure 2 shows the distributional characteristics of language in the classrooms of teachers in both classes. The image of the language of the teachers of class B is above that of class A. The teachers of class B have 30 statistical values higher than 50%, while the teachers of class A reach 50% or more only 22 times. From the fluctuation trend of the curve, the language of the teacher in class A shows big fluctuation in the whole class, indicating that the teacher's white time in language is more even, and the students will leave some time for discussion or independent thinking after a paragraph of the teacher's discourse, and the whole English translation class is more fluent and the classroom atmosphere is more active.The language of the teacher in class B is basically above 50% in the first 20 minutes, although it shows small fluctuation, but the the range is not large, indicating that it is mainly dominated by the teacher's language and students have less time for thinking and discussion.

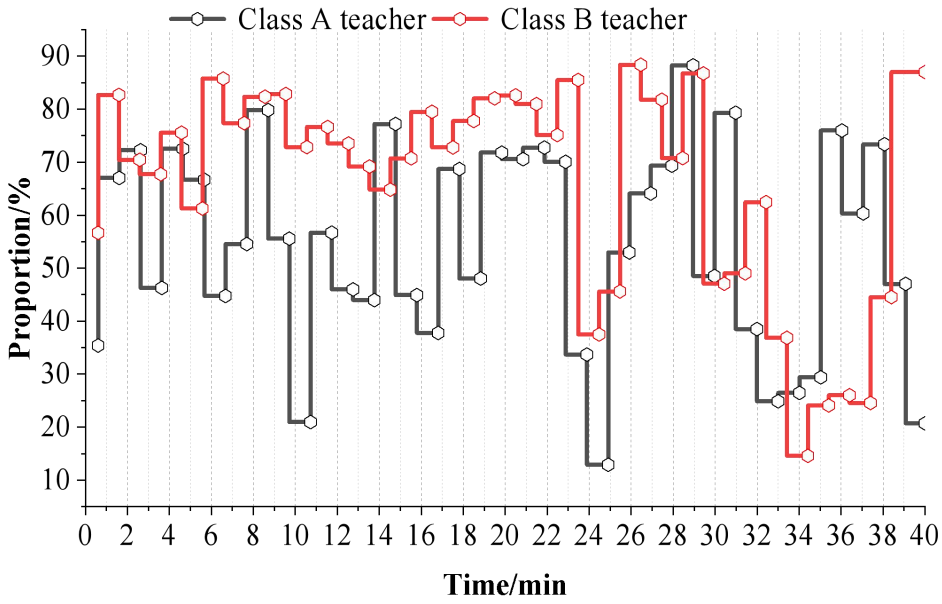

Figure 2. The distribution of language in teachers in two classes.

4.2.2. Analysis of student language

Comparative changes in the dynamics of students' language ratios are shown in Figure 3. Students' language fluctuated many times in both English translation classes, but the fluctuations were more pronounced in class A and showed the phenomenon that class A was larger than class B. The fluctuations were more pronounced in class A than in class B, and the fluctuations were more pronounced in class A than in class B. Large fluctuations indicate that the students' language is rich and lasts for a long time, while small fluctuations, especially at lower levels, indicate that the students' language is homogeneous and lasts for a short period of time, and that the students are largely responding passively to the closed-ended questions asked by the teacher.There are eight times in the curve of class B when the statistical rate is as low as 0%, and there are five consecutive occurrences, which indicate that the students do not have any linguistic behaviors for a long period of time. In contrast, the Class A statistic reached 0% only four times, almost all of which occurred at intervals, and had two large spikes, indicating that students had the opportunity to engage in free expression.

Comparatively speaking, the students adopting the high-level English translation teaching model based on big data showed more active language characteristics throughout the class and were evenly distributed, and the students spoke actively and positively.There was relatively little language in class B, and there was no student language for a long period of time, with the possibility of organizational breaks, and the students' language was monolingual and mostly passive responses.

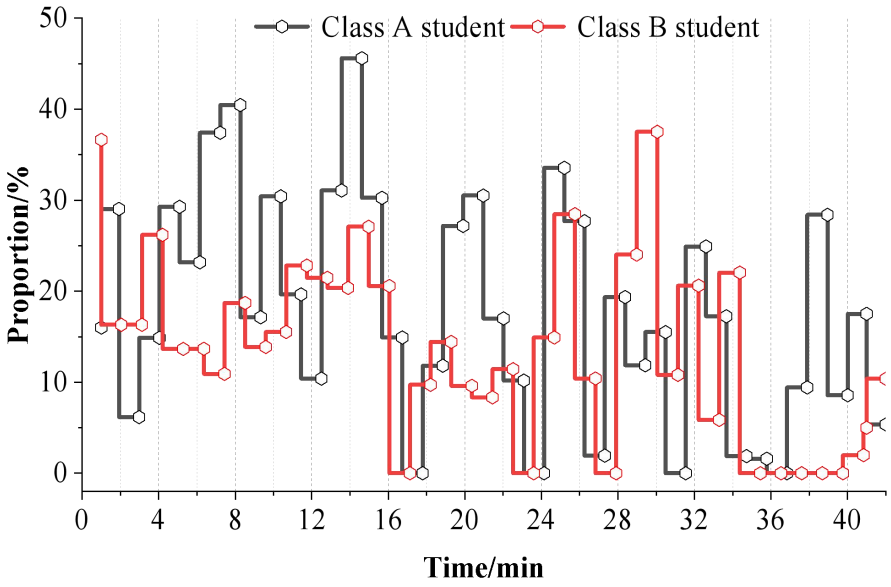

Figure 3. The distribution of language in students in two classes.

4.2.3. Silence and confusion analysis

Comparative changes in the dynamics of the silence to confusion ratio are shown in Figure 4.The Class A curve showed six large fluctuations one after the other, indicating that in all six instances, students had relatively enough time to think and explore. In contrast, the class B curve showed very small fluctuations in the first 24 minutes, most of which were close to 0. This indicates that in this period, students had little time to think independently, and were in the midst of lectures and expressions, and that the efficiency of classroom interactions was more evident. In the last 10 minutes, silence and confusion reached a high proportion, indicating that in this period of time, neither the teacher's guiding language nor the students' communication and expression language appeared, and the classroom atmosphere was relatively dull.

Comparatively speaking, in terms of white space in the classroom, Class A is more reasonable, and students are able to think and explore independently after expressing and listening to the lecture, leaving room to analyze the problem and discuss it more deeply. In contrast, class B did not have time for reflection and discussion, and there may have been a lack of students' understanding of the issues or indoctrination.

Through the classroom English matrix analysis and dynamic curve comparison, it is found that the English translation classroom adopting the proposed vocational English translation teaching model has a more positive and cordial teaching atmosphere, with stronger teacher-student interaction efficiency in the classroom, which is better able to promote the development of students' English learning ability.

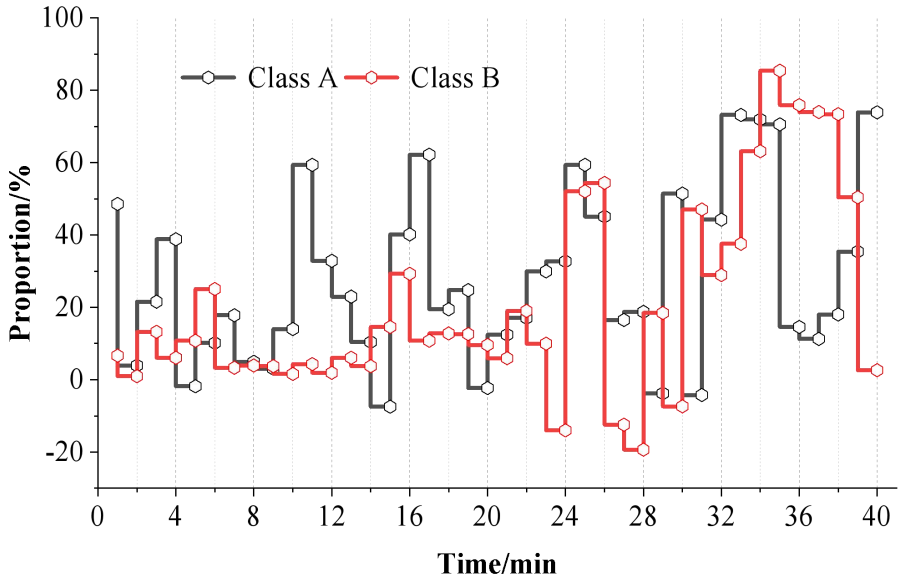

Figure 4. The distribution of silence and confusion ratio.

4.3. Results of Teacher-Student Interaction Assessment

The quality of teacher-student interaction was assessed in two English translation classrooms through the Classroom Teacher-Student Interaction Assessment System. The summary of teacher-student interaction quality scores for the two classes is shown in Figures 5 and 6, including four rounds of scoring summaries, with X1~X10 denoting the 10 evaluation indexes of positive factors, negative factors, teacher sensitivity, respect for students' viewpoints, behavioral management, classroom efficiency, teaching modes, conceptual development, quality of feedback, and linguistic demonstration, respectively. The results of the scoring of each index in the two classes are shown in Figure 7.

From the overall situation, the quality of teacher-student interaction in English translation classrooms of Classes A and B is at the medium and above level in all aspects. Specifically, both Classes A and B scored the highest in emotional support, 6.63 and 6.06 respectively.Class A scored the lowest in classroom organization, 6.25, while Class B scored 6.00.Class B scored the lowest in pedagogical support, 5.58, compared to 6.33 for Class A. Class B scored the lowest in teaching support, 5.58, while Class A scored 6.33. The overall teacher-student interaction quality scores were 6.40 and 5.88 for Class A and Class B respectively, indicating that the quality of teacher-student interaction in the English translation classroom was improved by 8.84% after adopting the big data-based higher vocational English translation teaching model.

By observing and analyzing the English translation classroom of Class A with the help of CLASS, it can be summarized that effective classroom teacher-student interaction is characterized by the following aspects:

(1) Positive emotional interactive atmosphere: Teachers create a positive emotional interactive atmosphere for teachers' and students' English translation classroom teaching activities, which is conducive to the establishment of cordial and harmonious teacher-student relationships, so that students can enjoy a certain degree of autonomy, experience a sense of belonging in the classroom, and be well prepared psychologically to meet the learning challenges.

(2) Rich and efficient classroom organization strategies: Teachers use rich and varied, efficient and orderly classroom organization and management strategies to guide students to maximize the use of classroom learning time, which provides a basic guarantee for students' learning activities. Teachers make sufficient preparation before class, use rich and varied classroom teaching materials to arouse and maintain students' interest in learning, so that students actively and efficiently utilize classroom learning time.

(3) Teaching guidance based on the exercise of thinking ability: Teachers abandon the indoctrination teaching method and adopt the guiding method to carry out teaching, for example, by asking for reasons and “brainstorming” to guide the students to the internal thinking and logical process of the language form, in order to exercise the students' analytical and reasoning ability, and to improve the students' innovative consciousness. Awareness. Teachers guide students to establish the connection between new

and old knowledge to enrich their original cognitive structure. Teachers help students establish the connection between book knowledge and real life, so that students can realize the practical use of English translation knowledge. Teachers engage in frequent question-and-answer processes with students, give them patience and appropriate encouragement, and ask or question students based on their answers, leading them to deeper thinking. Teachers summarize students' answers in a focused way, which improves students' language presentation skills in a subtle way.

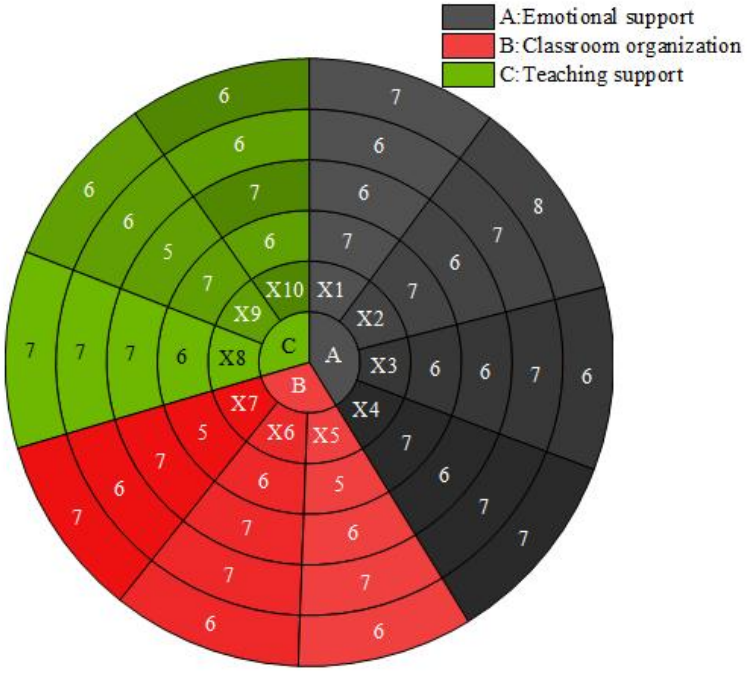

Figure 5. Summary scores of teachers and students' interaction quality of class A.

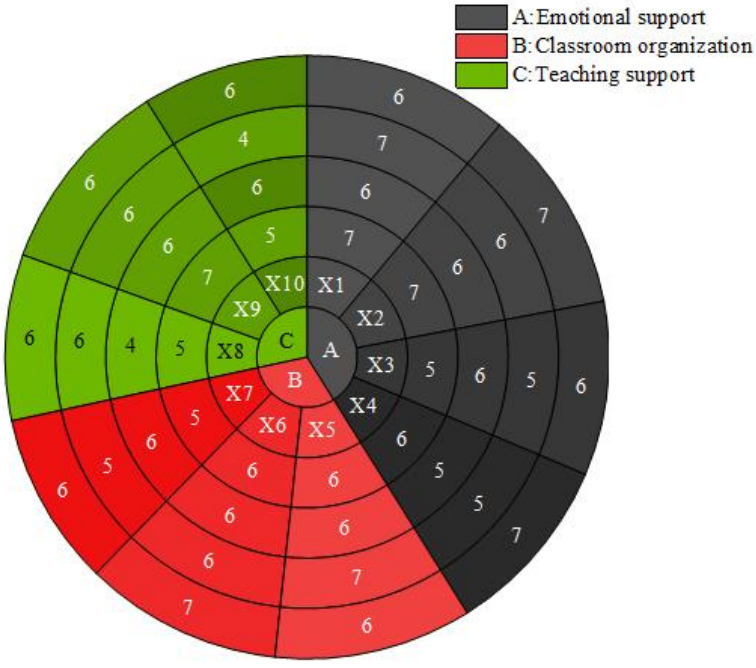

Figure 6. Summary scores of teachers and students' interaction quality of class B.

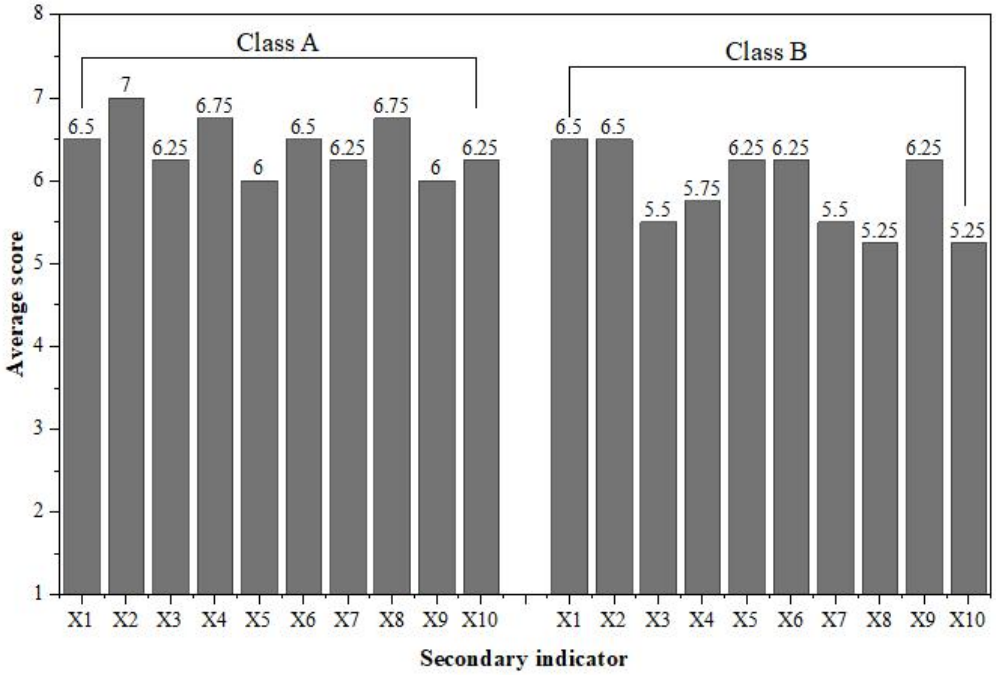

Figure 7. The results of each index of the two classes.

5. Conclusion

This paper opens the change and exploration of classroom teaching interaction in the era of big data, explores the strategy of improving the interaction efficiency of English translation classroom in higher vocational colleges, and proposes a higher vocational English translation teaching model based on big data. On this basis, teaching experiments are carried out to verify the actual effect of the proposed classroom interaction efficiency improvement strategy by utilizing the FIAS coding system and the CLASS classroom teacher-student assessment system.

The experiment found that the classroom interaction efficiency of teachers and students in Class A, which adopts the proposed vocational English translation teaching model, is higher than that in Class B, which is taught in the traditional way. In the analysis of English translation classroom language matrix, Class A has higher student language ratio and silence and confusion behavior, which are 17.33% and 23.26%, respectively, and the teacher's language ratio is reduced by 4.65%, and students have more active speaking and exploratory discussion behaviors. Meanwhile, the dynamic curves of teacher's language, student's language, and silence and confusion also reflect that the English translation classroom in Class A has higher activity and interaction. From the results of the assessment of teacher-student interaction, the overall ratings of the quality of teacher-student interaction in Class A and Class B were 6.40 and 5.88, and the quality of interaction between teachers and students in Class A was 8.84% higher. Therefore, the higher vocational English translation teaching mode based on big data can promote the improvement of classroom interaction efficiency, which is conducive to the development of English translation classroom teaching quality.

In the context of the big data era, higher vocational English teaching must be combined with the characteristics of the current era of development, and it is necessary to utilize big data technology to carry out teaching innovation, fully release the vitality of the English translation classroom, stimulate students' enthusiasm, improve the classroom efficiency, and promote the classroom interaction and the overall development of higher vocational English translation teaching.

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