



# A Case Study of the Verbal Interaction Between Teacher and Students in High-Quality English Reading Class Based on iFIAS

Haoying Wang<sup>(✉)</sup>

School of International Education Teachers, Changchun Normal University, Changchun 130032, China

why199862@163.com

**Abstract.** Teacher-student interaction is the key factor affecting the effect of real-time teaching in class. However, traditional English reading classes in China can hardly meet this need. To solve existing problems and optimize the teaching process, this study uses the coding framework based on iFIAS to analyze the high-quality case and constructs the corresponding matrix and dynamic curve to explore the characteristics of verbal interaction in Chinese high-quality English reading classes. The research finds that the mode of PWP (Pre-While-Post) is often relatively effective in the analysis of the reading materials; The teaching process is driven by questions. That means guiding students to think by questioning rather than simply indoctrinating; With that, the teacher encourages students' views and helps them clarify and perfect their points; With the harmonious interactive atmosphere, students have sufficient learning space and support for reading and thinking, thus they can solve problems and deeply understand the text through various activities with peers.

**Keywords:** Verbal interaction · Reading instruction · High-quality class · iFIAS

## 1 Introduction

Teacher-Student interaction refers to the interaction and influence between teachers and students in various forms and degrees [1]. It refers to the verbal or non-verbal interaction between teacher and students through dialogue in class. Many studies have found that the quality of interaction has become the primary factor affecting students' learning quality [2]. Effective verbal interaction will stimulate students' motivation, improve their learning efficiency, promote their participation, and have important value for their cognitive development [3]. Compared with other courses, as a conversion among teacher, students, and text, reading instruction usually put forward more requirements for teachers: How to deal with the relationship of each part in the text? What kind of activity will enable students to fully understand the text? What kind of learning environment should be provided in class? Therefore, after dialogue in class has become a pioneering field, many scholars began to focus on the impact of teacher-student interaction on

the teaching effect in reading instruction. Someone believes that interaction in early childhood will lay a foundation for students to acquire preliminary reading skills based on the basic principles of learning and memory, especially the correction of errors at the beginning of reading training [4]; someone emphasizes that teacher should give students enough opportunities for independent practice, which will help them master the newly learned vocabulary, concepts, and skills [5]. The above researches show that a specific model of teacher-student interaction can effectively cultivate students' reading ability (such as decoding information, combing facts, and spelling). The quality of interaction is crucial to the construction of knowledge [6].

In China, as a second language, English usually attaches great importance to the quality of interaction, practicality, and cultural connotation. The above characteristics determine the role of verbal communication in English class, and the way and efficiency of teacher-student verbal interaction should not be ignored. However, there are many traditional Chinese English teaching problems, such as limited content, superficial process, and vague correction. The model of interaction inclines to be rigid and mechanized. It has been found that some teachers lack the correct understanding of reading skills training, and they usually adopt mechanized ways and spoon-feeding explanations, which leads to inefficient reading instruction; Some teachers fail to guide students to explore the connotation of the text and lack the expansion and extension of knowledge, which neglects the cultivation of students' thinking, resulting in the "absence of speculation" [7]. The above problems greatly limit the effective implementation of English reading instruction.

This study believes that elementary education is a critical period for students, which gradually transforms from early literacy instruction to teaching that aims at cultivating critical awareness and innovative thinking. It is the "shaping stage" of high-level cognition. Although there are many achievements in English reading instruction, the research that focuses on the stage of Chinese basic education is relatively limited, especially the strategies summarized from the perspective of verbal interaction. Therefore, this study aims to analyze the teacher-student verbal interaction in a high-quality English reading class and use the coding framework for English reading instruction based on iFIAS to analyze the dialogue in the target lesson, to reveal the key factors that produce efficient teaching and provide the suggestion for improving the quality of teacher-student interaction.

## 2 Research Design

### 2.1 Objects

The success of teacher-student dialogue in class depends on two indicators [8]. Firstly, children should be encouraged to participate in class [9]; Secondly, the development of good practice in class depends on whether students can seize the opportunity to master knowledge [10]. In other words, it means whether teachers can provide students with these opportunities promptly. Based on the definition of high-quality reading class and effective teacher-student interaction, this study determines three selection principles for the research object: (1) The recording of the lesson should be clear and record the whole

dialogue. (2) The lesson should meet the basic conditions of various activities. (3) The teacher should encourage students to express their views.

First, select the objects by keywords including “Quality class”, “Excellent teacher”, and “English reading instruction”; Second, have a comprehensive review and evaluation based on the three principles; Finally, choose ‘City & Countryside’ as the study object. It is a high-quality course taught by Liu Wanqing from Anson Thomas School in Anhui Province in the 15th National Senior English Teachers’ Teaching Skills Competition. This teacher has 13 years of teaching experience. This lesson is 39 min and 11 s in total. Based on the theme of City & Countryside, the teacher takes a narrative essay about Cathy’s personal experience in urban and rural life as the reading material, guiding students to focus on the advantages and disadvantages of different lives. The theme is a classic dialectical dilemma that can effectively stimulate students’ motivation and deep thinking. It is a high-quality English reading teaching model that meets the research needs.

## 2.2 Tools

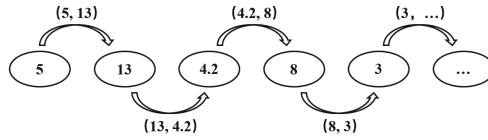
Class observation is a standard method for teacher-student interaction research [11]. Since the 20th century, as an increasingly popular field, there have been many effective methods in the research of teaching behavior. The most representative achievement is Flanders Interaction Analysis System (FIAS), which was proposed by Flanders in the 1960s [12]. This system provides a structural and quantitative technology for teaching behavior, it has been widely used for its understandability, systematism, and maneuverability. However, with the problems that emerged in its application, the following researchers have carried out various optimization for its structure and indicators: The modification proposal of FIAS proposed by Edmund in 1967 is a coding system containing 24 indicators [13]. It adds 10 codes on the basis of FIAS, aiming to completely describe the behaviors in class. However, due to the increase of indicators, this system is difficult to be mastered and applied by observers; In 2010, with the wide application of technology in Chinese classrooms, Gu Xiaoqing proposed a coding system called ITIAS, which is composed of 18 indicators, based on the fact that digital and intelligent elements have emerged in the traditional teaching [14]. It is used to reveal the characteristics of teacher-student interaction in the digital environment. However, since ITIAS has greatly changed the structure of the original FIAS coding system, it is difficult to judge the interaction type by relying on the matrix; To retain some of the advantages of FIAS and make it better used for the analysis of current teaching features in China, Fang Haiguang optimized the ITIAS coding system in 2012 and proposed the improved Flanders Interaction Analysis System (iFIAS), which includes 16 indicators [15].

Combined with the characters and the comparative analysis of the above achievements on the use of FIAS, it shows that iFIAS is more suitable for analyzing teaching activities in English reading classes. The reasons are as follows: First, compared with the 24-indicator coding system proposed by the modification proposal of FIAS and the 18-indicator system emphasized by ITIAS, iFIAS only contains 16 indicators, which will reduce the coding burden and retain the function of matrix analysis; Second, iFIAS refines the types of teacher’s questions, students’ responses, and silence based on the characteristics of Chinese class, and adds the coding of technology applications so the

system can cover all the behaviors. Combined with the characteristics of English reading class, this study forms a coding framework for the teacher-student interaction in English reading class based on iFIAS, which includes four categories of verbal behaviors and 16 secondary indicators. The specific indicators are shown in Table 1.

**Table 1.** A coding framework for English reading class based on iFIAS

Classification		Description	Examples	Code	
Teacher Talk	Indirect Influence	Accept feeling	Accept students' feelings	1	
		Praise or encourage	Encourage students' behavior	2	
		Accept student's ideas	Retell/expand students' views	3	
		Question	Open questions	Questions without clear answers	4.1
			Closed questions	Questions with clear answers	4.2
	Direct Influence	Lecturing	Explain specific points of the text	5	
		Giving direction	Give instructions for the process	6	
Criticizing/Justifying		Correct students' behavior	7		
Student Talk	Response passively		Respond to questions passively	8	
	Talking	Response proactively	Respond to questions Actively	9.1	
		Question proactively	Actively ask questions	9.2	
	Discussion with peers		Exchange opinions with peers	10	
Silence	Useless chaos		The class in a standstill or chaos	11	
	Beneficial silence		The Silence caused by learning	12	
Technology Use	Teacher use technology		Teachers use technology	13	
	Students use technology		Students use technology	14	



**Fig. 1.** Examples of Coding Sequence Pair

## 2.3 Procedure

Fang's research team from Capital Normal University develops the programs named "iFIAS coding assistant" and "iFIAS analysis program": After forming samples through the coding assistant, the data is imported into the program; Adjusting parameters; Selecting "Statistical Items" or "Draw Chart" to obtain matrix or curve chart.

The target lesson should be sampled every 3 s. According to the description of every indicator, a code should be assigned to the verbal activities that occur every 3 s, and the codes should be recorded in turn to form the sample for analysis. To ensure the objectivity and validity of the conclusion, the codes were obtained by two researchers with rich coding experience who simultaneously coded the same dialogue, and then analyzed the consistency of codes to ensure the credibility of the data.

756 codes were obtained by coding. The consistency was 94.3%. After the final coded text is obtained through unified adjustment of inconsistent codes, 756 codes are connected in chronological order, such as (5, 13), (13, 4.2) in Fig. 1, which means that after the teacher explains knowledge, the corresponding content is summarized through the software, and then questions closed questions for inspection. Thus the matrix composed of 755 pairs is constructed. The specific data were shown in Fig. 2. The first number in the sequence pair corresponds to the row in the matrix, and the second number corresponds to the column. The data in the cell indicates the frequency of the sequence pairs of verbal behaviors in class.

## 3 Analysis Methods

### 3.1 Matrix Analysis

The ratio of each part of the verbal behaviors in the matrix is an important indicator for analyzing teacher-student interaction. By making statistics on the frequency, distribution and proportion of data in the matrix, compared with the norm of verbal behaviors in class proposed by Rogers and Belek, we can describe the specific situation of teaching, and then analyze the characteristics of control style, interactional structure, teaching mode and emotional atmosphere in the high-quality English reading class.

#### 3.1.1 Control Style

The development of learning will never be "under the unilateral control of teachers or students" [16]. The control style of class usually reflects in the distribution of discourse power of learning subjects, the teaching methods, and so on. First, from the perspective of discourse power: the so-called discursive power is also called dialogue space, the

Category	1	2	3	4		5	6	7	8	9		10	11	12	13	14	Total
				4.1	4.2					9.1	9.2						
1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
2	0	2	4	6	1	2	5	0	0	0	0	0	0	0	1	0	21
3	0	1	10	2	6	4	4	0	3	3	0	0	0	0	3	0	36
4	4.1	0	0	0	7	2	1	7	0	5	4	0	0	0	2	0	28
	4.2	0	0	1	1	14	1	5	0	33	5	0	1	1	2	0	64
5	0	0	0	1	7	21	4	0	1	0	0	0	0	4	0	0	38
6	0	0	0	3	3	2	12	0	5	13	0	3	0	6	2	0	49
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	5	13	6	14	2	4	0	21	1	0	0	0	1	1	0	68
9	9.1	0	13	8	1	3	1	0	0	0	119	0	0	0	0	0	145
	9.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	0	0	0	1	0	1	0	0	0	0	128	0	0	0	0	130
11	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1
12	0	0	0	0	7	1	0	0	0	0	0	0	0	131	0	0	159
13	0	0	0	1	5	2	7	0	0	0	0	0	0	0	0	0	15
14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	21	36	28	64	38	49	0	68	145	0	130	1	159	15	0	755

Fig. 2. Analysis Matrix of Verbal Interaction in Class case

original definition is “an inclusive ‘space’ of dialogue in which self and others mutually construct each other’s cognition” [17].

According to statistics, the frequency of the teacher’s talk is 237, accounting for 31.39% of the total frequency of teacher and students; The frequency of students’ talk reaches 343, accounting for 45.43% of the total speech frequency, which is far greater than the 20% of the norm; The discourse ratio is about 2:3, which shows that teacher gives full respect to students’ right to speak; with active participation, students have enough opportunities to speak in class.

As far as the teacher’s role is concerned, it can be divided into direct and indirect influences. The direct influence refers to the behavior in which the teacher restricts students’ participation, including instruction or authority maintenance, which means the areas of cell codes 5, 6 and 7; The indirect influence refers to the behaviors that teacher encourages students’ participation, includes praising or clarifying students’ views, etc. It aims to keep students in a good mood for learning. In the matrix, it is shown in areas of cell codes 1, 2, 3, and 4. The ratio of indirect and direct influence is 1.71:1; it can be seen that teacher inclines to encourage students’ participating. From the above aspects, it can be seen that students are promoters of teaching, who occupy the main position.

### 3.1.2 Teacher-Student Verbal Interaction

Teachers’ behavior has been proven to support students’ autonomous learning in reading and writing tasks. High-quality interaction will promote students’ participation, so it is necessary to classify and analyze the role of teachers’ acts. First of all, it can be seen that the question in the teacher’s talk accounts for 70.77%, which is much higher than

26% in the norm standard, while the teacher's instruction only accounts for 29.23%. The teaching process is mainly driven by questions. The teacher tends to adopt the "Question-heuristic" teaching mode, which is a way to guide students to think by asking questions, rather than simply indoctrination and giving instructions; Secondly, it is found that the solid line box is the "Drill Pattern (Area C)", and the dotted line box is the "Creative Inquiry Pattern (Area D)" through matrix analysis, which can also be called the "Question" and "Inquiry" modes. The "Question" mode needs to discuss the contents of four cells (4, 4), (4, 8), (8, 4), and (8, 8); while the "Inquiry" mode needs to discuss the contents of eight cells (9, 9), (9, 3), (3, 3), (3, 9) and (8, 3), (4, 9), (8, 9), (4, 3), with a ratio of about 1:1.5. In addition, the proportion of open and closed questions is 1:2.29. It can be seen that in this lesson, the teacher's question is dominated by the closed question, and the teacher-student interaction mode adopts the "Inquiry" to guide students to reading. Although the proportion of open questions is relatively low, they put forward harder requirements for students' cognitive ability, which aims to generate their high-order thinking; Third, from the relationship between the two types of questions, the open questions and closed questions do not exist independently in the teaching process but complete each other. When students have difficulty solving abstract open questions, the teacher often breaks them into several specific closed questions to help students gradually finish their tasks.

In terms of students' talk, iFIAS divides them into three categories: passive response, active response, and discussion with peers. Active response accounts for 42.27% of students' talk, which is much higher than 34% of the norm standard. In addition, the frequency of discussion between students is 130, accounting for 37.90%. We can see that students are strongly willing to participate in class and have sufficient discourse space to communicate and cooperate with peers.

### 3.1.3 Emotional Atmosphere

The emotional atmosphere in class can be judged by the ratio of positive and negative interaction between teachers and students in the coding matrix. Codes 1–3 represent the positive reinforcement to students from teachers' talk, while codes 6 and 7 represent the negative reinforcement. The above two areas are called the defect area (Area B) and the positive conformity area (Area A). In this lesson, the area B is mainly composed of instructions from teachers, which aims to guide students to participate in various activities; Area A mainly refers to teacher's positive feedback on students' views, with a proportion of 1.41:1. It can be seen that the emotional atmosphere in the high-quality reading class is harmonious. Teachers can not only encourage students' views but also help them clarify their views and deepen their impressions.

### 3.1.4 Non-verbal Information

Nonverbal information includes silence, chaos, and the use of technology. The silence and chaos that are not conducive to teaching only occur once in the high-quality English reading class, accounting for 1.32% of the verbal interaction, reflecting the good classroom management and teaching of the teacher; The silence that contributes to teaching is as high as 159 times, accounting for 21.06% of the verbal interaction. The former

**Table 2.** Statistics of the proportion of teacher-student interaction

Terms	Calculation formula	Ratio	Norm
Teacher's talk	$\Sigma_{i=1}^7 \text{tally}(i)/\text{Total}$	31.39%	68%
Indirect/Direct influence	$\Sigma_{i=2}^4 \text{tally}(i)/\Sigma_{i=5}^7 \text{tally}(i)$	171.26%	-
Positive/negative reinforcement	$\Sigma_{i=2}^3 \text{tally}(i)/\Sigma_{i=6}^7 \text{tally}(i)$	116.33%	-
Questions in teacher's talks	$\text{tally}(4)/\Sigma_{i=4}^5 \text{tally}(i)$	70.77%	26%
Teacher's open/closed questions	$\text{tally}(4.1)/\text{tally}(4.2)$	43.75%	-
Students' talk	$\Sigma_{i=8}^{10} \text{tally}(i)/\text{Total}$	45.43%	20%
Passive response in students' talk	$\text{tally}(8)/\Sigma_{i=8}^{10} \text{tally}(i)$	19.83%	42%
Active speaking in students' talk	$\text{tally}(9)/\Sigma_{i=8}^{10} \text{tally}(i)$	42.27%	-
Discussions with peers in students' talk	$\text{tally}(10)/\Sigma_{i=8}^{10} \text{tally}(i)$	37.90%	-
Helpless chaos	$\text{tally}(11)/\text{Total}$	1.32%	11–12%
Beneficial silence	$\text{tally}(12)/\text{Total}$	21.06%	
Technology application	$\Sigma_{i=13}^{14} \text{tally}(i)/\text{Total}$	1.99%	-

two account for twice the norm, including the silences when students watch videos, carry out reading activities, think about questions and organize words. Although there is no actual verbal interaction, the behaviors in this part determine the state of students' participation, the validity of processing learning materials, and the quality of learning results. A good learning effect requires the teacher to give students enough time to think. However, although silence is valuable to do research, it is still a "black box" in class, and it is hard to evaluate with the existing technology. In addition, the proportion of technology applications is only 1.99%, which is implemented by the teacher. The specific behaviors include presenting the teaching content and promoting the process through video, pictures, slides, and so on (Table 2).

### 3.2 Curve Analysis

To clearly describe the dynamic change of teacher-student interaction in this lesson, we draw a line chart with time as the abscissa and the ratio of teacher's and students' talk per minute in Fig. 3.

This lesson adopts the PWP model, a common model used in the Chinese English reading class, which includes three parts: pre-reading, while-reading, and post-reading. The duration of these three stages is about 4 min, 10 min, and 24 min respectively. There were 16 peaks in the curve of teacher's and students' talk, while the curve of silence and technology application has 8.

On the whole, the curves of the teacher's talk and students' talk are relatively consistent and characterized by stages. There is only one 3-s chaos in the whole process, with great utilization of time. Teacher-student verbal interaction runs through the class. The core task of this lesson is to help students to analyze and solve problems dialectically



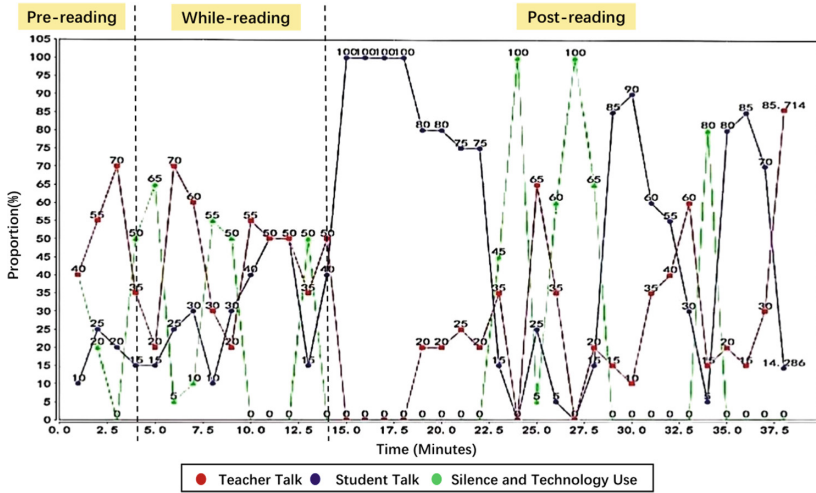


Fig. 3. The line chart of teacher-student interaction

with the theme of rural and urban life. The realization of this goal requires teachers to properly assign tasks. In terms of the characteristics of each stage, the pre-reading stage is dominated by the teacher’s acts. The teacher first shows students the pictures and videos of rural teacher Zhang Tian’s educational supporting life in the Guizhou rural area, and guides students to think through Quick-response: What’s the difference between our school life and rural schools? To help students build a schema before reading; At the while-reading stage, the teacher did not leave plenty of reading time for students but took the method of text segmentation for teaching. This “small-step” strategy leads to more frequent teacher-student interaction and a more compact dialogue structure. After the completion of each reading task, the teacher did not interpret but checked by asking questions about the general idea and details of each paragraph. At the same time, the change of peak is relatively consistent at this stage, and there is no significant dislocation, which indicates that students can respond in time and promote the teaching process around the three-paragraph reading activities with coherent interaction. At the post-reading stage, the curve of students’ talk firstly shows a 3-min peer communication, and the proportion of peak is more than 55%, with a frequency of 11. At this time, the students have just completed the reading task and need time to integrate the information. Therefore, the teacher asks the students to communicate with each other about the advantages and disadvantages of rural life for Cathy, which paves the way for the subsequent expression of their own views. Later, different from the pre-reading stage, the peak of the teacher’s and students’ talk appears alternately in the subsequence, and the time distribution was relatively sparse. On the one hand, the purpose of dialogue is no longer only focus on the promotion of activities but turn to the development of students, so they have enough freedom in the post-stage; on the other hand, in order to cultivate students’ high-level reading skills, the questions need students not only to integrate and sort out the text content but also to summarize the experience to solve actual problems, such as “Where do you think Cathy should live?” “Do you prefer city life or country life? Why?”. Therefore,

students need enough time to express their views, and the teacher needs to provide them with comprehensive feedback and suggestions, presenting a relatively relaxed structure of the dialogue.

## 4 Conclusions

Based on iFIAS, the analysis of teacher-student verbal interaction shows that the high-quality English reading class shows different characteristics from regular class in terms of discourse power, interactional structure, and emotional atmosphere.

First, students have sufficient discourse space. Different from the features that the teacher usually monopolizes the right to speak for a long time and focus on text content for knowledge indoctrination in the regular class. The teacher is no longer inclined to be a knowledge imparter but gradually turns to a collaborator or guide in the high-quality English reading class. In the traditional class, teachers' authority is overemphasized, and the right for students to express themselves is repeatedly compressed. However, the opportunity to express and practice independently is important to reading ability [18]. Whether in peer discussion or teacher-student interaction, students should be responsible for their learning and be able to display their opinions. Only by giving students sufficient and controllable freedom to talk can we achieve a virtuous circle of interaction in class.

Second, a good atmosphere should be set up for teacher-student interaction in class. The art of teaching does not lie in the ability to instruct, but in inspiring, awakening, and encouraging. In this case, the teacher is inclined to adopt an encouraging and positive attitude to accept students' views and help them clarify their views. Such features are conducive to creating a good atmosphere, strengthening students' positive behavior, and stimulating their learning initiative.

Third, the teacher uses multi-level questioning strategies. The teacher's question is crucial for guiding students to think and promote the teaching process. However, there are many wrong questioning methods in the traditional class, such as purposeless questions, questions out of the text content, and single-dimension questions. So it's crucial to think about how to correctly handle the relationship between open and closed questions, ensure the effective implementation of high-level questions, and improve the systematic design of question chains. In response to this question, a high-quality English reading case provides a reference: at the beginning of the dialogue, teachers often set some open questions or tasks with a high degree of abstraction in the introduction part, but such questions cannot directly generate students' high-level cognitive response. For example, the teacher and students discuss the question: Why do you like living in the city? Then, according to the student's answers, they usually broke these core questions into several closed questions, such as the specific reasons why the author likes urban life - the convenience urban life provides - the convenience in your life. This multi-level question structure realizes the transformation of the problem from abstract to concrete, text to reality. First, the complex problem is decomposed into multiple simple questions with progressive relations, then the students' thinking is continuously expanded through the questioning of answers in multi-level feedback. To solve problems, students can effectively promote the development of thinking by determining arguments, analyzing texts, finding evidence, and organizing answers.

This research focuses on the existing problems in the English reading class in Chinese basic education and creatively summarizes optimization strategies from the perspective of interactive behavior. Combined with the characteristics of English reading class, we adjust the indicators of the iFIAS and propose the English reading class coding framework based on iFIAS, which is used to analyze the teacher-student interaction, summarize the discourse characteristics of high-quality English reading class and provide a reference for teaching reform. However, iFIAS does not pay attention to capturing or measuring nonverbal interactions. Therefore, based on the results of this research, the follow-up research can explore them by using technology to provide the complete process of interaction.

**Acknowledgment.** Changchun Normal University Graduate Scientific Innovation Project [2022] No. 011.

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