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Dept. of Applied Linguistics

Flipped classroom and corpus linguistics in English
language teaching

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Abstract

Combining corpus linguistics with the flipped classroom approach is a new pedagogical approach to second language teaching. It breaks the traditional teaching model and can increase students' motivation to learn. However, the application of corpus linguistics in the classroom has not been effectively studied in recent years. Therefore, this study adopts a quantitative research method, supplemented by an online questionnaire, to analyze the effectiveness of corpus linguistics in the English translation classroom, the use of effective time in the flipped classroom, and the impact on students' English learning ability. The aim of this study is to analyze whether the use of corpus can help students to effectively immerse and output in the English classroom or after-class English practice, to overcome difficulties and to strengthen students' English awareness in order to improve the efficiency of English classroom teaching and the cultivation of excellent foreign language talents.

Key words: corpus linguistics; English teaching; Flipped classroom; English as a foreign language.

Resumen

La combinación de la lingüística de corpus con el enfoque de la clase invertida es un nuevo enfoque pedagógico para la enseñanza de segundas lenguas. Rompe con el modelo de enseñanza tradicional y puede aumentar la motivación de los estudiantes para aprender. Sin embargo, la aplicación de la lingüística de corpus en el aula no se ha estudiado eficazmente en los últimos años. Por lo tanto, este trabajo adopta un método de investigación cuantitativo, complementado con un cuestionario en línea, para analizar la eficacia de la lingüística de corpus en el aula de traducción de inglés, el uso del tiempo efectivo en el aula invertida y el impacto en la capacidad de aprendizaje de inglés de los estudiantes. El objetivo de este estudio es analizar si el uso de corpus puede ayudar a los estudiantes a sumergirse y producir efectivamente

en el aula de inglés o en la práctica de inglés después de la clase, para superar las dificultades y fortalecer la conciencia de inglés de los estudiantes con el fin de mejorar la eficiencia de la enseñanza en el aula de inglés y el cultivo de excelentes talentos de lenguas extranjeras.

Palabras clave: lingüística de corpus; enseñanza del inglés; clase invertida; inglés como lengua extranjera

Resum

La combinació de la lingüística de corpus amb l'enfocament de la classe invertida és un nou enfocament pedagògic per a l'ensenyament de segones llengües. Trenc amb el model d'ensenyament tradicional i pot augmentar la motivació dels estudiants per aprendre. Tot i això, l'aplicació de la lingüística de corpus a l'aula no s'ha estudiat eficaçment en els darrers anys. Per tant, aquest treball adopta un mètode de recerca quantitatiu, complementat amb un qüestionari en línia, per analitzar l'eficàcia de la lingüística de corpus a l'aula de traducció d'anglès, l'ús del temps efectiu a l'aula invertida i l'impacte en la capacitat d'aprenentatge d'anglès dels estudiants. L'objectiu d'aquest estudi és analitzar si l'ús de corpus pot ajudar els estudiants a submergir-se i produir eficientment a l'aula d'anglès o a la pràctica d'anglès després de la classe, per superar les dificultats i enfortir la consciència d'anglès dels estudiants per millorar l'eficiència de l'ensenyament a l'aula d'anglès i el cultiu d'excel·lents talents de llengües estrangeres.

Paraules clau: lingüística de corpus; ensenyament de l'anglès; classe invertida; anglès com a llengua estrangera

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1. Introduction

1.1. Personal motivation

This study focuses on Corpus linguistics and flipped classroom and was inspired by my previous professional experience as English teacher in China.

There are currently two academic views of Corpus linguistics. One view is that it is a theory, and the main support for this view is from the Firth school. However, most scholars believe that Corpus linguistics is not a theory, but a method. This study examines corpus-based English Language Teaching (ELT) in detail in order to analyze the methodological orientation of corpus linguistics in all its aspects, i.e. the 'corpus-based paradigm', as Leech (2011: 158) points out: "corpus linguistics is essentially a strongly methodologically oriented branch of linguistics".

In *Teaching and Corpora* (Wichmann et.al., 1997:1), Leech also points out that corpus and English teaching research¹ has reached a level of disciplinary co-evolution. In the last two decades, there has been an explosion of research on corpus linguistics by scholars within China, both in terms of the analysis of corpora themselves and the application of corpora to foreign language translation teaching, with such research scholars studying typical learner behaviour based on corpus. At the same time, corpora have been used as a guideline for analysis, and more in-depth research has been carried out on the development of teaching content and objectives. The findings of these scholars have not only made an important contribution to the development of corpus linguistics but have also provided valuable lessons for language teaching. Recent research on corpora has shown that many of our linguistic intuitions are wrong and that we are prone to make mistakes even as native speakers, let

¹ The translation classroom mentioned in this research study is based on my belief that the translation classroom belongs to the category of English language teaching and is an inevitable trend in the development of English language teaching, so the following study of the English language teaching classroom is equally applicable to the translation classroom.

alone when we are learners of a foreign language.

The results of the analysis of language features and language learners' characteristics using corpora will be useful in improving classroom teaching and guiding the practice of language teaching. For English learners, especially cross-lingual learners like Chinese students (Chinese is Sino-Tibetan and English is Indo-European), most of our foreign language learning methods start with rote memorization of words and grammar, which is abstract information for language learners, and these dictionary explanations and grammatical rules are only limited in scope, without the realistic context-based language learning tools that a corpus usually has, that is language learning tools based on real-life contexts. Instead, our native language is acquired through a large number of texts and vivid episodes, and then in real conversations and contexts over time. It follows that, when learning a foreign language, we need not only authentic contexts as a reference, but also a significant investment of time in spontaneous learning both inside and outside the classroom. Using the flipped classroom method as the keynote for foreign language teaching and learning, and the corpus as a learning tool is a relevant way to learn a foreign language. It is evident from previous research that using corpora in language teaching can help immerse students in effective input, which means that students are also exposed to a large amount of authentic corpora in the classroom. The use of corpora can also help students to overcome their fears and strengthen their sense of being a translator in the future, so that they can play the role of a translator better both in and out of class. The use of corpora can also increase students' motivation by highlighting their subjectivity and changing their passive input from prior models. The richness of corpora also helps students to discover the complexities of language use during the search process, improving their powers of observation and making it easier for them to ask questions and investigate.

As effective as a corpus in putting students at the center of the learning

process and developing their independent thinking skills is the 'flipped classroom', a term most recently coined in the US. The Center for Digital Education's 2013 national survey of teachers in US colleges and universities showed that some teachers in the US have begun to adopt flipped classroom teaching methods, with good results (Morris & Brown, 2013). It can be seen that the flipped classroom is a new model of language teaching, which means that students are no longer just sitting in class listening to the teacher, referring to a rigid textbook, and completing assignments and exercises that result in students not using the knowledge they have absorbed in class effectively, and that teachers do not have to balance the need to keep up with the pace of teaching with the need to ensure that students understand what is being taught and do not need to drag the class out. In contrast, the corpus-based flipped classroom teaching model is one in which the teacher analyses and organizes the knowledge units of the course according to the teaching requirements before the start of the course, and records or creates micro-videos for the students, which will contain the key learning content of the course. This allows the teacher to have a general grasp of the students' understanding of the knowledge units, and also allows the students to find out what they don't understand before class and discuss it with their classmates with their understanding and questions.

This way of teaching also coincides with the ancient Chinese educator Confucius' concept of "teaching students according to their abilities". The teacher acts as a guide so that the students can truly 'study'; this is a teaching style that is more suitable for shy Chinese students who are 'afraid' to communicate with their teachers. All in all, this master thesis examines the use of a corpus linguistics-based translation flipped classroom as a pedagogical model, supplemented by a corpus as a learning tool and a teaching tool, and analyses the effectiveness of the two in the English language teaching classroom of Chinese students to see whether this model can achieve a

positive response.

1.2. Aims of the study

The main aim of this research study is to analyze the impact of a corpus-based linguistic translation flipped classroom on students' English language acquisition. Here, we used three different online questionnaires for students and teachers' versions about the effectiveness of corpus and flipped classroom in foreign language teaching and collect data for comparative analysis in order to propose the most suitable English teaching methods for Chinese secondary school students. The aims of the study are divided into three specific aims.

- Specific aim 1: to verify that students absorb more knowledge in the flipped classroom by analysing their classroom feedback through an online questionnaire.
- Specific aim 2: to analyze the effectiveness of the use of corpora in English language teaching by students who can use them as a tool to support their learning in order to verify the positive contribution of corpora to students' independent learning in English.
- Specific aim 3: to analyze the ability of secondary school students who do not use the corpus to summarize the index lines² of the corpus-based methodology after their first exposure to it in order to assess whether the corpus is a powerful English language teaching tool for secondary school students.

1.3. Research questions

² According to Sinclair (2003:68) and Wang Jianxin(1998:1), the contextual texts obtained from the corpus using index lines and indexing software are examples of language use centered on the detection of words. A small number of index lines were used as examples in questionnaire 2 of this study to verify that students could summarize well without exposure to the corpus.

This master thesis also aims to answer the following research questions.

- Research question 1: Why is in the flipped classroom easier for students to acquire knowledge than in the traditional Chinese ELT classroom?
- Research question 2: In what ways does the corpus-based methodology positively contribute to secondary school students' English learning?
- Research question 3: By analyzing the resulting data, is the corpus-based flipped classroom the most suitable English teaching method for Chinese secondary school students?

1.4. Structure

In the first chapter, we introduce the personal motivation, research aims, and research questions of this master thesis; in the second chapter, we present the theoretical framework for "flipped classroom", "corpus-based methodology" and "English language teaching". In Chapter 3, the research method used in this paper is introduced, that is, the quantitative approach. In Chapter 4, the resulting data from the three questionnaires used are analyzed. And finally, in the last chapter, conclusions are detailed and recommendations are given.

2. Theoretical Framework

2.1. Theories related to corpus linguistics

2.1.1. Corpus

The famous linguist David Crystal in *A Dictionary of Linguistics and Phonetics* (1991:389) defines the concept of corpus as:

A collection of linguistic data, either written texts or a transcription of recorded speech, which can be used as a starting-point of linguistic description or as a means of verifying hypotheses about a language.

In the above definition, Crystal does not only point out that a corpus is a transcription of a written or spoken language, but also points out the significance of corpora for linguistic research, and even gives guidance on how to use a corpus for language research.

John Sinclair, a well-known corpus linguist, defines corpora in *Corpus, Concordance, Collocation* (1991) as: “A collection of naturally-occurring language text, chosen to characterize a state or variety of a language.” In this definition, Sinclair, while not giving specific instructions on how to use a corpus for language research, gives clear answers to the questions of what should be included in a corpus and why it should be used. As we can see from the above definition, a corpus is, by definition, a storehouse of linguistic materials, in short, authentic natural language works are collected and organized according to certain principles for the purpose of language research. But whether it is spoken or written, it must be naturally occurring language (neither language derived from questionnaires or interviews, let alone from the verbal intuition of linguists). Similarly, McEnery, Xiao and Tono (2006) outline the characteristics that a corpus must have:

1. The linguistic data is authentic/naturally occurring (spoken or written).

2. It must be computer-readable electronic text; corpus research is basically based on retrieval software, so the data must be computer-readable/electronically stored so that we can use retrieval software to extract the required corpus.

3. Representativeness; it should be noted that it is not possible to achieve 100% representativeness, for example, when we need to make a general corpus, we need to collect all languages; this cannot be done, people are speaking all the time, we cannot collect all-natural languages. Therefore, the representativeness of a corpus is a relative concept.

4. Text types (spoken/written), but in the actual building of a corpus, there is not only a distinction between the two types but also a more specific domain distinction.

5. General/specialized and diachronic/synchronic, e.g., A general corpus needs to take into account spoken, written, fictional, journalistic texts, among other, but it is also built by collecting relevant texts in a certain proportion. In contrast, specialized corpora are relatively simple, considering only domain-specific corpus collections. In contrast, a diachronic corpus is more useful for studying the analysis of languages in various periods. For example, COHA collects corpus data from 1810 to 2010, and such a diachronic corpus is useful for examining the changes of specific languages in this two-century span.

When we use a corpus for research, we need to consider whether there is an existing corpus available for research, and if not, we need to build our own (self-compiled corpora). As for the corpus compilation, Sinclair (1991:109-170) suggests the following indications:

1. Make sure that the collection must be naturally occurring texts and not made up by individuals (authentic language use).

2. Corpus capacity and its representativeness (representativeness vs. size) For a corpus, the bigger the corpus, the more representative it is, but at this point, we also need to achieve a balance here, that is, the size of the corpus is

a manageable range, but also to ensure its representativeness to the maximum extent possible.

3. Information desirable; the collection of text is still necessary to consider linguistic information, for example, when examining the language of different age groups or social classes, this linguistic information is very useful.

4. Copyright/ethic issues; when building a corpus of your own, you also need to consider the issue of copyright. For example, when building a corpus of master's theses in English, you need to seek permission from the author when including his/her master's thesis.

Regarding corpus processing, the first step is text cleaning/editing, and the second step is mark-up, which is annotation. Many retrieval platforms or software can achieve such annotation functions, such as BNC or Sketch Engine. These interfaces come with a lexical annotation system that allows us to retrieve grammatical structures or constructions. However, Sinclair believes that a clean-text policy should be implemented because he believes that text is not the original text after lexical annotation (cf. Sinclair, 1991 "clean-text policy"). Semantic annotation and pragmatic annotation are relatively rare, and such annotation requires a lot of manual effort. The third step is corpus analyses/queries (for instance, with AntConc, Wordsmith, SketchEngine, CWB) and finally data interpretation. The study of the corpus is not just about reporting frequency, but about a qualitative study based on quantitative data, starting from the data or from the corpus, getting the basic corpus data information based on the corpus, and then interpreting the language use or specific linguistic phenomena.

A frequent criticism of corpus linguistics is that it tends to disregard context (Brown and Yule, 2008:273-306). When building a corpus it is usually decontextualized, seeing clean text that is devoid of socio-cultural context, so some scholars would argue that corpus texts are decontextualized and it is

difficult to speculate on its social implication or social relationship between participants. Paul Baker, in his work on Critical Discourse Analysis, referred to the extent to which context can guarantee data interpretation, i.e., if the text can guarantee the social relationship when doing data interpretation, then the context of the collected text is sufficient.

Mautner (2007:65) argues that “what large-scale data are not well studied for [...] is making direct, text-by text links between the linguistic evidence and the contextual framework it is embedded in”. These criticisms seem to stem from restricted conceptions of corpus linguistics (CL) and they would apply more accurately to CL studies that limit themselves to the automatic analysis of corpora, and are of a descriptive rather than an interpretative nature. Likewise, in response to such a challenge, some scholars have argued:

The examination of expanded concordances (or whole texts when needed) can help the analyst infer contextual elements in order to sufficiently recreate the context (Brown and Yule,1982). During language communication, addressees do not need to take the full context into account; as according to the principle of local interpretation, addressees need not construct a context more complex than that needed for interpretation (Brown and Yule, 1982). In turn, the co-context provided by the (expanded)concordances helps in “limiting the interpretation” to what is contextually appropriate or plausible (Brown and Yule, 1982: 59).

2.1.2. Corpus linguistics

Regarding the definition of corpus linguistics, the following three examples are quoted:

1. "The study of language based on real-life examples of language use is called corpus linguistics" (McEnery & Wilson, 1996: 1).
2. "An approach that uses the corpus as a starting point for language portrayal or uses the corpus as a way to test hypotheses about language is called corpus

linguistics" (Crystal, 1991: 86).

3. "The reference to corpus-based approach is rather a more accurate reflection of the nature and orientation of corpus linguistics" (Xu, 2003:6-9).

From the above definitions, it can be seen that corpus linguistics is not a study of a particular aspect of language itself, but a multifaceted and all-round study of language, language communication, and the behavioral patterns of language learning, using the facts of language in real language use as the basic evidence and a data-driven positivist research method with modern computer technology, thus revealing a new research method, which is based on corpora. This approach draws from the study of the classification, acquisition, storage, processing, statistical analysis, and application of natural language texts, and the use of detailed and objective linguistic evidence to guide linguistic research and promote the development and application of natural language information processing systems. Corpus linguistics is the study of language based on discourse corpus and is also a branch of computer linguistics.

Since the creation of the first electronic corpus, the Brown Corpus, by Henry Kucera and Nelson Francis at Brown University in 1964, corpus linguistics has grown considerably, and a consensus has been reached on several issues. For example, the Brown Corpus, the Survey of English Usage, and the extensive corpus built by Lancaster University all have the same roots. Frequent exchanges and collaborations have led to a greater understanding and consensus among the team and the development of a "corpus-based" research paradigm.

Another example would be that "Corpus linguistics has become the mainstream of language research. Corpus-based research is no longer the exclusive domain of computer experts. It is having a growing impact on many areas of language research" (as cited in Ding, X.S., 1998). The opening remarks of a collection of papers on corpus linguistics published by J. Thomas

et al. to congratulate G. Leech, a major founder and proponent of corpus linguistics, on his sixtieth birthday (Ding, 1998:8). At the same time, however, divisions within the corpus linguistics area have become increasingly evident, with two main paradigms emerging: corpus-based and corpus-driven approaches. For example, a group of scholars at Lancaster University use what is often referred to as a corpus-based approach. In their view, the most important feature of corpus linguistics is its instrumental nature, which provides reliable material for language research and a set of continuously improved research methods. They advocate the use of corpora to study linguistic issues, social issues, and other possible problems. A group of scholars at the University of Birmingham, led by John Sinclair, has developed a very different set of ideas. Their approach is often referred to as the "corpus-driven approach". In their view, corpus linguistics should be not just a method, but a theory that depicts and analyzes language from a word and phraseological perspective, independent of any existing language theory (Gries, 2010; McEnery & Hardie, 2012; McEnery & Wilson, 2001). From the available literature, those studies that fall into the latter category are still very few. The vast majority of language researchers are more comfortable with a "moderate empiricism" in their scholarly orientation, adopting a "corpus-based" research paradigm (Gast, 2006:115-116) and considering corpus linguistics as a research method (e.g., Gries, 2010; McEnery & Hardie, 2012; McEnery & Wilson, 2001). Therefore, corpus linguistics should be distinguished from more theoretical branches of linguistics such as cognitive linguistics or functional linguistics, but in practice, most researchers treat corpus linguistics as a methodology for research analysis and comparison.

In fact, a corpus is a principled collection of naturally occurring language texts that are representative of the targeted discourse domain (McEnery & Hardy, 2012). Corpus linguistics is primarily a way of doing linguistics (Meyer, 2002). It is not a random text archive as opposed to other linguistic concepts of

"text archive", but rather a corpus is built on the principle of collecting data. As mentioned above, the data collected in the corpus correspond to "naturally occurring language" rather than "inventive examples". Another important concept of corpora is "representativeness", which means that when we study a specific domain or a specific text type, we need to make sure that the collected data is representative of the domain. For example, when we study English acquisition, we usually collect texts produced by English learners.

2.2. Theoretical foundations related to the application of Corpus Linguistics in English language teaching

With the popularity of the English language in China, many people are paying more and more attention to the learning of foreign languages. Indeed, many people have been learning English since elementary school, yet after years or even decades of uninterrupted study, they still cannot easily understand, speak, read or write fluent English until they graduate from college. There are of course many influencing factors, one of which is that they have not learned the part of the language that they should master the most. For instance, general present tense English verbs used in the third person singular to add -s to the end of the word, this is a rule that every beginner in English knows, but when some people have studied English for more than ten years, this is still a problem in some occasions. The reason for this is probably the improper way of learning. Therefore, there is a lack of English teaching in the past in terms of learning content and learning style. The difficulty of English learning itself lies in the learning of vocabulary and grammar. They have always been a difficult and important part of English learning.

Modern corpus linguistics is a science of language research that emerged in the mid to late twentieth century, specializing in the study of large-scale corpora stored in computers. It is playing an increasingly important role in

modern linguistics and language education because of its unique advantages such as large capacity, authentic data, and fast and accurate retrieval. Not only is corpus linguistics an important breakthrough in research methodology, but it also gives birth to a framework for describing language and even to the idea of language, that is, to a constant renewal of the perception of language (He, 1997: 21-26). Corpus linguistics promotes the formation of new concepts in foreign language education, proposes new learning methods and models, and adds new theories and perspectives to vocabulary and grammar learning. It helps to solve the problem that the fundamental goal of education is not only "what to learn", but also "how to learn", and that schools should train not "examination machines", but learners who are good at independent thinking. As we can see, linguistics is closely related to foreign language teaching, and corpus linguistics has penetrated into all aspects of foreign language teaching. Specifically, its role in teaching is reflected in the following aspects.

2.2.1. Natural and authentic corpora, adding lively and interesting learning content for foreign language learners

As early as the 1960s and 1970s, when corpus linguistics was just emerging, a group of European founders of corpus linguistics and linguistic educators, such as G. Leech, T. Johns, and others, began to consider the application of corpora to language teaching as an important branch of corpus linguistics, since the two are an interpenetrating synthesis. They argue that corpus applications for teaching can be divided into two aspects: first, direct applications, which include teaching about corpus, teaching methods of corpus exploration and using corpus resources for teaching; second, indirect applications, which include compiling dictionaries, grammar reference books and textbooks based on corpus, developing multimedia courseware, language learning software packages and test and evaluation tools based on corpus and computers, etc. (He, 2004: 45). As corpus linguistics becomes more and more mature, research

on the direct application of corpora to teaching and learning has also received increasing attention from researchers.

Traditional foreign language learning is mainly about memorizing vocabulary and grammar from books or other reference materials. The openness and flexibility of foreign language learning are ignored because the environmental conditions of language learning are not taken into account. Although they can learn some vocabulary and grammar, they cannot improve their motivation and ability to use the language. According to the rules of language acquisition, memorization of language knowledge does not guarantee correct language use, and a large amount of natural language input is necessary to enable students to master the language they are learning. Even if students are able to memorize the rules of the language, they may not be able to apply them correctly in practice (Nunan, 2001).

The unique and most powerful features of corpora are, firstly, the manifestation of frequency and, secondly, the co-occurrence of context, which can provide learners with a large amount of authentic and natural language materials in an instant and can help learners to take initiative and engage in independent learning (He, 2004: 87). It provides students with a much larger amount of language input than the limited number of examples provided in textbooks to explain a certain language rule in traditional linguistics. Moreover, since the corpus collects language in actual use, it provides not only a large amount of language input, but real language input, in contrast to textbooks where many of the language examples are written by the textbook writers based on their own linguistic intuition and not the language used in real contexts. In sum, the corpus has contributed to the development of a new concept of curriculum resources. Based on the fact that traditional grammars are often incongruent with real language use, Sinclair (2004:1-317) points out the advantages of using computer corpora as language teaching resources:

(1) Corpora present only real language examples, because examples made

up out of thin air can easily mislead students. For example, teaching *borrow* in isolation is likely to overlook the fact that the word is always used in conjunction with modal verbs such as *can, shall, must, had to*, and so on. People rarely say that *People borrow books*, but they often say that *People can borrow books*.

(2) Corpora allow people to recognize their linguistic instincts, i.e., to see clearly the forms of language that they normally use without thinking about it but often. An example is a use of *nice*. Many English speakers do not realize that they always use the indefinite article in front of the word instead of the definite article *the*; when using it as an epithet, they often bring an intensifier such as *very, pretty, extremely* before; when using it as an adjective, they often bring another adjective such as *a nice relaxing time* after it; when modifying nouns, this word when used as an adjective, it is often followed by another adjective such as *a nice relaxing time*.

(3) Corpora can provide the context in which words are used (i.e., what semantic meanings are usually found around them). For example, the word *eye*, when combined with other words, is used primarily to indicate observation, evaluation, and attention. The *naked eye* is often preceded by the preposition *with*, and the verb before it is likely to be *see, spot, observe, recognize*, etc. If it is preceded by an adjective, it is likely to be *visible, perceptible*, etc.

(4) Corpora provide the semantic basis for grammar. Often a word with two meanings also implies that it has two grammatical structures. For example, *see* has a physical meaning in the following example (a) - *to see with the eyes* - followed by a noun (the object to be seen) or an adverb, such as *well* (to evaluate the eyesight); while in example (b), *see* indicates understanding, comprehension, and is followed by a subordinate clause.

(a) I can see George's face as clearly as if he were here with me.

(b) I see you had a good trip.

(5) Corpora provide a large number of variants of language use and fresh and creative forms, reflecting the latest developments and changes in language.

The language in daily use is a language that people use constantly. It is the result of the constant innovation of people, reflecting the nature and characteristics of the language chapter. An example is the use of the phrase *a/an X of Y*. The search results of a large corpus tell us that the nouns that can be placed in the position of X are quantifiers such as *pint, yard, ounce*; irregular quantifiers such as *blob, dash, lump, shred*; quantifiers of shape such as *shaft, stick, tuft*; quantifiers of flow such as *dribble, jet, spurt*; quantifiers of container such as *bag, bucket, tank, tub*; defining the more standard group quantifiers such as *herd, flock, team*; defining the less regular group quantifiers *bunch, clump, group*, etc. The quantifiers that represent containers are followed by *-ful*, such as *a bagful of*, etc. Corpora thus form an open and never-ending source of cognition and learning (Ho, 2004: 46-47, Sinclair, 1997: 27-39). Thus, by using corpora as learning content, learners not only acquire knowledge of the language they are learning but also really know how to use the language correctly and appropriately and acquire an authentic foreign language.

2.2.2. Syllabus design and teaching materials development

Corpora not only provide a rich source of material for language research and are an important source for dictionaries, grammar books and various textbooks, but also play an important role in the theory, content and methodology of foreign language teaching. Badow (2002) argues that corpus linguistics can be applied to syllabus design, selection and development of teaching materials, and classroom activities.

With reference to the corpus linguistic descriptions of foreign language, one can develop and revise syllabi more scientifically and write teaching materials more rationally. The syllabus enables teachers to develop an organic focus for classroom instruction based on the needs of students. Frequency distribution and domain information can be helpful in the selection and development of lesson plans. For example, teachers can analyze the corpus related to a

particular classroom instruction and, based on this, determine which language items are relevant to the target domain and thus develop a syllabus that meets the actual classroom instructional requirements. In addition, the selection of appropriate materials is very important for teaching. Many textbooks are usually selected based on the experience of the writers and their intuitive sense of what students need to learn, without objective quantitative criteria, which often do not guarantee that the selected discourse is truly relevant to teaching needs. A corpus, on the other hand, can be very helpful in writing materials. The distribution and frequency of certain words in a given discourse can be statistically and analytically analyzed using word search software to determine the subject matter and difficulty of the discourse in a more objective way, and a corpus linguistic approach can be used to analyze the text and quantify various indicators to determine whether the selected text meets the requirements. In addition, with the help of the corpus, textbook writers can create exercises based on real-life examples, which give students the opportunity to discover the real features of language use. Susan Conrad (2000) suggests that textbook writers should take into account domain-specific corpus research, while Biber, Conrad and Reppen (2000) emphasize that textbook writers need to take into account the frequency of vocabulary and structures found in corpus research when designing textbooks, and that the entire content of the textbook can be entered into a computer to create a textbook corpus that can be used as a tool. A corpus of teaching materials can be created as a reference for teachers' teaching and lesson preparation. It is also possible to assign more accurate word lists for teaching.

2.2.3. Classroom Teaching Model: A New Concept of Learning Approach - Data-Driven Learning (DDL)

Corpora have great advantages in terms of their large storage capacity of information, easy, fast and accurate retrieval. They provide a new way to solve

the problem of how teachers teach English in their classes. Therefore, corpora are of great significance in foreign language teaching. They can promote the improvement of teaching ideas and teaching methods, and help to realize the "student-centered" concept and change the previous "teacher-centered" concept. Students can explore and research freely on their own. The use of corpora in the classroom helps to improve teaching methods. Data-driven learning based on corpus indexing is a good example. The key to this learning approach is that students reason about grammar rules and vocabulary by analyzing the language usage patterns provided by the corpus.

Tim Johns, the founder of a new corpus-based learning model, argues that teaching is a natural extension of research and that "corpus-driven learning" may best represent learner-centered "discovery learning" through computer corpus (Johns, 2002:107-117). Modern education advocates a shift from a passive learning style to an active learning style of discovery, advocating that the process of student learning be transformed into a process of problem identification, formulation, analysis, and solving. Therefore, the modern learning style has the basic characteristics of initiative, independence, experience and problematic.

Corpus-driven learning is a discovery and exploration learning mode based on corpora, using the original corpus or the results obtained through corpus retrieval tools for language learning (He, 2004: 96). Corpus-based learning activities usually begin with a problem that students need to solve, and then require them to independently collect, analyze, and process the corpus from which they can generalize their own views and opinions about the problem. Students analyze and summarize the corpus around the problem and finally solve the problem, reflecting the problematic nature of modern learning; moreover, students need to solve the problem independently and be responsible for their own decisions, reflecting the initiative and independence of modern learning; furthermore, learning must personally participate in the

whole process of solving the problem and find the answer to the problem in the investigation of the problem, showing the experiential nature of modern learning. Therefore, the corpus-driven learning model is in line with the new teaching philosophy. Cheng Chunmei (2007:58-64) summarizes the five characteristics of this new learning model:

(1) It is based on corpora. These authentic corpora can undoubtedly serve as a bridge between language learning and real-life use, providing a better foundation for students to use the language. The code-enclosed corpus provides a rich source of knowledge for students.

(2) Use of the corpus' search tools and their various functions. With the power of the search tools, "contextual co-occurrence" can present all the knowledge points of a language in one place at the same time, and a "glossary" can list all the words in the selected corpus according to their frequency of occurrence or in alphabetical order, providing a basis for which words should be given priority. The "vocabulary list" lists all the vocabulary in the selected corpus in frequency or alphabetical order, providing a basis for which vocabulary should be given priority.

(3) The design of classroom activities is learner-centered (a learner-centered approach to learning was discussed above.)

(4) It can be implemented in both classroom and distance learning environments; it can have both native speakers and learner corpora; they can be both written and spoken corpora. Both individual and group learning are possible. The approach is flexible and has a wide range of applications.

(5) After being familiar with this learning mode, learners can use the search tool to retrieve the corpus according to their own learning needs, and answer the questions they encounter in the learning process. DDL truly embodies the idea of independent learning (He, 2004: 104).

2.2.4. Teaching vocabulary and grammar under the guidance of new learning models

Traditional language learning completely separates vocabulary from grammar, teaching vocabulary in isolation and using it as a resource to fill in grammatical structures. Willis' (1999) vocabulary syllabus also advocates that vocabulary should be taught within its grammatical model. Vocabulary is not an isolated item, and grammar does not just tell how these items are combined; the two are actually intricately related and are reflected through patterns. A corpus index can help learners discover the existence of various patterns and thus facilitate their better acquisition of vocabulary. In addition, the difficulty of vocabulary teaching is the multiple meanings and synonyms, and it is often difficult for learners to choose what kind of vocabulary to use in what kind of situations and contexts. The traditional method of vocabulary learning is to explain the meaning of vocabulary and show one or two example sentences. It does not solve the problem of how to use the words in specific contexts. One of the challenges of second vocabulary acquisition is that learners do not have time to engage with the rich variety of contexts in their natural environment. Corpus indexing provides rich contexts for vocabulary. It presents a certain search term together with its multiple contexts of use and arranges them vertically. By observing both horizontally and vertically, other words that often appear together with the search term can be identified, thus achieving chunks of memory, from which learners can obtain information about the usage pattern of the search term and discover the meaning, grammatical structure and pragmatic information of the word. Thus, the purpose of learning vocabulary is to use it in a specific context.

Traditionally, there are two approaches to teaching grammar in foreign language teaching: one is the product approach, which subdivides the grammar system into components and then teaches each part to students in turn, such as the grammar-translation method and the listening method; the other is the process approach, which encourages students' ability to explore and discover in the learning process, allowing them to discover linguistic patterns through

exposure to language, such as the communicative approach and the task teaching approach. Both approaches have strengths and weaknesses. The outcome approach can provide learners with detailed grammatical rules, but the correctness of these grammatical rules themselves cannot be guaranteed, and it is difficult to say whether students will understand the grammatical knowledge taught. The outcome method considers only the regularity of language, and in fact, the nature of language is probabilistic rather than statutorily (Gui, 2004:3-9). Instead of classifying linguistic phenomena into grammatical and ungrammatical, it is better to classify sentences into "frequent" and "infrequent" occurrences. The process approach brings into play students' subjectivity and aims at communicating in the foreign language, thus neglecting the acquisition of language knowledge.

The data-driven approach draws students' attention to the formal features of the language they are learning by presenting them with a large amount of authentic corpus, i.e., a lot of "consciousness-raising" activities, rather than just instilling grammatical rules. These activities allow students to become researchers of language usage rather than passive recipients of knowledge. Thus, the data-driven learning approach takes full advantage of the process approach's idea of language acquisition as an organic process and of allowing students to self-discover language rules. In addition, the corpus it provides is based on authentic discourse in large quantity, which is both authentic and vivid, contemporary and persuasive, thus overcoming the shortcomings of the outcome teaching method. No wonder He Anping (2003:86) points out that in actual teaching, the outcome method and the process method are not two extremes but a conjoined entity, and the data-driven learning method is spatially located in the middle of these two teaching methods, which integrates the advantages of each of the outcome and process methods into the most ideal grammar teaching method (He, 2004: 109).

2.2.5. Classroom teaching activities

In the foreign language classroom, the teacher can have the students use a certain word search tool and a carefully selected corpus to conduct a linguistic analysis in order to discover patterns of language use: the teacher should provide adequate help and guidance. The teacher can guide the students through a predetermined analysis and achieve results; or the students can do it independently. They may, of course, achieve results that are lower than expected. This will train students to identify patterns of language use on their own and promote learner autonomy (Ding, 1998:5-13).

1) In foreign language teaching, corpus linguistics can develop students' independent learning ability. The autonomous learning mode not only complements and extends classroom teaching, but also stimulates learners' interest in active learning, expands their thinking, and helps them to develop independent problem identification and problem-solving skills. It also stimulates learners' interest in active learning, expands their thinking, and helps them to develop the ability to discover and solve problems on their own. As Li Wenzhong and Pu Jianzhong (2001:20-25) mentioned in *The Application of Corpus Indexing in Foreign Language Teaching*, the combination of corpus and foreign language teaching has two major features. First, it is scientific. The second is the autonomy and openness. Under the guidance and supervision of the teacher, learners acquire a large number of valuable real-life and natural language examples through the corpus, and gain access to the context of language use. On this basis, they observe, analyze, and summarize the language, and gradually move towards accurate and authentic language use. The corpus has a unique contextual co-occurrence function that allows the same language phenomenon to be repeatedly presented in different contexts in a large amount of corpus, so introducing the corpus into classroom teaching is conducive to developing learners' ability to learn independently.

2) Develop students' ability to observe and analyze problems. In conventional teaching, language teachers often take great pains to tell students what the correct English sentence "should" be, rather than allowing them to discover authentic and correct expressions in the actual corpus, especially in the native English corpus. The corpus presents a large number of contextual examples in the form of data or contextual co-occurrence, which creates a learning environment that attracts learners' attention, helps them to strengthen their memory, and helps them to use the context to acquire meaning and summarize patterns. In the process of inquiry learning, learners gradually develop the awareness of observing linguistic phenomena, analyzing and summarizing linguistic features, and strengthening their language skills. It is very important to build a proper corpus, such as the English-Chinese parallel corpus and the English-Chinese comparative corpus, as well as a specialized corpus. Too much reliance on a corpus for the development of a pedagogy may lead to irrelevance, oversight, misrepresentation. Harrison and Ballantyne (2005:219-226) mentioned that the corpus should be used judiciously in pedagogies that enlighten and enliven teaching and learning rather than determine it, so as not to revert to prescriptivism in *Teacher Education: Local and Global*. Although corpora have many problems and limitations that need to be supported by linguistic theory, the empiricist idea of learning language specificity through careful observation of actual output language has been developed. It serves intuitive linguistic analysis, opens up new approaches to language learning, etc.

2.3. Theoretical background related to flipped classroom

2.3.1 Origin of the Flipped Classroom

Flipped Classroom is also known as the upside-down classroom, and some people refer to it as the inverted classroom. The idea of the flipped classroom first emerged in the early 19th century when Sylvanus Thayer, the General at

West Point, had his own teaching method, in which students studied the content in advance through materials distributed by the teacher before class, and spent time in class for critical thinking and collaborative problem solving among groups. This is the basic concept of the flipped classroom and the origin of the idea of the flipped classroom. Later, Eric Mazur, a physics professor at Harvard University, suggested in 1991 that computers could play a huge role in the future of teaching, replacing some of the teacher's work. Professor Mazur also created a teaching method that he believed would make teaching more dynamic - the PI (Peer Instruction) method. He discussed that learning is divided into two steps: first, the transfer of knowledge, and then the internalization of knowledge.

In 2000, Maureen et al. adopted a new teaching format for their "Introductory Economics" course at the University of Miami: using the World Wide Web and multimedia. Students watched videos of lectures at home or in the lab and completed homework assignments in small groups in class. In 2004, the Bengali-American Salman K., a professor of economics at the University of California, was invited to teach a flipped classroom. In 2004, Salman Khan, a Bengali-American, made a video of his tutorials and put them on YouTube. The prevalence of public video classes and Khan Institutes around the world became a key driving factor in the rapid growth of the flipped classroom. It wasn't until 2007 that chemistry teachers Jon Bergmann and Aaron Sams at Woodland Park High School in Colorado used video recording software to record Power Point presentations and upload them to the Web for the students who missed class study afterward. Unexpectedly, students who did not miss class would also use these online resources to revisit lessons. Later, the two teachers tried to reverse the traditional teaching model by having students watch pre-recorded videos at home before class and spend class time completing assignments, which we now call the "flipped classroom" model. After the two teachers implemented this model, the effect of teaching exceeded

people's expectations, and thus the flipped classroom was widely promoted in various schools in the United States. Many people now refer to Woodland Park High School as the origin of the flipped classroom.

2.3.2. Two main theoretical foundations

Some scholars believe that traditional classroom teaching usually consists of two stages: knowledge transfer and knowledge internalization, in which knowledge transfer is done by teachers in class and knowledge internalization is done by students through homework, operation or practice after class. The flipped classroom reverses the transfer of knowledge and the internalization of knowledge, moving the transfer of knowledge from the traditional classroom before class, and the internalization of knowledge from the activity of doing homework after class to the learning activity in class. The author believes that instead of the transfer of knowledge internalization, it should be the optimization of knowledge internalization. So, what is knowledge majorization?

1. Theory of knowledge internalization

According to Piaget (1952, as cited in Aloqaili, A.S., 2011), any external stimulus is received into the subject's cognitive structure through the functions of "assimilation" and "adaptation". Knowledge construction emphasizes how individual learners use their existing knowledge and experience to perceive and understand new information from the outside world. According to Ausubel (1968:149), knowledge internalization is the process of learning new knowledge by absorbing the original knowledge in the cognitive structure of the learner. In the process of knowledge internalization, the assimilation process means that the learner interprets the new knowledge with the original cognitive structure, i.e., the new knowledge is absorbed into the original cognitive structure, and the assimilation only causes a quantitative change in the cognitive structure. Assimilation and

adaptation are the two functions of knowledge internalization, which complement each other and exist simultaneously, and their results lead to the creation of new cognitive structures, i.e., knowledge internalization. Therefore, knowledge internalization is the process of transforming new external knowledge into the learner's own cognitive structure based on the learner's existing cognitive structure through the interaction of the processing mechanisms of assimilation and adaptation and the white ego monitoring mechanism of metacognition.

In actual classroom teaching, it is far from enough for students to acquire knowledge by internalizing it only once; it must be internalized several times to achieve proficiency. It is not true that knowledge is not internalized when it is taught in traditional classrooms, but due to the limited time available in class, the result is not enough to promote new cognitive structures, and the internalization of students' knowledge mainly relies on practice after class, without timely help from teachers and peers. In the flipped classroom, students watch the video before class, and from then on, their existing cognitive structures start to interact with the new knowledge, and the first internalization takes place. Students can pause and watch the video, again and again, to think and comprehend, and they can also discuss and share with teachers and classmates through online teaching interfaces, BBS, QQ groups (a Chinese social networking app), etc. to promote further internalization of knowledge. In the classroom, teachers collect students' questions and answer them in a targeted manner, and help students maximize their internalization of knowledge through teaching activities. It can be said that the success of flipped classroom is the adoption of this "learn first, teach later" model and

the use of modern information technology such as teaching videos, which decompose the difficulty of knowledge internalization, increase the number of times of knowledge internalization, help students better complete the internalization of knowledge, save valuable classroom time, and improve learning efficiency. Thus, if the process is only superficially flipped, without focusing on the basic principles of knowledge internalization in the process of flipping, and without providing high-quality pre-class learning resources and classroom teaching activities to help students better internalize knowledge, such flipping is just a formality and cannot really be effective. So, how to maximize the internalization of knowledge? How to ensure the high quality of learning resources and classroom activities? The Social Constructivism theory provides us with theoretical support.

2. Social Constructivism Theory

According to Willams and Burden (1997) in *Psychology for language teachers: A social constructivist approach*, and Mercadal (2020), social constructivism is the integration and interpretation of the important contemporary psychological theories and ideas of humanism, constructivism, and social interaction theory in understanding teaching and learning processes (Dias & Yesudhas, 2021:9) (the word "social" is used here in its microcosmic sense, i.e., "interrelations of people" "of the group", etc.) (Kadnikova, Morozov, Abysova & Ischuk, 2012:348-349). Among them, humanism is a philosophy of education that respects students' personal feelings and needs, emphasizes learning with real personal meaning, and advocates education for the whole person, including cognition and emotion. Constructivism emphasizes the subjective understanding

and meaning construction of objective things from the background of one's own experience, emphasizes learners as active meaning constructors and problem solvers, and values the learning process rather than the simple transmission of ready-made knowledge. Social interaction theory emphasizes that human learning and development occur in interaction with others, and emphasizes the interaction between teachers, students, tasks or activities, and its dynamic nature. Therefore, the main idea of the social constructivist model is that knowledge is constructed by each individual, not transmitted by others: but this construction occurs in the environment of interaction with others, as a result of social interaction: the model establishes the influence of multiple factors in four aspects (students, teachers, tasks, and the environment on the learning process, and at the center of which is, of course, the subject of knowledge construction). The four aspects are interconnected; special attention is paid to the development of the whole learner; in addition to cognitive development, there is also the development of learning skills characterized by metacognition, positive self-concept and personality qualities. Therefore, flipping the classroom is not only a superficial flip of the teaching process from "learning in class and doing homework after class" to "learning from teaching videos before class and doing homework in class", but more importantly, it fundamentally changes the roles of teachers and students. From the original knowledge instructor into a learning guide, and facilitator; students from the original knowledge passive recipient into an active researcher. To accomplish such a transformation, the quality of teaching videos and classroom activity design is crucial. For teaching videos, if they still follow the traditional view of teaching and learning and are still transferring knowledge in one direction,

then it means that only the place where students receive knowledge has changed, then it is "wear new shoe to take old road", and the significance of flipped classroom is limited. Therefore, the teaching video should not only focus on content, but also take into account the principle of reflecting students' subjectivity, and should not just be stuffed with knowledge, but should be more inductive and less deductive, creating a good environment for students to learn and explore independently. In the classroom, if there is no proper design of classroom activities, no multilateral interaction, and no teacher guidance, the flipped classroom will not be able to play its full role. Therefore, the activities designed by teachers in the classroom should emphasize the meaningfulness and authenticity of the learning tasks, and the design and selection of communicative tasks should be related to students' real life, so as to stimulate their interest and motivation in learning. Promoting active cognitive participation and active learning, the tasks and group activities provide students with opportunities and conditions for communicating and interacting with teachers, peers, and learning objects, negotiating meaning, and constructing knowledge about the learning objects in the process of the activities. This makes full use of the valuable classroom time saved and changes the single flow of information (i.e., teacher to student) that is common in traditional classrooms, maximizing the internalization of knowledge.

2.3.3. Definition and features of flipped classroom

1) According to the American economists Lage, Platt, & Treglia (2000:30-43), the flipped classroom takes the teaching and learning activities that occur in the traditional classroom and makes them happen outside the classroom while

putting the teaching and learning activities that occur outside the classroom inside the classroom. The use of information-based learning tools provides new learning opportunities for student learning, which is the earliest definition of the flipped classroom as a model. However, this definition only briefly describes the transformation of the classroom model compared to the traditional teaching model and does not define the flipped classroom model in terms of the teaching model.

2) Brian-Gonzalez(2011), Intel's Director of Global Education, at the 2011 Intel One-to-One Digital Learning Conference described that the flipped classroom refers to educators giving learners more freedom in learning, creatively setting the process of knowledge transfer outside the classroom and allowing learners to choose the most suitable way to learn instead of just listening to the lectures inside the classroom; placing the more important process of knowledge internalization inside the classroom, and furthering the learning process through communication and exchange between teachers and students. Brian-Gonzalez's definition of the flipped classroom fully reflects the fundamental difference between the flipped classroom and the traditional classroom, but also does not provide a clear definition of the flipped classroom teaching model.

3) At the Flipped Classroom Conference held in Colorado in July 2011, Jonathan-Bergmann (2011) defined the flipped classroom with the experts and scholars in the conference. They argued that the flipped classroom is a means to increase student-teacher contact time and change the way students and teachers communicate; it is a more personalized education than traditional teaching models, where students must take full responsibility for their own learning, thus fostering greater motivation. On the other hand, in a flipped classroom, the teacher is not a dictator at the podium, but a guide for students'

independent learning. In the information-based environment, students can review their own work at any time, so that learning is no longer limited by the time and space of the classroom. It is a hybrid teaching model that combines direct teacher instruction with a constructivist view of living and learning in a traditional classroom setting. The above definition shows that the flipped classroom model is a teaching and learning tool that emphasizes the significant advantage of the flipped classroom model in providing a personalized learning environment for students and defines the role of teachers in this teaching model.

As it can be seen from the above definition, the flipped classroom is part of the larger education movement and is a blended learning model. The goal is to engage students more flexibly and actively in their learning, thereby developing higher-level competencies.

The current hot topic of teaching reform is whether to achieve high efficiency in teaching, which is a substantive issue of teaching reform. Efficient teaching should maximize efficiency and optimize effectiveness. Maximizing efficiency refers to the maximum amount of benefit per unit of time for students, mainly in terms of increased teaching capacity and reduced academic load inside and outside the classroom; optimizing effectiveness refers to the positive degree of students' influence on education and teaching, mainly in terms of personalized development of interest, habit formation, learning ability, thinking ability and quality. Only the harmonious unification of the two is a truly efficient flipped classroom. The flipped classroom should make a breakthrough in teaching efficiency and effectiveness, and achieve light burden, low consumption, full dimensionality, and high quality. To maximize efficiency and optimize effectiveness, the flipped classroom must change from the traditional classroom model. We need to change from the traditional classroom model of "focusing on the transfer of knowledge" to "focusing on the development of students"; from the traditional classroom of "teaching" to "learning". Only in this way can we truly realize the high efficiency of teaching. The traditional classroom is

"classroom learning + after-class practice", while the flipped classroom is "after-class learning + classroom practice". Students use mobile smart terminals to acquire knowledge independently in the three-dimensional information transfer interface built by the school before class, and complete pre-study and preliminary learning; in the more important time period of the classroom, face-to-face communication between teachers and students and between students and teachers, allowing students to fully express their views and gradually reach consensus, discuss and complete exercises and generate works, and internalize knowledge in the classroom to achieve deeper learning. The flipped classroom is essentially the best form of "blended learning" under different cognitive and learning theories and different teaching environments, combining the advantages of digital learning and face-to-face learning to form a new way of learning. In the flipped classroom, students acquire knowledge independently through smart mobile terminals on a three-dimensional information delivery platform built by the school, which compensates for students' cognitive deficiencies due to individual differences, as indicates the Theory of Mastery Learning of Bloom (1976), and retains the advantages of efficient knowledge delivery in the traditional classroom while transforming the traditional classroom model. Students' independent and collaborative inquiry in the classroom reflects constructivist thinking, helps students understand deeper knowledge, and significantly increases the efficiency of the internalization of knowledge. The flipped classroom is a revolution in learning, and according to the study of Karpicke and Roediger (2008:966-968), repeated extraction of new knowledge is better than refined learning. In short, the essence of the flipped classroom is "blended learning" under different cognitive theories, learning theories and learning environments, which is reflected in the form of student pre-study + learning before class and cooperative questions and answers + practice during class.

Since the flipped classroom is a hot issue in education that has emerged in

China only in recent years, next I summarize the definition of flipped classroom based on the above three definitions. Flipped classroom refers to the realignment of time inside and outside the classroom, shifting the decision of learning from the teacher to the students. In this model of teaching and learning, the valuable time within the classroom allows students to focus more on active project-based learning, working together on problems to gain a deeper understanding. Teachers no longer take time away from the classroom to deliver information that requires students to complete independent learning before class, where they can watch video lectures, listen to podcasts, read functionally enhanced e-books, discuss with other students on the web, and be able to access the material they need at any time. Teachers are also able to have more time to interact with each individual. At the end of class, students plan their own learning content, pace, style, and presentation of knowledge, while teachers use didactic and collaborative approaches to meet students' needs and enable their individualized learning, with the goal of making learning more authentic through practice.

Traditional teaching mostly adopts "classroom introduction of problems - introduction of knowledge points - application of examples - review and summary". Unlike the traditional education model, the flipped classroom makes use of online courses, MOOCs, micro-lessons and other teaching videos produced by teachers to enable students to learn the course content before class, while the classroom teaching time is focused on communication and discussion between teachers and students, transforming passive one-way knowledge transmission into active collaborative inquiry knowledge learning.

Through literature reading and actual teaching application, the flipped classroom has the following characteristics compared with the traditional classroom teaching mode.

1. Change of teacher's role

The flipped classroom transforms the teacher from a knowledge transferor in the traditional classroom to a facilitator and mentor of learning. This means that teachers are no longer at the center of knowledge interaction and application, but they are still the primary facilitators of learning for students, providing them with the necessary support when they need guidance. Since then, teachers have become the scaffold for students to easily access and use resources, process information, and apply knowledge to real-world situations.

With this change in teacher identity, there is a challenge of developing new teaching skills. In the flipped classroom, students become the center of the learning process. They are required to construct knowledge by completing authentic tasks in real-world engagement activities. This requires teachers to use new instructional strategies to achieve this goal. New instructional strategies need to facilitate student learning, but not interfere with student choice. Teachers design instructional activities to promote student growth and development. At the end of a unit of study. Teachers need to check students' knowledge and provide timely feedback so that students are clear about their learning. Timely assessment also allows teachers to make timely adjustments to the design of classroom activities to better facilitate student learning.

2. Classroom Time Redistribution

The second core feature of the flipped classroom is to reduce the teacher's lecture time in the classroom, leaving more time for students to engage in learning activities. These learning activities should be based on real-life situations and allow students to work interactively and collaboratively to complete learning tasks. Transferring content from the classroom to the classroom will increase student interaction in the classroom without reducing the amount of basic knowledge presented. Ultimately, this shift will improve student understanding. In addition, interactivity in the classroom becomes more effective when the teacher conducts performance-based assessments, which

provide students with a more objective understanding of their learning and better control over their learning based on feedback from the teacher. Learning is one of the most valuable human activities, and time is the most essential element of all learning activities, and sufficient time and efficient learning are the key factors to improve learning performance. The flipped classroom extends the teaching and learning time by maximizing "pre-study time". The key to this is that teachers need to carefully consider how to use the time in the classroom. The key is to consider how to use the time in the classroom to make "class time" more efficient.

3. Change of students' roles

With the development of technology, education has entered a new era, an era where students can extend their own knowledge. Educators can use technology tools such as wikis or blogs to efficiently provide students with rich learning resources, and students can access their own knowledge in online resources. In technology-enabled personalized learning, students become self-paced learners who can control when and where they learn, and the amount of learning received. However, in a flipped classroom, students do not learn completely independently. The flipped classroom is dynamic and requires a high level of student engagement. In a collaborative learning environment supported by technology, students need to repeatedly interact with peers and teachers to extend and create depth of knowledge based on the learning content. Thus, the flipped classroom is a classroom where students are the protagonists in building deep knowledge.

3. Methodology

This paper uses questionnaires and statistical analysis as the basic research methods. Questionnaire 1 and Questionnaire 2 were completed by secondary school students who have taught English courses in China. Questionnaire 3 was completed by English teachers in Chinese tutorial classes. The questionnaires can be found in the Appendix. will use SPSS as a tool to analyze the data of the questionnaires.

3.1. Research Questions

This study aims to find out whether the corpus-based flipped classroom is useful for improving secondary school students' English language learning ability with the following three specific research questions.

1. Does the flipped classroom have a positive impact on secondary school students' English learning ability?
2. Is the corpus applicable to secondary school students' English learning? If so, in what ways does it contribute?
3. Is the combination of flipped classroom and the use of corpus suitable for Chinese secondary school students?

3.2. Research Methodology and Advantages and Disadvantages

In this research study, I will use questionnaires to collect data and the SPSS tool to analyze the learning of secondary school students using the corpus as a teaching tool in the flipped classroom model, with the final aim of validating the specific aims of this TFM, as described in Chapter 1. As mentioned in the previous section, this study uses a quantitative approach and an online questionnaire method. Considering the specificity of having both teachers and students in the classroom, I designed two sets of questionnaires, one for students' self-perceptions and knowledge absorption in the classroom, and the

other for experienced teachers' perceptions of students' learning in the classroom.

The questionnaire method is one of the systems of quantitative research, while the interview method is one of the systems of qualitative research. Although the last century has been filled with the struggle to separate the two paradigms in the field of educational science (quantitative research and qualitative research, which constantly emphasize the respective strengths and scientificity of the paradigms), the academic community has not abandoned either of these two approaches. Gradually, as understanding and practice advanced, academics acknowledged the existence and value of both paradigms. By the 1970s, there was a paradigm shift in the Western educational science community: the West switched from a focus on universal laws to a focus on contextual meaning, emphasizing attention to personal experience and advocating the educational practice. It is undeniable that qualitative research does not have the advantages of quantitative research and the scientific nature of quantitative data, and likewise, quantitative research does not have the advantages of the humanistic, contextual, and flexible nature of qualitative research. The questionnaire method is incorporated into the category of quantitative research because of the characteristics of questionnaire implementation and the requirements for questionnaire return rate and the quantitative nature of statistical data, and the quantitative research component is more obvious.

The questionnaire method is a research method that collects data by asking questions in writing (Mcleod, 2022). The researcher compiles the questions to be studied into a questionnaire and fills in the answers by mail, in person, or by follow-up interviews, to understand the subject's views and opinions on a phenomenon (Einola & Alvesson, 2021:102-114), so it is also called the questionnaire method. A questionnaire survey differs from the questionnaire method in that it investigates a narrower scope, favoring opinions, attitudes or

perceptions, and tends to target individuals or groups of people. According to Williams (1969:369), the questionnaire method is a research method that uses a form of written questions to collect information, analyze problems, and find patterns. It is often used in the field of educational sciences.

And, specifically, temperature questionnaire method has the following advantages:

1. High efficiency: questionnaire survey is very widely used, because its biggest advantage is simple and easy to operate, economic saving expenses. It can not only save manpower, material resources, financial resources, and time, but also in a short period of time it can survey many people, therefore, questionnaires are very efficient, and suitable for computer processing data, saving the cost of analysis and time.
2. Objectivity: questionnaires generally do not need to sign the questionnaire, newspapers and magazines and mail methods do not need to sign, and the respondents can express their own hearts if the questionnaire involves privacy issues, the non-anonymous state of the questionnaire can be free of fear.
3. Unity: in a questionnaire survey all respondents are asked with the same questionnaire, which is beneficial to the respondents in the same situation for comparative analysis, but also to investigate and analyze the individual and collective situation.
4. Wide range: questionnaire surveys are not limited by the number of people, the scope of the design of the range of possible answers given generally have the survey respondents to make a choice so that it is also convenient for the survey respondents to understand the survey content. As most questionnaire surveys are conducted in a closed type of survey due to the process of data collation, the answers can be coded and data entry is compatible with quantitative processing and analysis.

A questionnaire survey has advantages, but also limitations, as shown in the following aspects:

1. Inflexible: most of the questionnaires are pre-designed by the questionnaire designer to answer the range, making the respondent's answers more restricted, may miss some more detailed, deep information for complex questions, simple answers and be able to obtain the rich information needed.
2. Easy to misunderstand: the questionnaire issued by the respondents is free to answer, and the investigator in order not to give the survey the pressure, generally will not be on the spot to check the correct answers or omissions, so that the respondents are prone to have some problems such as missing answers, wrong answers.
3. The recovery rate and efficiency rate is low: in the questionnaire survey, the recovery rate and efficiency rate of the questionnaire has a certain ratio in order to make the survey information representative and valuable, through the mail out of the questionnaire, the recovery rate is often not high, because its respondents do not have any constraints, if not voluntarily and consciously, then they often do not receive back the questionnaire, which has a great impact on the survey sample.

I compared the advantages and disadvantages of these research methods and chose the online questionnaire method because the advantages of the questionnaire method outweighed the disadvantages for this study, as well as the fact that the population of this paper were students who had received English courses in China. This study also considered the possibility of successfully achieving the research objectives, in order to increase the return rate of the questionnaire and the true and valid response rate.

3.3. Questionnaire1: Questionnaire on the effectiveness of flipped classroom application

This questionnaire was administered to a survey of 69 secondary school

students³ and was designed to allow students to independently identify their performance and evaluation in the flipped classroom and to collect their perceptions of the flipped classroom. Thus, the survey was designed with 16 subjective questions aimed at understanding students' personal performance in the flipped classroom and the limitations of the flipped classroom.

3.4. Questionnaire 2: Questionnaire on the effectiveness of corpus application in English language teaching

This questionnaire was administered online to 50⁴ middle and high school students, and consists of two parts, one for students who have never known corpus before to learn about corpus use and to summarize the index lines in order to prove that corpus use is very useful for language learning, and the other for students who have been exposed to corpus before to get feedback on the effectiveness of corpus use.

3.5. Questionnaire 3: On the use of flipped classrooms in English language teaching

This questionnaire was administered to 30 teachers to analyze data from Chinese teachers who have implemented flipped classrooms to teach English courses and to compare these data with the student version of the questionnaire in order to identify the strengths and limitations of flipped classrooms.

The reliability of the evaluation instrument was tested by using Cronbach's

³ Since I have 4 years of experience as a part-time English teacher in China, the students who were able to participate in this survey were of different grades, but they were all secondary school student

⁴ The inconsistency in the number of people receiving the questionnaire here is due to the fact that some students are already in their senior year of high school and have to prepare for the Chinese college entrance exam, so they are not contacted again.

coefficient of agreement and the results were statistically analyzed using SPSS, which yielded a result of Cronbach's $\alpha = 0.985$, which is greater than 0.8, so the test has good reliability.

Cronbach Reliability analysis

N of items	cases	Cronbach α
14	50	0.985

Table 1. Reliability analysis of Questionnaire on the effectiveness of corpus application in English language teaching

4. Analysis and results

This chapter will analyze all the data and summarize the results of the entire study, and I will also answer the questions posed in the previous chapter.

4.1. Answer to the research questions

4.1.1. Answer to the first question

Regarding the first research question: "Does the flipped classroom have a positive impact on secondary school students' English learning ability?", the main analysis and answers are as follows:

From the results of the questionnaire, there is no doubt that the flipped classroom has a positive impact on secondary school students' English learning ability, as evidenced by the four main findings of this questionnaire.

First, in the question "After studying before class, do you feel more confident and willing to participate in class activities? It can be seen that there are 69 valid responses, among which 10 students chose "Very confident", 52 students chose "More confident", and 7 students chose "Not confident". There are 10 students who chose "Very confident", 52 students who chose "More confident", and only 7 students who chose "I'm not sure", as shown in Table 2.

Item	Frequency	Percent
Very confident	10	14.49%
More confident	52	75.36%
I'm not sure	7	10.14%
Total	69	100.0%

Table 2. After studying before class, do you feel more confident and willing to participate in class activities?

This shows that 89.9% of the students benefited from the lesson learning session and were better able to engage in the next lesson, and the pre-lesson

independent learning session is one of the most important parts of the flipped classroom, most of the students can achieve good learning results in this session and are more willing to enter the next lesson, which also proves that the flipped classroom has a more efficient learning effect, awakening students' motivation for independent learning, and students' confidence in learning before the class extends to the rest of their learning, which will greatly enhance their interest in learning English.

Second, in the question "After watching the learning video, can you complete the pre-class exercises independently?", 54 students chose "I can complete part of it ", 15 students chose "I can complete all of it", and no one chose "No", see Table 3 for details.

Item	Frequency	Percent
I can complete part of it	54	78.26%
I can complete all of it	15	21.74%
Total	69	100.0%

Table 3. After watching the learning video, can you complete the pre-class exercises independently?

The highest percentage of students who were able to complete the video was 78.26%. The data in the above table shows that watching the video before class has a high promotion effect on students' completion of the pre-class learning tasks, and also shows that students can understand and absorb the course knowledge independently without teacher's guidance.

Third, the more intuitive question "Is the classroom group discussion helpful to your English learning?" was used to determine whether students had a clearer perception in the self-evaluation session and the student-student assessment. Six students chose "not helpful at all", while 44 students chose "a little helpful" and 19 students chose "a lot", which shows that 91.3% of the students showed their subjectivity in acquiring knowledge.

Item	Frequency	Percent
No	6	8.70%
It can improve a little	44	63.77%
A lot	19	27.54%
Total	69	100.0%

Table 4. Is the classroom group discussion helpful to your English learning?

In the classroom discussion, the students' subjectivity is not only reflected in the students' "eating" and "understanding" to gain knowledge, but also in the students' ability to develop their own skills. Before the discussion class, teachers ask students to watch the video to learn the new knowledge of the day and complete the exercises before class, which cultivates students' independent learning ability and summarizing ability. In the discussion process, students must then independently summarize what they have learned before class and output their understanding to other students, which develops their independent thinking skills. After the conclusion is reached, students have to express their opinions and even argue with others, and express them in reasoned language, which naturally promotes the development of language expression skills. When they find contradictory views with other students but both are valid, they have the ability of dialectical thinking in generating confusion.

And classroom discussion does not only externally reflect students' subjectivity, but in its process in turn inherently enhances students' subjective consciousness. "Developing students' ability to educate themselves and manage themselves will mobilize their great enthusiasm and motivation and enable them to protect, perfect and improve their subjective consciousness (Han, 2022)." In the process, students realize that they can solve their problems mainly by themselves, with the help of teachers and mutual communication among classmates, and they develop the character of "not being teacher-

oriented", which is of great significance not only for their studies, but also for their life in the long run.

At last, in the question "Can the flipped classroom model improve your interest in learning English?", 4 students chose "No ", 49 students chose "It can improve a little", and the remaining 16 students chose "A lot", as shown in Table 5.

Item	Frequency	Percent
No	4	5.80%
It can improve a little	49	71.01%
A lot	16	23.19%
Total	69	100.0%

Table 5. Can the flipped classroom model improve your interest in learning English?

As shown in Table 5, 94.2% of the students think that the flipped classroom model has increased their interest in learning English, and with interest comes consciousness of learning, then the motivation to learn will be significantly strengthened, and they will no longer learn English passively, but take learning as fun. Long-term independent learning will strengthen their understanding of learning, what to learn, how to learn, why to learn, for whom to learn, and who is the biggest beneficiary of learning. In this way, the motivation for learning is gradually strengthened, and the purpose of learning is naturally strengthened. From the above four aspects of the questionnaire data, we can see that the flipped classroom does have a positive impact on secondary school students' English learning, and most students benefit from the flipped classroom model, whether it is the independent learning session before the class, the discussion session during class, or the independent evaluation and student assessment session after class. In addition, the flipped classroom model optimizes students' learning methods compared to traditional teaching methods. Students have a

self-regulated approach to learning. With multimedia teaching, students can pre-study carefully before class, circle what they don't know, listen to the lectures with questions and solve their problems, and review well before exams, categorize and summarize what they have learned. Once students get used to this series of links, they will change their bad study habits and shape their own learning methods. Because the flipped classroom is implemented with the use of multimedia and other information technology, the use of multimedia is not only vivid and interesting compared with the boring traditional teaching method, but also the visual display of video with pictures, sound, and animation, which promotes students' understanding and deepens their memory. Secondly, because students have studied the new knowledge through the video before the class, they will be selective in their learning in the class and make good use of the retelling method. Students will focus on solving their own questions, and what they know will be filtered and restated in class, so that students can fully grasp, strengthen their memory, and gain new insights.

4.1.2. Answer to the second question

In answering the second question: "Is the corpus applicable to secondary school students' English learning? If so, in what ways does it contribute? ", I divided this question into two parts to determine whether the corpus is applicable to secondary school students' learning by analyzing the feedback of students who had already been exposed to the corpus, and the other part to determine whether the corpus is applicable to secondary school students' learning by analyzing the feedback of students who had not been exposed to the corpus before taking this questionnaire and using the corpus index line for the first time.

1) Part I: In this questionnaire, there were 50 valid questionnaires, among which 33 students had been exposed to the corpus, and the next part is to analyze the feedback of these 33 students one by one.

In the question "Do you think this teaching model is effective?", 9 students chose "Very effective", 18 students chose "Rather effective", 3 students chose "Fair", 1 student chose "Not very effective", and the remaining 2 students chose "Not very effective". The remaining 2 students chose "Not effective at all", as shown in Table 6 below.

Item	Frequency	Percent
Very effective	9	27.27%
Rather effective	18	54.55%
Fair	3	9.09%
Not very effective	1	3.03%
Totally ineffective	2	6.06%
Total	33	100%

Table 6. Survey of students' perceived corpus validity

Since the analysis of the effectiveness of this corpus-based teaching model was in the form of multiple-choice questions, I chose a Cross-tabulation analysis to better present and analyze the data, which can be seen in Table 7 and Table 9 below.

X/Y	It can provide language that fits the actual usage situation	it brings out the language facts in that context	it activates attention to linguistic phenomena	It can develop the cognitive ability of analysis and induction	it can improve the initiative and motivation of learning	it can improve the understanding of language	Other	Subtotal

Very effective	8	4	4	7	6	3	0	9
Rather effective	9	14	12	12	8	6	1	18

Table 7.On the effectiveness of corpus-based teaching models

Here is a more visual bar chart for easy comparison⁵

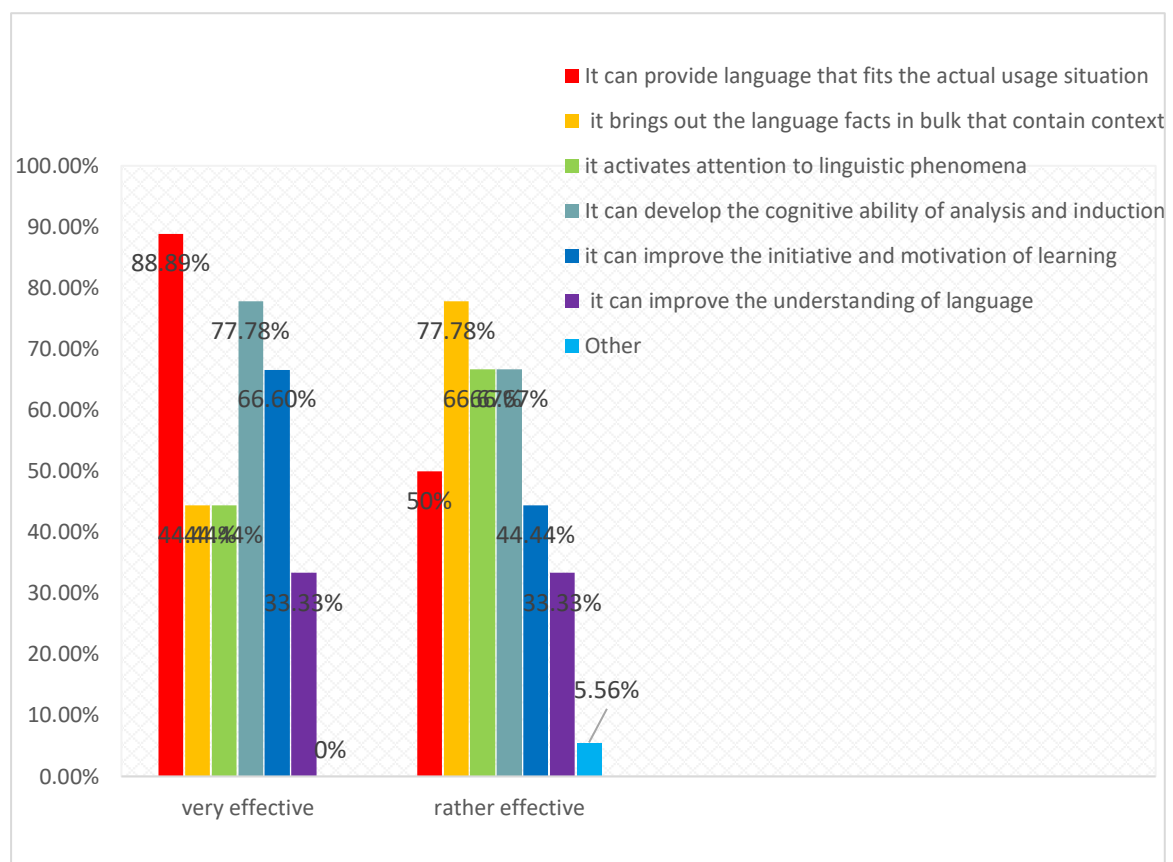


Table 8.Bar Chart Comparison

Y/X	Fair	Not very effective	Totally ineffective
The corpus is difficult to obtain, especially the	1	0	1

⁵ The sum of the percentages in this row is greater than 100% because the dependent variable in the Cross-tabulation analysis is a multiple choice question.

pedagogical corpus which is suitable for students' level			
Retrieval methods (especially when extracting complex structures) are difficult to master	2	0	1
The volume of search results is large, and it takes time and effort to analyze them one by one	0	1	0
The vocabulary in the index line context is too difficult to understand	0	0	1
insufficient ability to operate computers and related software	0	0	1
lack of ability to summarize search results, not very good at finding patterns based on phenomena	0	0	0
Other	0	0	0
subtotal	3	1	2

Table 9.On the embodiment of the problem of corpus-based teaching models

Similarly, I have created a bar chart to show the problems of this teaching model.

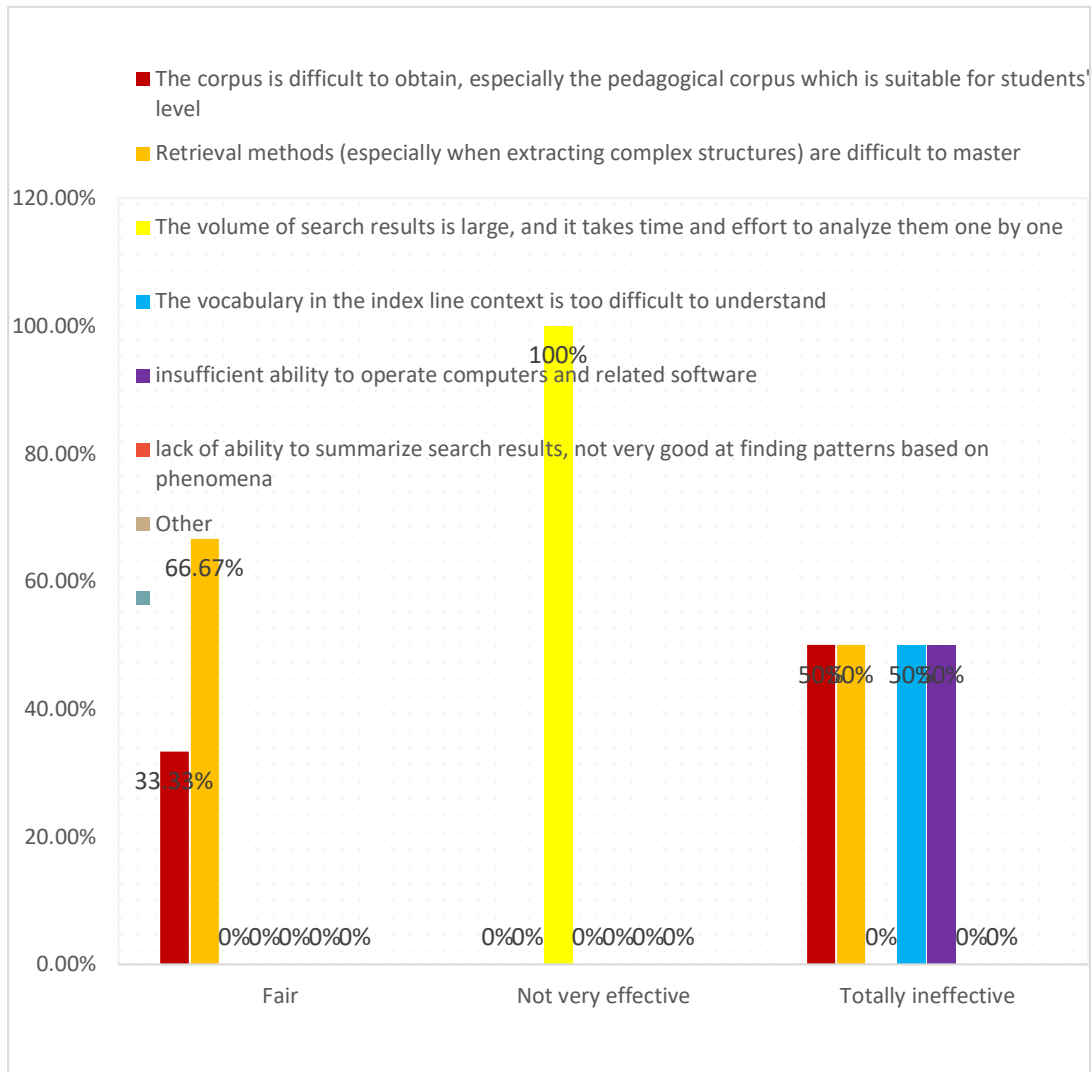


Table 10. Histogram comparison on teaching model issues.

From the responses of the 33 students who have been exposed to corpus learning, 81.82% of them thought that this teaching tool is effective and give their own perceptions of effectiveness. From Tables 7 and 8 above, 88.89% of the 9 students who chose "Very effective" felt that it was because "It can provide language that fits the actual usage situation", while 44.44% thought that "it brings out the language facts in bulk that contain context", and 44.44% thought that "it can develop the cognitive ability of analysis and induction", 66.67% thought that "it can improve the initiative and motivation of learning", 33.33% think "it can improve the understanding of language", and the highest percentage is "It can provide language that fits the actual usage situation",

obviously, this is also the biggest advantage of the corpus itself compared to traditional teaching books and syllabi. Of the 18 students who chose "Rather effective", 50% thought "it can provide language that fits the actual usage situation", 77.78% of the students thought that "it brings out the language facts in bulk that contain context", 66.67% of the students thought that "it can develop the cognitive ability of analysis and induction", 44.44% of the students thought that "it can improve the initiative and motivation of learning", 33.33% of the students thought "it can improve the understanding of language", and 5.56% of the students chose "others" but did not specify them in detail, so they are not considered here. The above shows that in the perception of students who chose "Rather effective", the effectiveness of the corpus is more reflected in "it brings out the language facts in bulk that contain context". As I mentioned in Chapter 2, Section 1, the corpus itself is characterized by the collection of naturally occurring real-life corpus, and students who have been exposed to the corpus will also be convinced by the advantages of the corpus over traditional rigid textbooks. As can be summarized from Table 7, for students who have been exposed to the corpus, the corpus does have a facilitating effect on students' English learning, which can be manifested in 1. providing students with text or spoken content in authentic English contexts, and 2. avoiding students' passive acceptance of knowledge and using the specificity of the corpus to stimulate students to take the initiative to discover linguistic phenomena and summarize them.

Accordingly, the corpus-based teaching model has corresponding limitations. For example, in Table 9 and Table 10 above, we can see that 33.33% of the students who chose "fair" felt that it was fair because "The corpus is difficult to obtain, especially the pedagogical corpus which is suitable for students' level", while 66.67% of students chose "Retrieval methods (especially when extracting complex structures) are difficult to master". The students who chose "Not very effective" thought that "The volume of search results is large,

and it takes time and effort to analyze them one by one". The number of students who chose "Not effective at all" was 50% for each of the following four questions: "The corpus is difficult to obtain, especially the pedagogical corpus which is suitable for students' level, "Retrieval methods (especially when extracting complex structures) are difficult to master", "The vocabulary in the index line context is too difficult to understand" and "Insufficient ability to operate computers and related software". It can be seen that the problems with the use of corpus as an English teaching tool are mainly related to the use of corpus rather than the new teaching tool itself. It is important to mention that this study was conducted with students from the first to the third year of high school, so they did have a slightly lower level of computer use than students in higher grades, but this aspect of the corpus as a teaching tool to facilitate summarization can be verified in the negative responses in Tables 9 and 10.

2) Part II: Accordingly, in this questionnaire count, there are 50 valid questionnaires, among which 17 students have not been exposed to the corpus. Next, the same 17 students' questionnaire responses are analyzed one by one.

Item	Frequency	Percent
Very effective	3	17.65%
Rather effective	5	29.41%
Fair	3	17.65%
Not very effective	4	23.53%
Totally ineffective	2	11.76%
Total	17	100.0%

Table 11. In general, how do you think your teacher currently teaches vocabulary?

From the above table (table 11), it can be observed that among the 17 students who did not have access to the corpus, 17.65% thought that the vocabulary

lessons were "Very effective", while 29.41% thought "Rather effective", 17.65% thought "Fair", 23.53% thought "Not very effective", and 23.53% thought "Totally effective", 29.41%, "Fair" 17.65%, "Not very effective" 23.53%, "Totally Overall, 47.06% of the students thought that the current traditional teaching method was effective, while 52.94% of the students thought that the traditional teaching method was ineffective. Therefore, in the next questionnaire, the researcher set questions about the index row of vocabulary usage for the research subjects to try to summarize and generalize, and to find out the advantages or disadvantages of the corpus for vocabulary teaching in this test. The following tables 12 and 13 show this.

Please observe the following examples .Example 1: lack but it eventually fell by the wayside for lack of interest; Lack of regular exercise may increase the chance of illness; They simply lack the subtle energy fields or mental configuration People do not lack strength, they lack will; He's lacking in practical experience. Do you think you can summarize the three uses of lack based on the sentences arranged above (observe the italicized bolded parts)?

Item	Frequency	Percent
Very easy	3	17.65%
Easier	7	41.18%
OK	4	23.53%
More difficult	2	11.76%
Very difficult	1	5.88%
Total	17	100.0%

Table 12.Analysis of the effect of example 1

Example 2 adverb of degree+ important It's quite important for us; They are not just my pets to me, they are also my very important family members

Do you think you can master the expression "it is important" based on the sentences presented above (observe the italicized parts)?

Item	Frequency	Percent
Very easy	2	11.76%
Easier	7	41.18%
OK	3	17.65%
More difficult	3	17.65%
Very difficult	2	11.76%
Total	17	100.0%

Table 13. Analysis of the effect of example 2

As shown in Table 12, 17.65% of the students thought that it was easy to summarize the vocabulary usage through the index line. The percentage of students who thought "Easier" was 41.18%, while the percentage of students who thought "OK" was 23.53%. The percentage of students who thought "More difficult" was 11.76%, while the percentage of students who thought "Very difficult" was only 5.88%. From the above data, 58.83% of the students think that this way of learning vocabulary is easy by observing the index rows and summarizing them by themselves.

Similarly, as seen in Table 13, 11.76% of the students thought that it was "Very easy" to learn vocabulary and usage by summarizing and summarizing the index rows, while 41.18% of the students thought that it was "Easier", answers to "OK", "More difficult", and "Very difficult" were 17.65%, 17.65%, and 11.76% correspondingly. Overall, 52.94% of the students in the second example, Table 13, thought that this learning method was easy, which means that more than half of the students in both examples thought that the method of observing index rows in the corpus to summarize vocabulary was acceptable and fell into the category of easy. Moreover, as seen from the index lines in the two examples above, the corpus not only helps to learn the vocabulary itself, but also helps to master the word collocations, and students are able to

understand the collocations of words under various conditions by searching the corpus. Students' language skills can also be enhanced in this process. As seen in example 2, based on the searched sentences, it is possible to analyze and summarize the common collocations and usage of degree adverb +important. It can be seen that the effective application of the corpus can not only strengthen students' vocabulary ability but also help them build a certain knowledge system.

After the initial exposure to the corpus, students also had different views on the corpus-assisted classroom teaching. 2 out of 17 students thought that this method was "Very effective", 9 students thought that it was "Rather effective ", 3 students thought it was "Fair", 2 students thought it was "Not very effective", and 1 student thought it was "Totally ineffective" are shown in Table 14 below

The example in the above question is an index line extracted from an English corpus. Do you think it would be effective to introduce such an index line in the classroom to support vocabulary teaching?

Item	Frequency	Percent
Very effective	2	11.76%
Rather effective	9	52.94%
Fair	3	17.65%
Not very effective	2	11.76%
Totally ineffective	1	5.88%
Total	17	100.0%

Table 14. Summary feedback on the use of index lines

From the above data, 64.7% of the students thought that introducing the corpus into the index line was effective, which means that most of the students were able to use the corpus as an effective aid to vocabulary learning based on their inductive summarization ability without having been exposed to the corpus.

From the above two parts of the analysis, we know that the corpus is applicable to junior high school students' English learning and contributes positively to students' English learning mainly in the following aspects.

1. Autonomy of language learning

During the teaching process, teachers first expose students to a large number of example sentences, and then let them summarize and conclude the collocation rules. After communication and discussion, students form a correct grasp of the rules under the teacher's guidance, replacing the traditional teaching method of learning language rules first and then understanding the corresponding example sentences. For instance, using the BNC corpus can develop students' learning habit of actively exploring word collocation patterns, cultivate students' awareness of independent learning, and improve students' passive receptive learning mode, i.e., mechanical memorization of learning patterns and consolidation of learning through example sentences. Students can also gain a sense of accomplishment and increase their interest in learning English while actively exploring the patterns.

2. Authenticity of language materials

Using a corpus to support English language teaching allows students to experience word collocations in real, original language texts, rather than through a teacher-made language environment. The corpus provides students with a new perspective on word collocation patterns: by reading a large number of authentic examples, students begin to understand that native English speakers usually use and collocate words in the way that the examples present, and that second language learners can effectively facilitate their own language learning if they can draw certain language patterns from them. The use of the corpus allows students to focus more on the appropriateness of the language rather than the rightness or wrongness of the language.

4.1.3. Answer the third question

In answering this question: "Is the combination of flipped classroom and the use of corpus suitable for Chinese secondary school students?", the authors will combine the questions from the three questionnaires with the data for analysis.

First, the level of student initiative in taking control of class time and teacher reduction in lecture time greatly increased students' motivation in flipped classroom activities. For example, in question 7 of Questionnaire 1, "When you encounter a problem in the flipped classroom, do you ask your classmates or look for information to understand it?", we can see that 3 students chose "No", 31 students chose "Rarely", and 35 students chose "Yes", the specific percentages can be seen in Table 15 below.

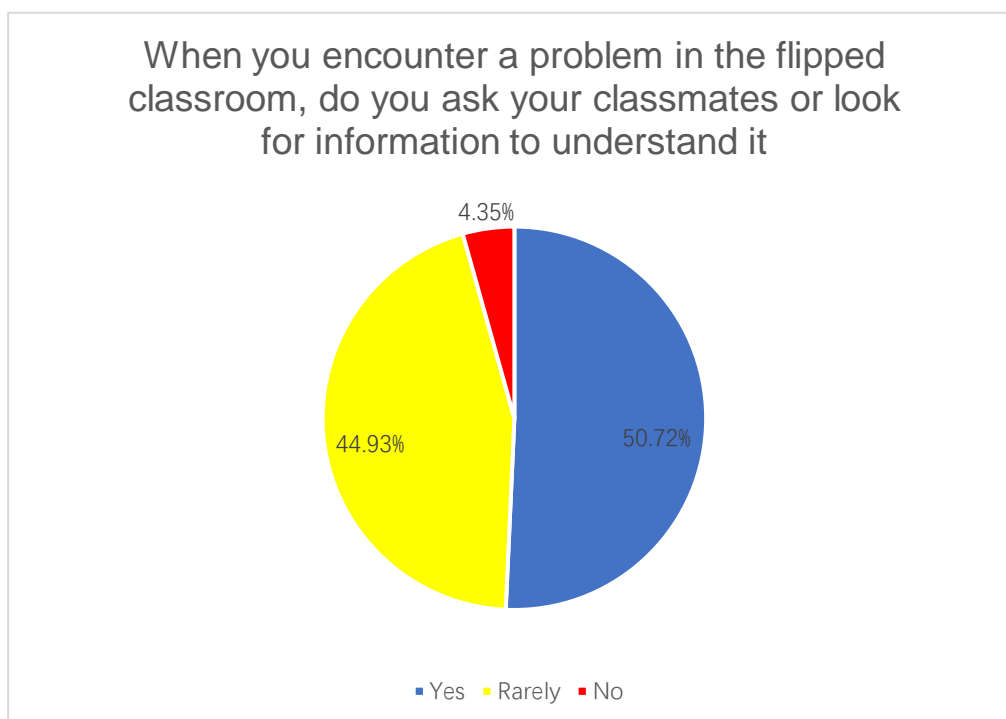


Table 15. Interactive performance in the flipped classroom

The above table shows that 50.72% of the students would actively seek help

from their classmates or teachers when they encountered problems, 44.93% of the students rarely asked questions or discussed with their classmates, and only 4.35% of the students chose "No". The teacher-student interaction and classroom presentations are the visual externalization of students' thinking in the classroom (Zu, 2009:25), and teachers can effectively receive feedback from students on the issues they are learning through these behaviors, which can positively contribute to the development of an effective classroom. However, Chinese secondary school students are currently less active in the classroom, not only because of the students themselves, but also because of the traditional one-way transmission of knowledge by the teacher in Chinese culture (Huang, 2012:97-101). The flipped classroom is a good solution to this problem at the root, as the classroom is returned to the students, who are naturally willing to speak more and ask more questions. This shows that the implementation of flipped classroom is a more stimulating teaching model for Chinese secondary school students to learn actively.

The results from question 8, "Under the flipped classroom model, the teacher's lecture time in class is shortened and our students' activity time is increased?", can also be found in the following Table 16.

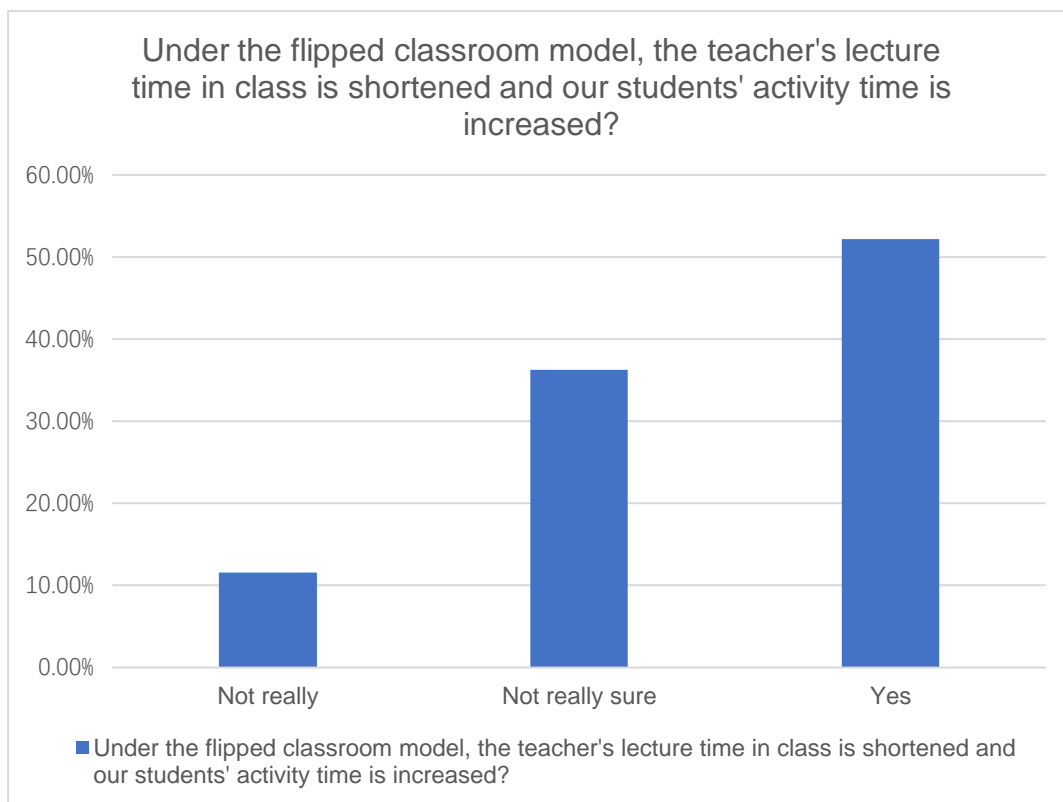


Table 16. Degree of mastery of classroom time

Secondly, in terms of the applicability of the corpus, the analysis will focus on students who have already been exposed to the corpus, so that the analysis is more convincing based on the experience of using the corpus and its effects, as in question 2 of Questionnaire 2, "In which course did you come across corpus knowledge or resources?".

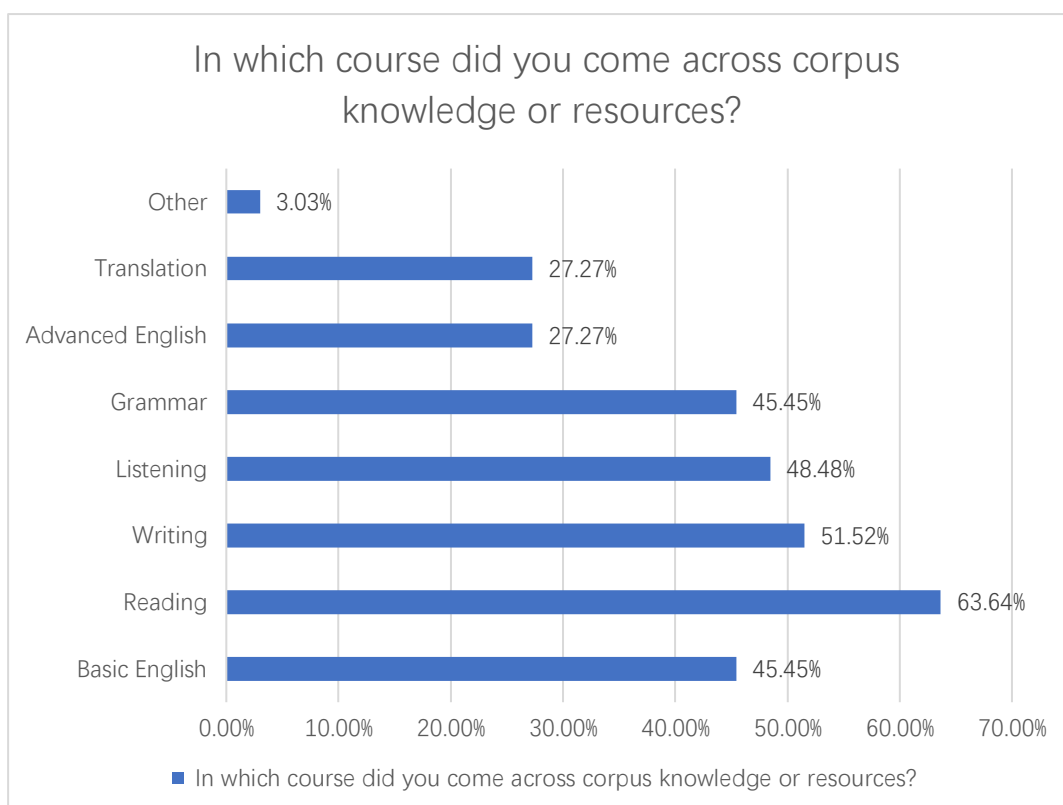


Table 17.Subjects in which you are exposed to the corpus

As shown in the table above, 15 students (45.45%) were exposed to the corpus through Basic English; 21 students (63.64%) were exposed to the corpus through Reading; 17 students (51.52%) through Writing, 16 students (48.48%) through Listening; and 15 students (45.45%) through Grammar, nine students (27.27%) were exposed to the corpus through Advanced English; nine students (27.27%) were exposed to the corpus through Translation, and one student (3.03%) chose "Other". From the above data, the highest percentage is "Reading", followed by "Writing". One of the most important features of the corpus is the use of authentic corpus, which enables students to learn the real usage of vocabulary in standard contexts, so that they can apply what they have learned and become inquirers of language learning and active networkers of knowledge. According to the results of the empirical study in "A Study on the Effect of Online Corpus on Students' English Reading Ability" by Cheng Ling and Zhang Sihong (2012:240-242), the effect of online corpus on students' reading ability did not reach a significant level, but students' vocabulary

recognition ability and interest in reading were greatly improved, which echoes the results of the questionnaire in this paper. This echoes the results of this study's questionnaire: the exposure to the corpus in reading is relatively high, and students need a relatively authentic context to learn English.

Moreover, the authentic corpus is more helpful in adapting the four aspects of listening, reading, and writing for secondary school students, as opposed to the dialogue texts compiled from textbooks.

Finally, according to the combined results in Tables 15, 16 and 17 above, the teaching model using corpus and flipped classroom basically meets the learning requirements of secondary school students at the current stage.

4.2. Data Analysis

4.2.1. Questionnaire 1

In the questionnaire "The impact of the flipped classroom on secondary school students' English learning ability", I cross-analyzed the data from the first and fifth questions of the questionnaire in order to determine whether there is a necessary correlation between students' exposure to the concept of the flipped classroom and their adaptation to it. The following table, Table 18, shows the details.

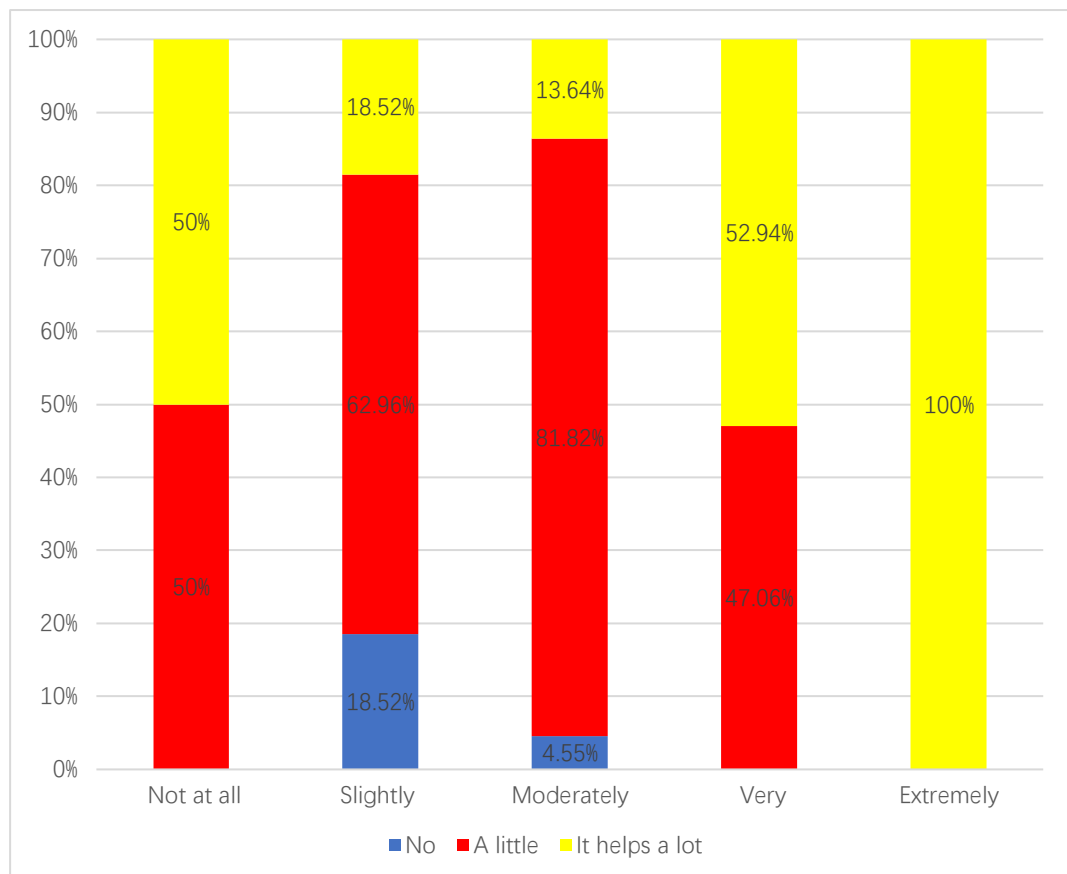


Table 18. Cross-tabulation results chart

From the above table, it can be seen that out of 69 students' valid questionnaires, regarding the first question "Did you know about the flipped classroom as a teaching model before taking the questionnaire?", 2 students

did not know anything about the flipped classroom before taking the questionnaire, 27 students knew slightly about the flipped classroom, 22 students knew moderately about it, 17 students knew a lot about it, and one student knew extremely about it. 42.03% of the students had no real contact with the flipped classroom.

In the cross-tabulation analysis with the first question as the independent variable and the fifth question "Is the classroom group discussion helpful to your English learning?" as the dependent variable, 50% of the students who did not know anything about flipped classroom thought that the classroom group discussion was helpful to them. In the cross-tabulation analysis of the fifth question, "Is the classroom group discussion helpful to your English learning?", 50% of the students who had no knowledge of the flipped classroom thought that the classroom group discussion was very helpful to their English learning, and another 50% thought it was a little helpful. Among the students whose knowledge of flipped classroom is "Slightly", 18.52% of them think that group discussion is very helpful to their English learning, 62.96% of them thought it was a little helpful, while 18.52% thought it was not helpful at all. And of the students who chose "Moderately" in their level of understanding of the flipped classroom, 13.64% said it was very helpful, 81.82% said it was a little helpful, and 4.55% said it was not helpful at all, while 52.94% of students who knew more about flipped classroom thought classroom group discussion was very helpful for English learning, 47.06% thought it was a little helpful, and students who were experts on flipped classroom thought classroom group discussion was very helpful for English learning.

From the above data, it can be seen that most students, whether they know more or less about the flipped classroom, still find the classroom group discussion session helpful for English learning. As discussed in Chapter 3, group discussion is an integral part of the flipped classroom and is essentially cooperative learning. It is clear that there is no necessary correlation between

students' exposure to the concept of flipped classroom and their adaptation to the flipped classroom. The data here can also answer the first research question in Chapter 1 of this research study, which is "Why is the flipped classroom easier for students to acquire knowledge than the traditional Chinese ELT classroom?".

As mentioned earlier, constructivists believe that although the material world exists objectively, each of us individually constructs our own perceptions of the world and assigns meaning to it based on our own internal experiences. Therefore, the process of learning should not be simply taught by teachers to students, but should create conditions for students to know and understand the process of knowledge on their own. From a constructivist view of teaching and learning, the flipped classroom model solves the traditional pace of learning in the classroom and pays more attention to the individual cognitive differences of students. This prevents some students from falling behind because they cannot keep up with the pace of the classroom and strong learners from losing interest because the pace is too slow. Each learner processes and recreates his or her original knowledge in the context provided, and constructs a knowledge network with his or her own experience and asks personalized questions. Therefore, in the flipped classroom, context creation, cooperative inquiry, questioning and communication, and meaning construction become the main teaching elements.

In the process of cooperative learning, it is emphasized that every member of the group should actively participate in the learning activities, and each member carries great enthusiasm, and the learning tasks are shared by everyone, pooling their ideas and expressing their own opinions, and everyone does his or her best, so that the problems become easier to solve. It provides a good teaching atmosphere for each student to participate in learning, and lays a solid foundation for developing students' cooperative qualities and improving their overall quality and lifelong learning ability. Cooperative group learning is

the process of helping each other and exchanging knowledge among students, as well as the process of communicating their feelings to each other. It makes each member dissolve into the collective and enhances the collective consciousness. Cooperative group learning overcomes the shortcomings of the previous teaching of poor coverage, insufficient practice opportunities for students and insufficient training, and gradually changes the passive learning style of students who are more inert, lazy to speak up and overly dependent on teachers. In the process of cooperative group learning, students communicate with each other in terms of knowledge, ability, interest and quality, agree with each other, complement each other, influence each other and promote each other. This way of learning can solve individual differences, reduce polarization, and help to teach students according to their abilities.

In short, the learning style of cooperative learning is not based on the negation of our teaching traditions, but on the supplementation and improvement of teaching traditions, so as to improve the teaching status quo, change the one-way or two-way communication mode between teachers and students in the traditional teaching system, and form an all-round, multi-level and multi-angle communication mode between teachers and students, students and students. So that everyone in the group has the opportunity to express their own views and opinions, and is also happy to listen to other's opinions, so that students feel that learning is an enjoyable thing, thus satisfying their psychological needs and fully developing their emotional resources, promoting the harmonious development of their intellectual and non-intellectual factors, and finally achieving the goal of making students learn, know how to learn, and enjoy learning, and thus effectively improving the quality of teaching.

In question 3 of this questionnaire, "How much time are you willing to spend before class on self-study of teaching contents?", 2 students indicate they had never studied before class, 26 students would spend "Less than 20 minutes" on the pre-class study, and 39 students would spend "20 to 40 minutes" on the

pre-class study. 26 students would spend "Less than 20 minutes" on the pre-class study, 39 students would spend "20 to 40 minutes" on the pre-class study, and 2 students would spend more than 40 minutes on the pre-class study. In the fourth question, "After studying before class, do you feel more confident and willing to participate in class activities?", it can be seen that 10 students indicated that they were more willing to participate in the next class after studying before class, while 52 students indicated that they were more confident and 7 students indicated that they were not confident. Here, I analyzed the two questions together to see if there is a relationship between the two, i.e., the willingness to study before class and the willingness to participate in class activities, as shown in the following table, Table 19.

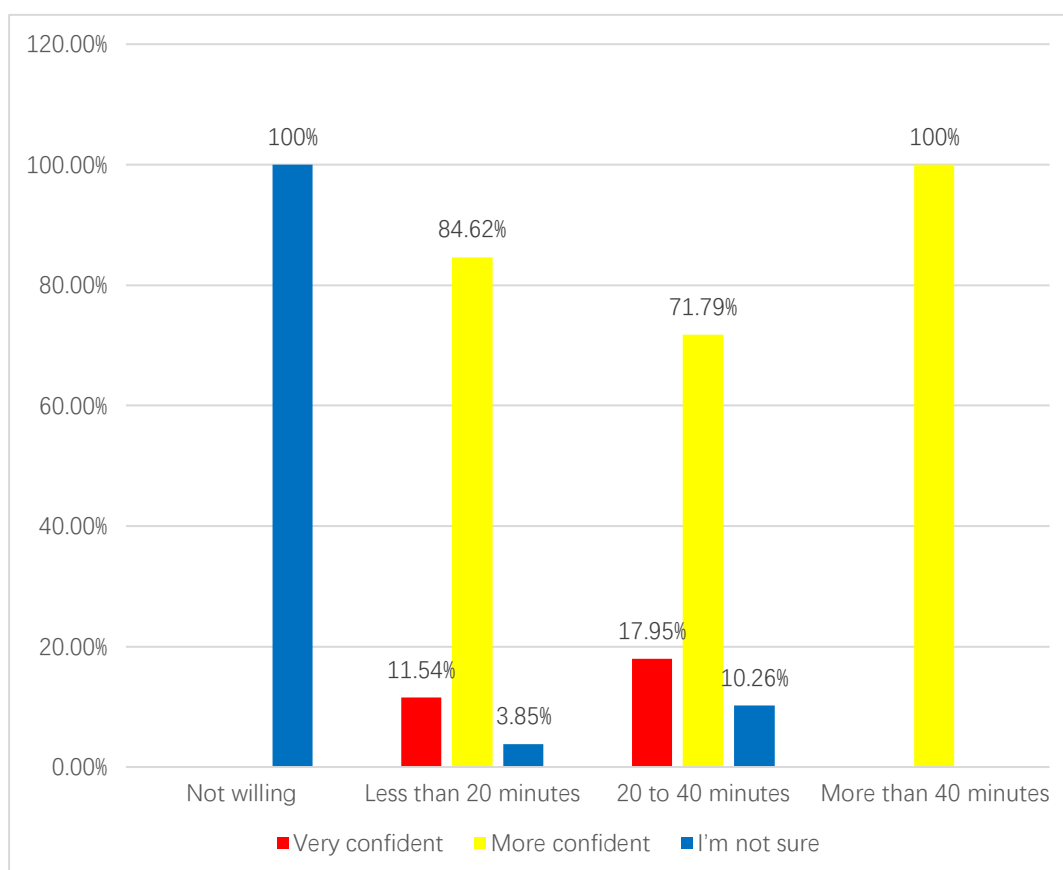


Table 19. Pre-class learning and willingness to participate in class

The above table shows that students who are not willing to do pre-class study

do not have any confidence in the next classroom activities, while among students who study less than 20 minutes before class, 11.54% are very confident to deal with classroom activities, 84.63% are more confident, while the remaining 3.85% are still not confident; among students who study 20 to 40 minutes before class, 17.95% of them were very confident to enter the next class, 71.79% of them were more confident, while 10.26% of them were still not confident; while students who studied more than 40 minutes before class were more confident to participate in the next class activities. The above table and data show that we cannot say that learning before class will necessarily increase students' interest in learning and their desire to actively participate in classroom activities, but if there is no learning before class, they will definitely not have the confidence to participate in the next classroom activities. As mentioned in Chapter 2, flipped classroom refers to the transfer of the decision of learning from the teacher to the students, where the teacher uploads teaching videos, lectures, e-books, and courseware to the teaching platform and issues learning tasks before class, and students can independently plan the learning content, style, pace, and way of learning knowledge by watching these materials before class. Students can independently plan the learning content, style, progress, and learning knowledge by watching these materials before class to complete the tasks assigned by the teacher, and for the problems they do not know or do not quite understand, students can discuss them with other students online or ask for help from the teacher in the teaching platform. This is a new teaching mode that can improve students' independent learning ability, analyze and solve problems, promote students' personalized learning, and close the distance between teachers and students and students, thus improving teaching quality and teaching effectiveness. It is clear from the definition that the most antecedent part of the flipped classroom is the pre-class learning, which shows that the teaching mode of the flipped classroom is more capable of enhancing students' confidence and interest in learning.

In question 11 of this questionnaire, "Which aspect of the flipped classroom do you find most satisfying?", 7 students chose "Strong student subjectivity", 44 students chose "Free learning time", and 18 students chose "The group learning is more relaxed ", and the details are shown in Table 20 below.

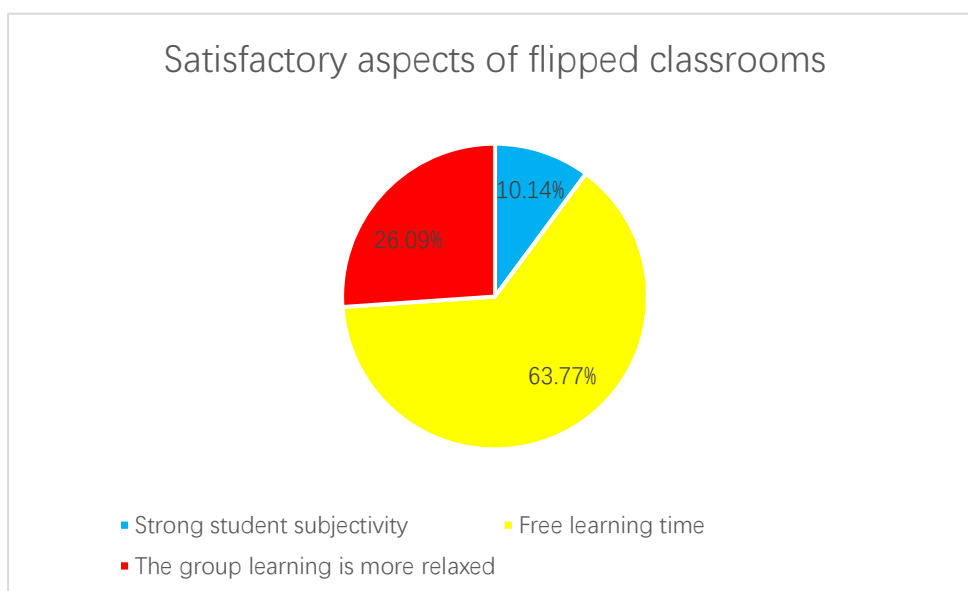


Table 20. Satisfactory aspects of flipped classrooms

Instead of having to adapt to the teacher's pace of imparting knowledge, as in a traditional ELT classroom, students are in control of every step of their learning, just as in a flipped classroom: the greatest advantage of a flipped classroom is that it gives students the greatest autonomy during the knowledge transfer stage. Students are the master of learning and cognitive activities, the main body of learning, in the whole teaching process, whether it is the acquisition of knowledge and experience, or the development of intelligence and ability, teachers can neither replace students reading, nor can they replace students analyzing and thinking, neither can knowledge be rigidly instilled into students' minds, nor can ideas be transplanted into students' minds. Students as the main body should let students move, from learning to knowing how to learn.

The cross-analysis of question 2 "Your academic performance" and

question 9 "Through the flipped classroom, can you reflect on and summarize your English learning methods?" shows that the implementation of the flipped classroom not only brings good influence to students with excellent academic performance but also is a good teaching mode for students with average academic performance to adjust their learning progress according to their own learning situation. In the second question, 18 students said "Excellent", 32 students said "Good", 15 students said "Moderate", and 4 students answered "Need to improve", while in the ninth question, after experiencing the flipped classroom, will they reflect on their English learning methods?" 2 students chose "Never", 44 students chose "Occasionally", and 23 students chose "Often". From the simple analysis of the data here, we can see that most of the students can summarize and reflect on their English learning and methods through the flipped classroom teaching mode, regardless of their excellent performance.

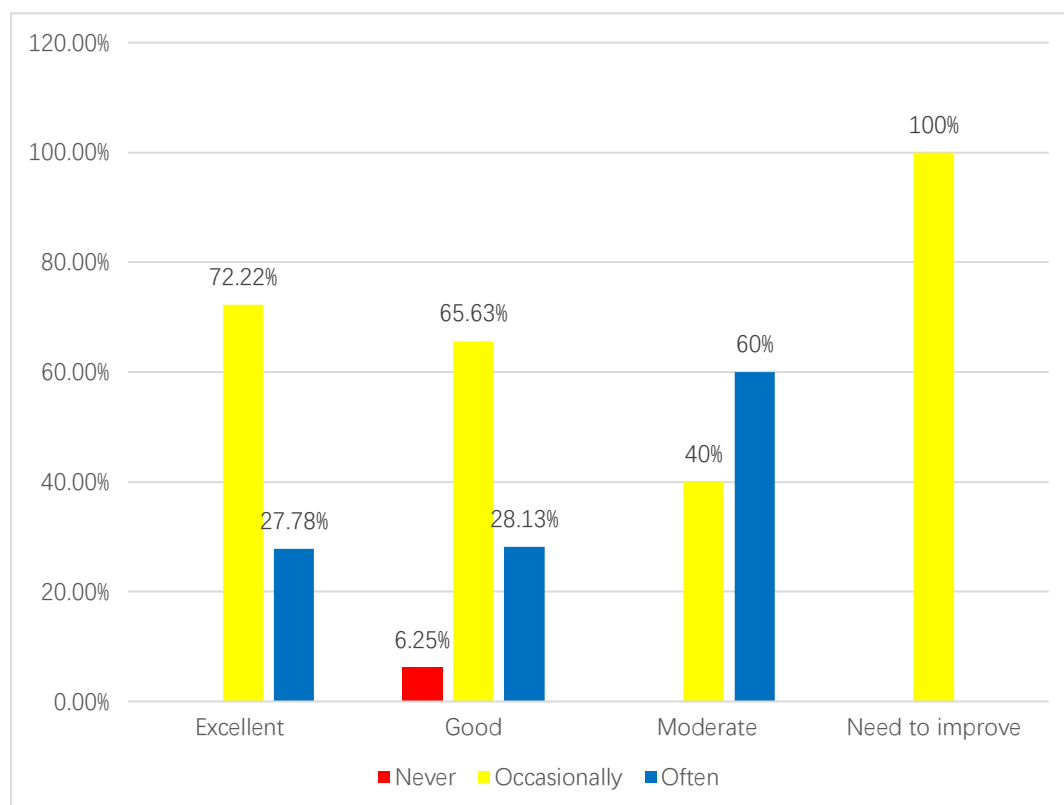


Table 21. Association of grades with flipped classroom applications

From the above graph, 72.22% of the students with good grades reflected on their learning methods occasionally after experiencing the flipped classroom, and 27.78% reflected frequently; 6.25% of the students with good grades never reflected and summarized, 65.63% reflected occasionally, and 28.13% reflected frequently. 40% of the students with moderate grades reflected occasionally and 60% reflected often. Students who needed to improve their grades reflected and summarized their English learning methods after experiencing the flipped classroom model. The above data show that the implementation of the flipped classroom is not directly related to students' academic performance, but the flipped classroom enhances students' subjectivity, and students become more interested in their own learning and begin to reflect on their own learning methods. In addition, flipped classrooms can help students who are unable to keep up with their learning. Students can play back microlearning videos for learning if they don't understand something in class, breaking the limits of space, time and number of times. Students can also choose to pause, rewind, rewind and fast forward according to their own receptiveness, which is more conducive to their acceptance of new knowledge. It also gives teachers time to focus on students who are struggling to learn.

In question 13 of the questionnaire, "What skills can you improve in the flipped classroom model? ", 34 students chose "independent learning ability"; 56 students chose "communication and expression skills", 42 students chose "independent thinking ability", and 15 students chose "problem-solving skills". Details can be found in the following, Table 22.

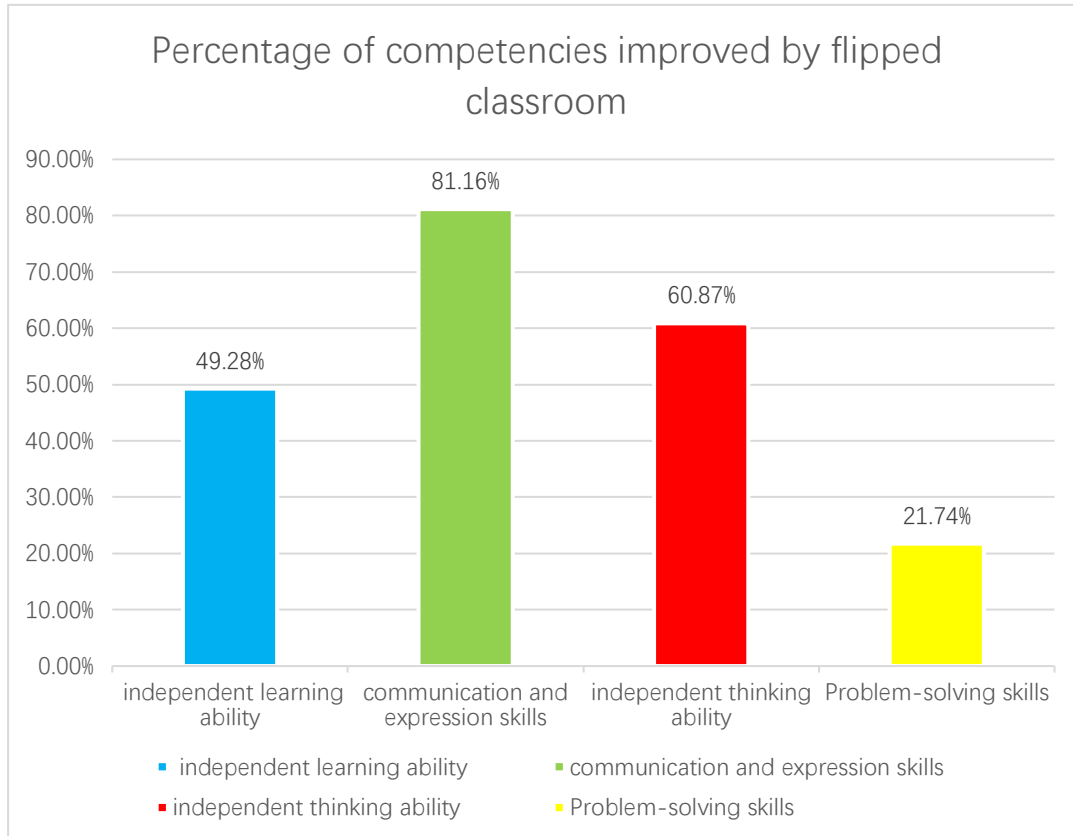


Table 22. Percentage of competencies improved by flipped classroom

From the above table (Table 22), the highest percentage is "communication and expression skills", which shows that the flipped classroom teaching mode cultivates not only the learning ability of students but also the communication ability between students or teachers and students. As shown in Table 15 above, most of the students thought that the group discussion session was helpful to their English learning and that learning English itself is a subject that requires more communication, so it was the students' free discussion to ask the teacher questions that improved their communication skills.

Moving on to question 14 of the survey, "How can a flipped classroom help you _____? [Multiple Choice](Multiple options available) **", 26 students chose "effectively review the lessons or other contents you have learned at regular intervals" and 53 students chose "facilitate classroom group work, communication and discussion to deepen your understanding of what you have

learned", 49 students chose "develop critical thinking and find solutions to problems from various aspects", 14 students chose "to have enough time to practice in class, which can effectively help you consolidate what you have learnt". Detailed percentages can be found in Table 23 below.

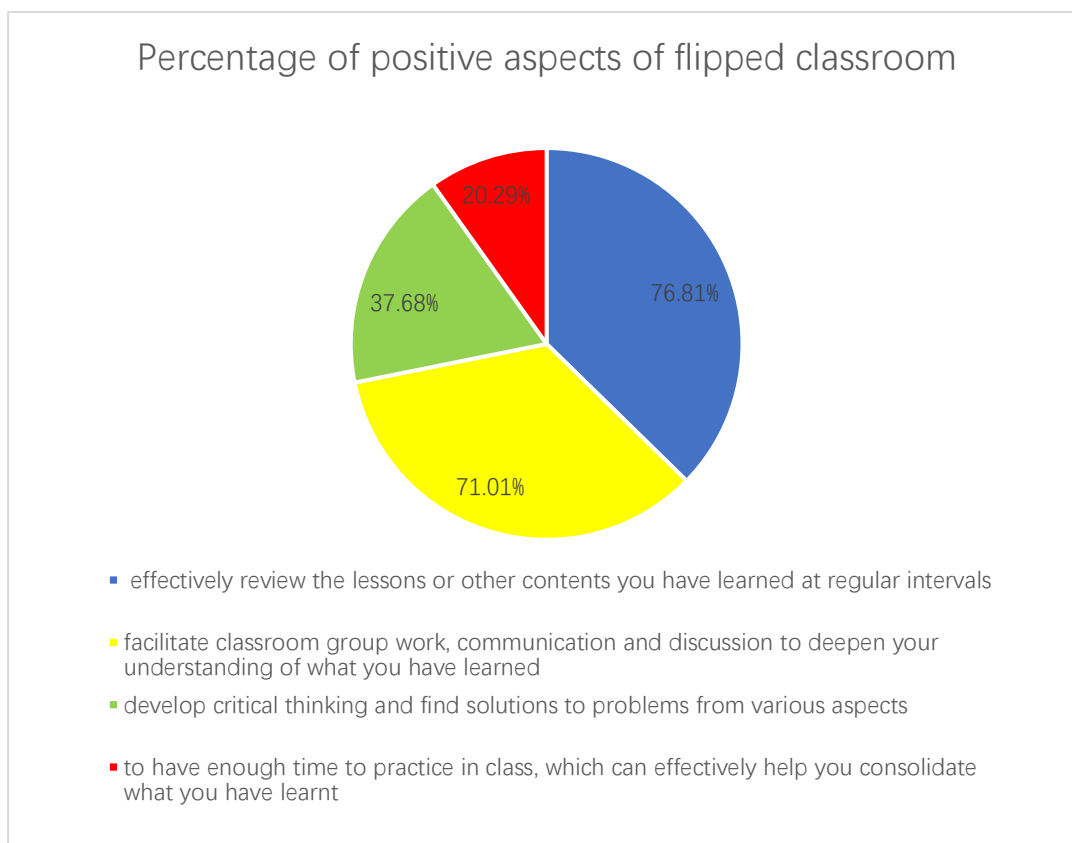


Table 23. Percentage of positive aspects of flipped classroom

From the above pie chart, the highest percentage is "effectively review the lessons or other contents you have learned at regular intervals", and from the data here we can again find that in the flipped classroom; it is important to hold on to students' interests, focus on emotional communication, and stimulate students' positive emotions. In the process of changing from the traditional classroom to the "flipped classroom", it seems that we are only recording videos and implementing pre-learning and learning plans, but in fact, we are managing the classroom effectively, and in the classroom, we are not a teacher standing

in the lecture hall, but we are constantly communicating with each student or group of students in the classroom. The teacher has not the role of a lecturer but is in the classroom constantly interacting with each student or group of students, patiently guiding each student through active learning. After a while, students find that their time in the classroom becomes more meaningful. Students are encouraged to cooperate and communicate in the classroom to experience the process of knowledge formation so that they can experience the joy of learning and enjoy the joy of success. In the classroom, students actively explore new knowledge, actively implement knowledge in application, and improve their ability to cooperate, so that students' enthusiasm and initiative in learning become higher and higher, and greatly improve their learning ability. Moreover, by implementing flipped classroom teaching, students' awareness of asking questions is strongly improved.

At the end of this questionnaire, a basic research was done about students' attitudes towards the flipped classroom teaching model. Out of these 69 questionnaires, 64 students expressed their support and another 5 students expressed their disapproval. The details are shown in the following chart.

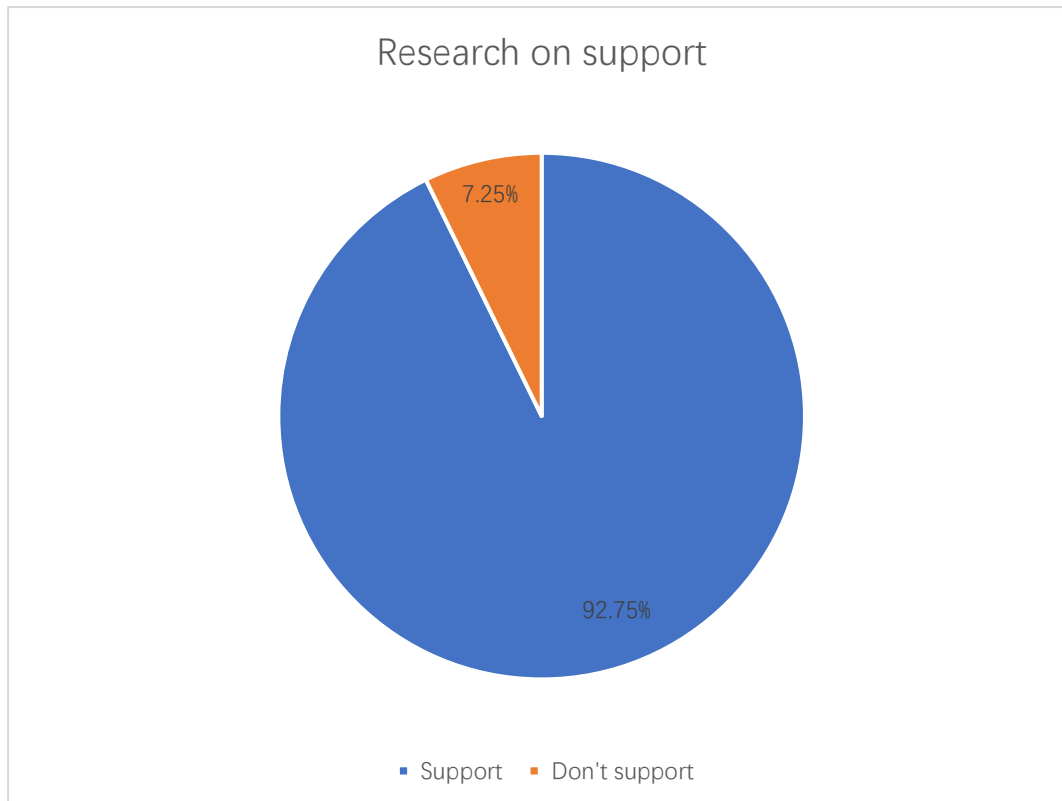


Table 24.Research on support

It is evident that 92.75% of the students are in favor of the promotion and popularization of the flipped classroom personalized teaching model in schools, which would answer the research question in Chapter 1 of this paper, "What are the students' attitudes toward the flipped classroom?". This means that most of the students have positive attitudes towards the flipped classroom. In this regard, we can compare the results and analyze question 6 of the questionnaire, "Can the flipped classroom model improve your interest in learning English?", as shown in Table 25 below.

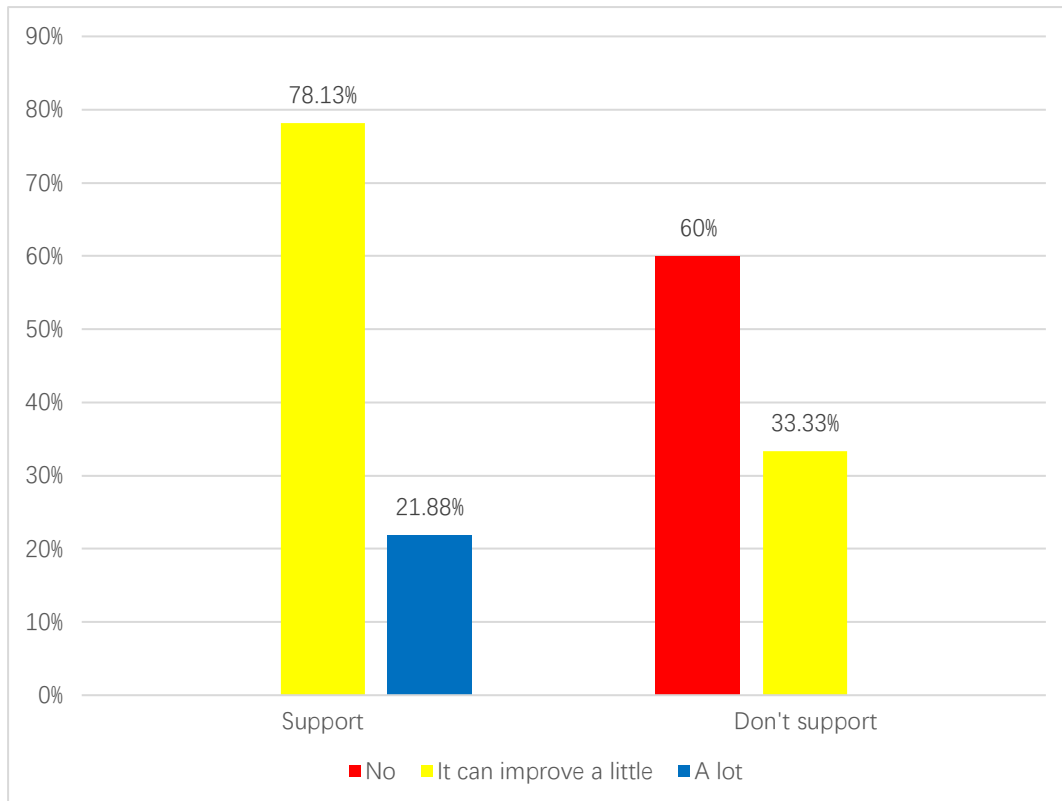


Table 25. Attitude vs. facilitation graph

From the above table (Table 25), we can see that among the 64 students who support the implementation of flipped classroom, 78.13% of them think that flipped classroom can enhance their interest in learning English, 21.88% of them consider that it can effectively enhance their interest in learning English, while among the 5 students who do not support the implementation of flipped classroom, 3 of them think that flipped classroom cannot enhance their interest in learning English. The other two students thought that the flipped classroom could enhance their interest in learning English, which shows that students with positive attitudes towards the flipped classroom can indeed promote their interest in learning English.

4.2.2. Questionnaire 2

In the questionnaire "An investigation of the application of corpus-based teaching models in English classrooms", 50 responses were collected, and 50 responses were valid. I will analyze each question one by one.

First of all, the question of whether or not the students had been exposed to the corpus was reflected in the first question of this questionnaire. 33 students had been exposed to the corpus before, while the other 17 students had never used the corpus before. Table 26 below shows this.

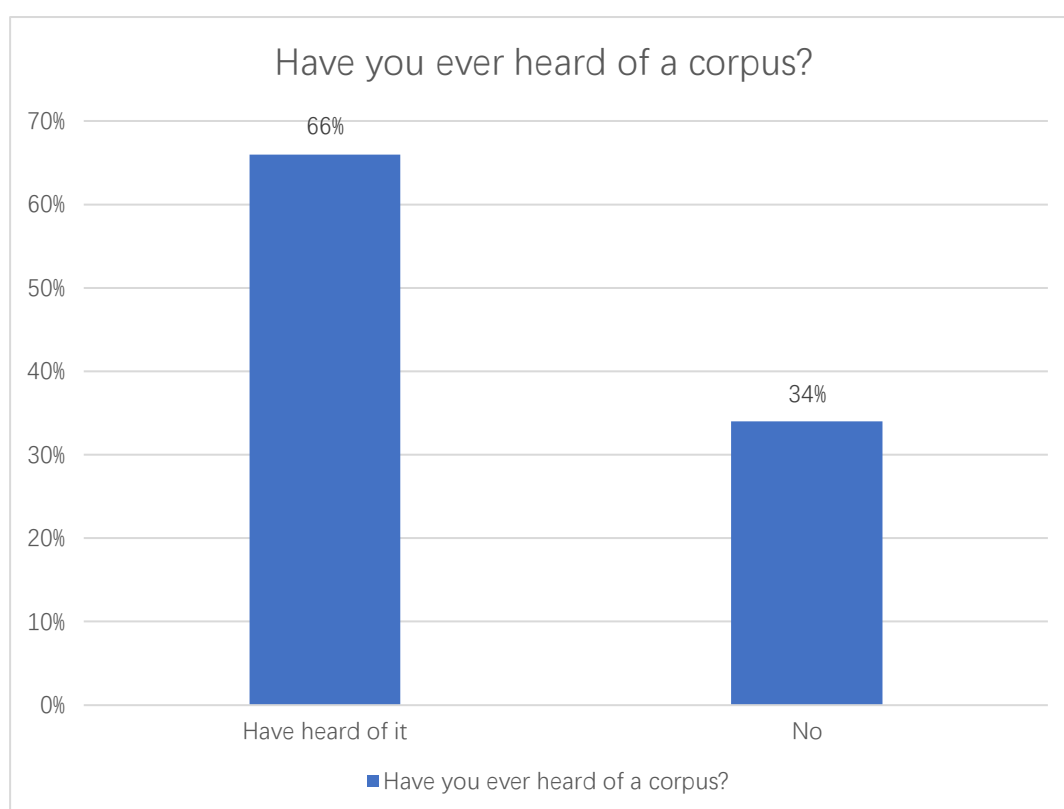


Table 26. Have you ever heard of a corpus?

Regarding the use of corpus, I collected data in question 3, "What teaching content does your teacher mention or use corpus resources for?" for comparison⁶. This question was surveyed based on students who had been

⁶ This subsection, as described in Section 1 of Chapter 4 of this paper, categorizes and compares the answers of students who have and have not been exposed to the corpus so that

exposed to the corpus; thus, the total number of respondents was 33. The surveys on this question are shown in Tables 27 below:

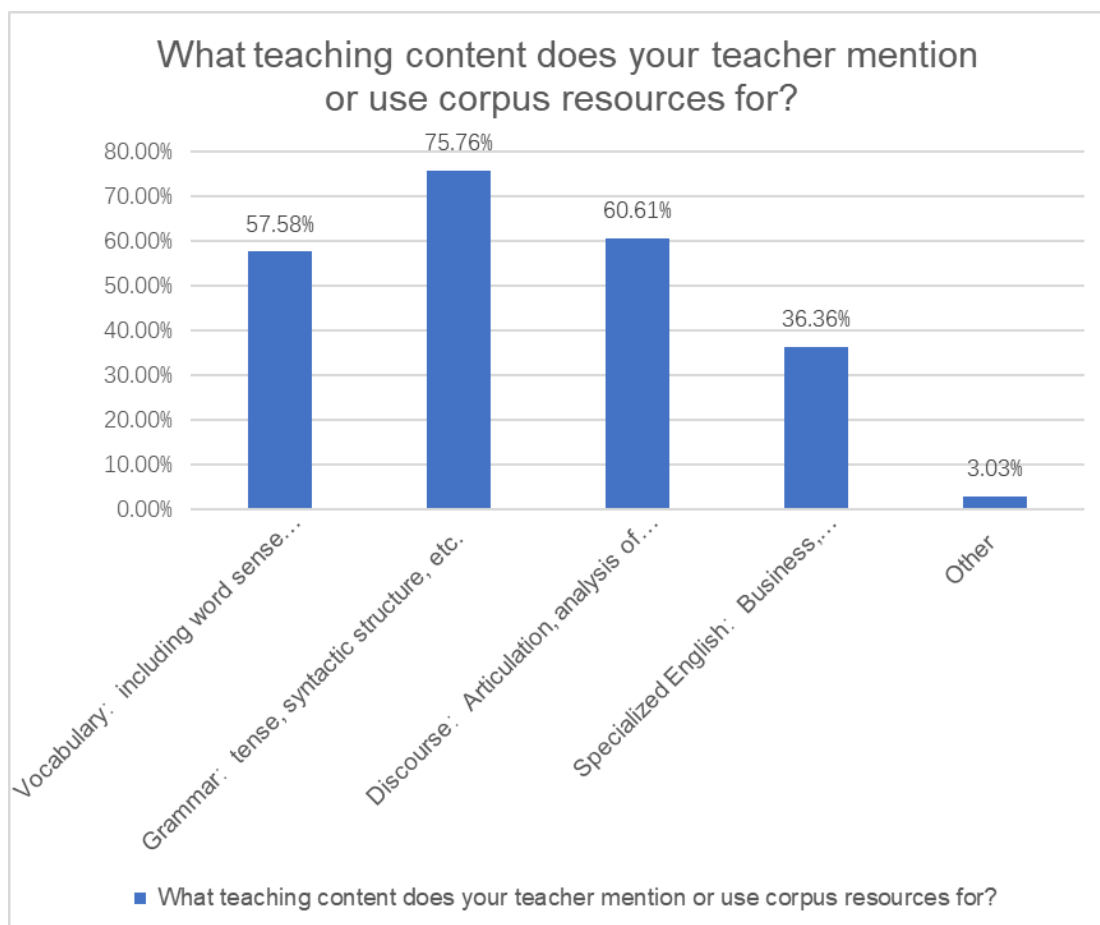


Table 27. What teaching content does your teacher mention or use corpus resources for

From the above table (Table 27), it can be observed that 19 students (57.58%) chose "Vocabulary: including word sense analysis, collocation, etc.", 25 students (75.76%) chose "Grammar: tense, syntactic structure, etc." and the number of students who chose "Discourse: Articulation, analysis of chapter structure, etc." was 20, or 60.61%.

The number of students who chose "Specialized English: Business, academic English, etc." was 12 (36.36%), and one student chose "Other". One student chose "Other", accounting for 3.03%. It can be seen that the highest

the conclusions drawn are more convincing.

percentage was "Grammar: tense, syntactic structure, etc.", which means that most of the students had heard or used the corpus when learning grammar. Regarding the effectiveness of using corpus for grammar teaching, this paper refers to the results of research of Wenyu Guan (2005:19-25) on "designing grammar exercises with corpus - conditional sentences" and finds that the use of corpus can avoid the limitation and unreliability of teachers' personal intuitive judgment relying on the native language. It is clear that the data obtained from actual observation and analysis of the corpus are more accurate and scientific. The above is a preliminary analysis of the use of the corpus for grammar learning by students who had access to the corpus, and the following section compares the use of the corpus for grammar learning by students who had no access to the corpus.

Regarding the analysis of the results of the 17 other students who had not been exposed to the corpus, in question 2 of this questionnaire "How does your teacher teach vocabulary in the classroom?", 8 students chose "He/she explains the meaning of words", accounting for 47.06%, and 8 students chose "He/she gives examples", also accounting for 47.06%. 47.06%, 6 students chose "He/she practices filling in the blanks, making sentences, translating, etc.", accounting for 35.29%. "He/she asks the students to explain the vocabulary" was chosen by 6 students (35.29%), and one student chose "other" (5.88%). 5.88%. Table 28 shows that.

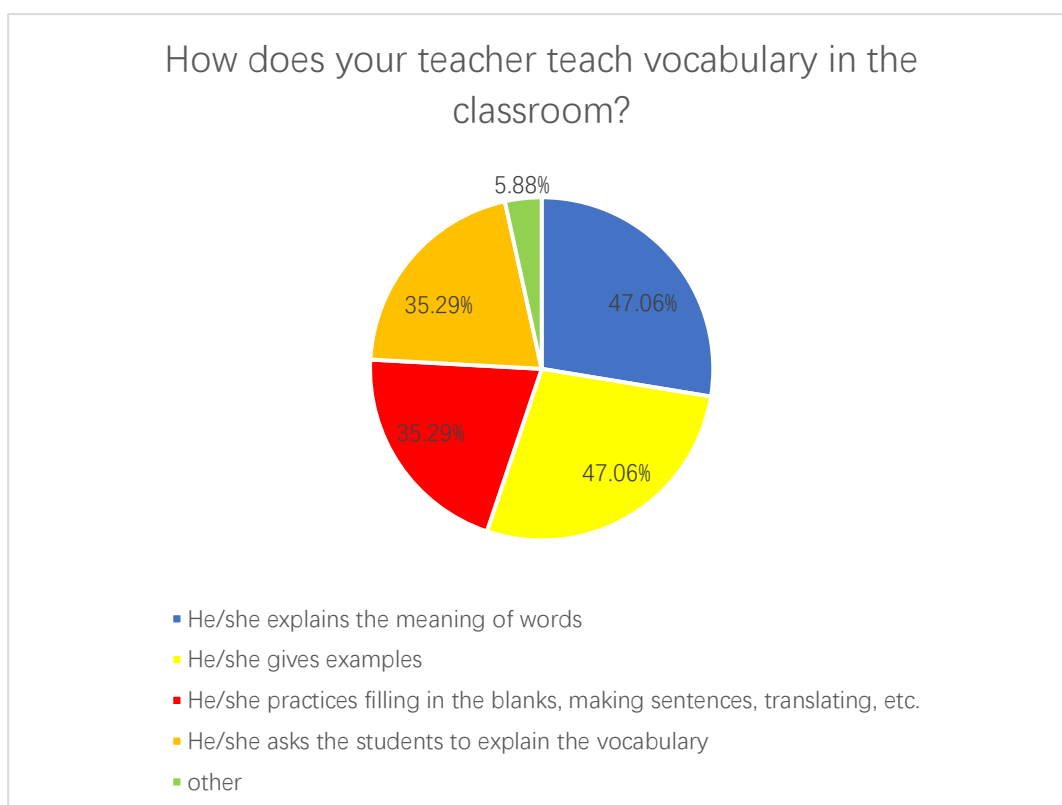


Table 28. Vocabulary teaching method

From the above table and the above data, it can be seen that among students who had not been exposed to corpora before, the most frequent ways for teachers to teach vocabulary are "explaining the meaning of words" and "giving examples". In addition to the basic explanation of the meaning of words, teachers usually choose to explain vocabulary through examples, and using examples to explain vocabulary is to use the contextual discourse to deepen students' understanding of vocabulary. As we know: what is understood is easy to remember, and the deeper the understanding, the stronger the memory. When teaching words, the sound, form and meaning should be taught at the same time so that students have a comprehensive understanding of the words and so that the words taught are presented in a certain context, which is more conducive to students' understanding and memory.

Teaching words with abstract concepts in phrases, sentences or texts makes the students' understanding of the words concrete. This is also one of

the important pedagogical methods in teaching vocabulary in English language teaching. The foreign language teaching approach likewise coincides with the biggest feature and advantage of the corpus: the availability of a large amount of processed and authentic corpus. This also helps students to acquire vocabulary knowledge accurately, meaningfully and appropriately in a foreign language teaching classroom that combines communication and form.

In question 4, "When your teacher teaches vocabulary" and question 5, "In general, how do you think your teacher currently teaches vocabulary", I conducted a basic research on students' satisfaction with the existing teaching methods of vocabulary, and cross-tabulated them as shown in Table 29 below.

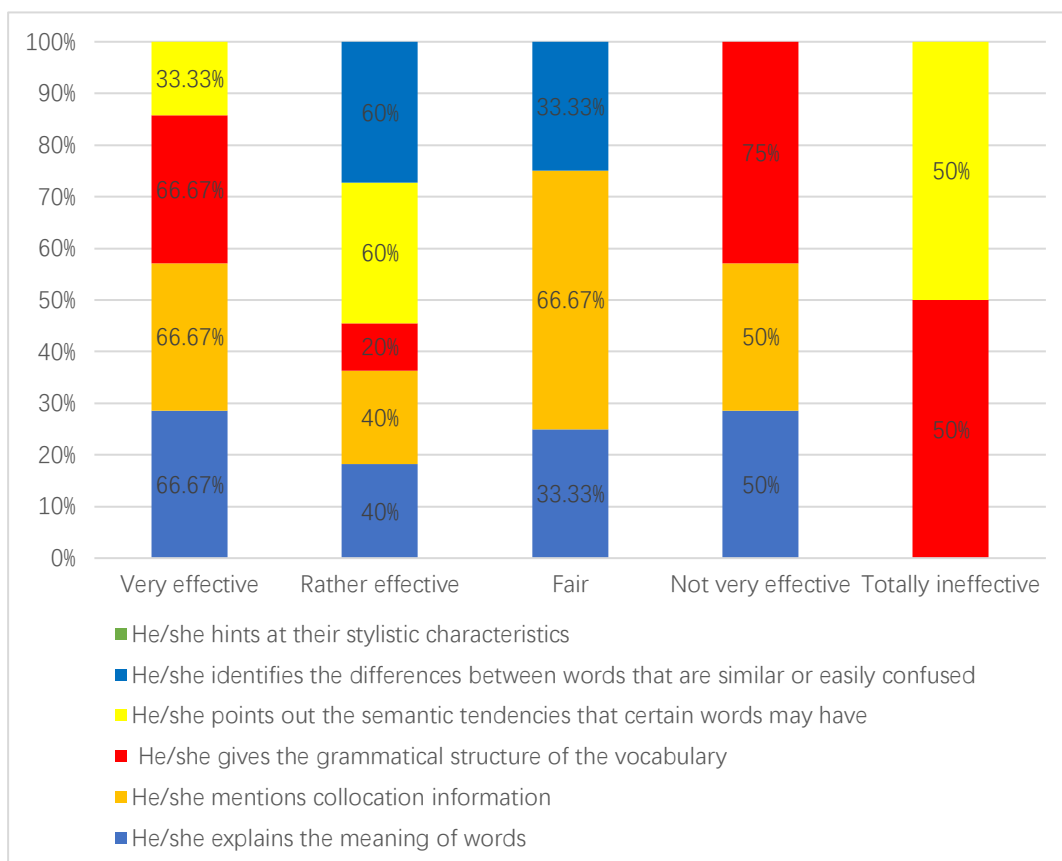


Table 29. Vocabulary teaching methods and satisfaction

From the above data, it can be seen that for the research of question 5, 3 students think the teacher's method at this stage is very effective, accounting

for 17.65%, 5 students think it is more effective, accounting for 29.41%, 3 students think it is average, accounting for 17.65%, 4 students think it is not very effective, accounting for 23.53%, and 2 students think it is completely ineffective, accounting for 11.76%. Overall, the percentage of students who thought the ordinary way of teaching vocabulary was not very effective was relatively large, about 52.94%. As seen from the above bar chart, the highest percentage of students who think the vocabulary teaching method is very effective without using the corpus is 66.67%, respectively: "He/she explains the meaning of words", "He/ He/she mentions collocation information", "He/she gives the grammatical structure of the vocabulary". The highest percentage of students who thought the effect was average was: "He/she mentions collocation information". The high percentage of students who thought it was less effective was: "He/she gives the grammatical structure of the vocabulary". Students who considered it totally ineffective did so because: "He/she points out the semantic tendencies that certain words may have" and "He/she gives the grammatical structure of the vocabulary".

Among the common approaches used by teachers, the more effective way is to explain the meaning of the words themselves and to expand the grammatical structure, which means that the key to learners' mastery of the meaning and usage of a word is "whether they can master the common word chunks that reflect the common meaning and usage" (Han 2011:97). The general idea of teaching word chunks is to put common words back into context (instead of isolating them) and to take into account the key contexts in which they are used, i.e., to extract chunks of words that can fully reflect typical class connections and collocations for attention and learning. These can be achieved by using a corpus, for example, (Pu, 2003:444) corpus-based English vocabulary teaching is in line with Lewis' (1993:993) advocacy of the idea of inputting a large number of authentic chunks as the basic unit of language learning. The corpus enables the automatic extraction of collocations and

learners can learn the typical collocations of words intuitively. And according to the previous, Tables 12, 13 and 14, it can be concluded that the corpus-based teaching model is very helpful for teaching English vocabulary to secondary school students, and most of them can try to learn to summarize the basic usage of vocabulary.

In question 8 of this chapter, "How does your teacher teach grammar in class?", ways of learning grammar without the use of a corpus were collected, as shown in Table 30.

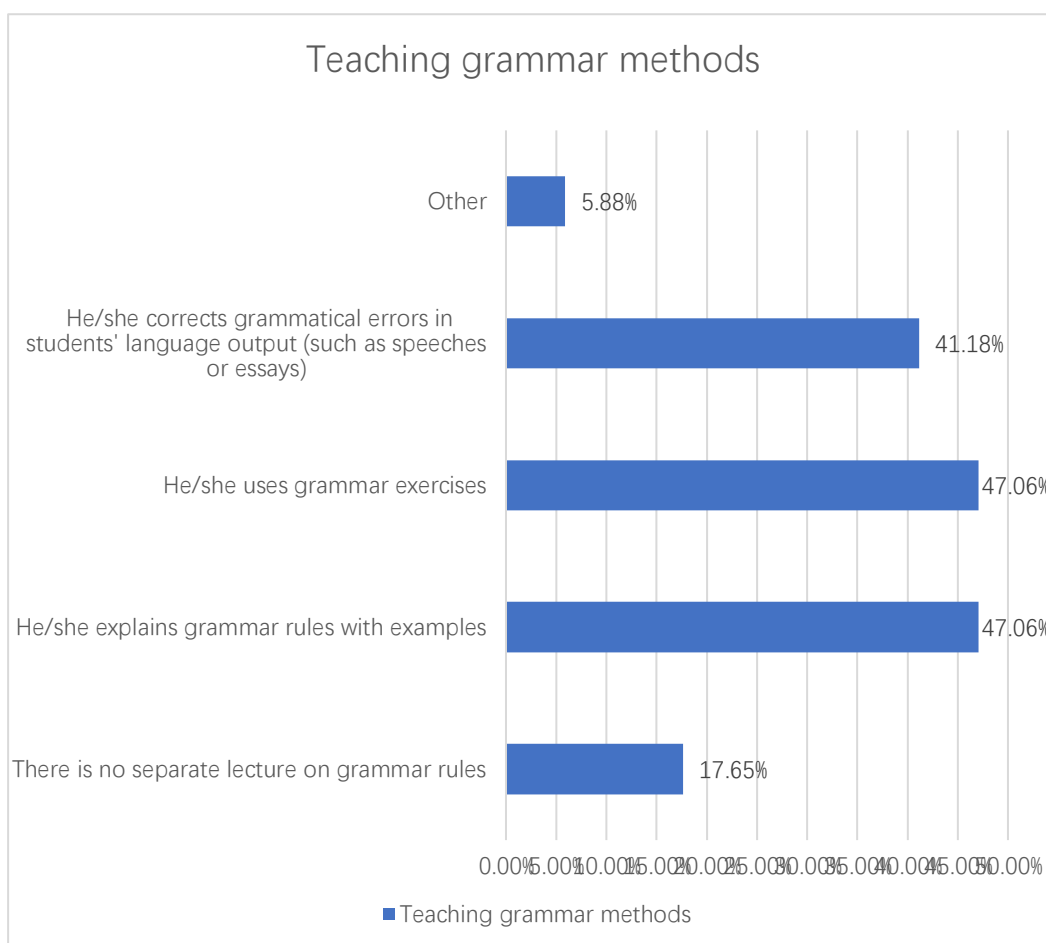


Table 30.Teaching grammar methods

In the above table, 3 students chose "There is no separate lecture on grammar rules" (17.65%); 8 students chose "He/she explains grammar rules with examples" (47.06%); similarly, 8 students chose "He/she uses grammar

exercises", also with 47.06%; 7 students chose "He/she corrects grammatical errors in students' language output (such as speeches or essays)", accounting for 41.18%, and one student chose "other", accounting for 5.88%. It can be seen that the most popular method of teaching grammar is to explain grammar rules with examples and to do written grammar exercises. The survey on the satisfaction of grammar teaching methods is shown in Table 31 below.

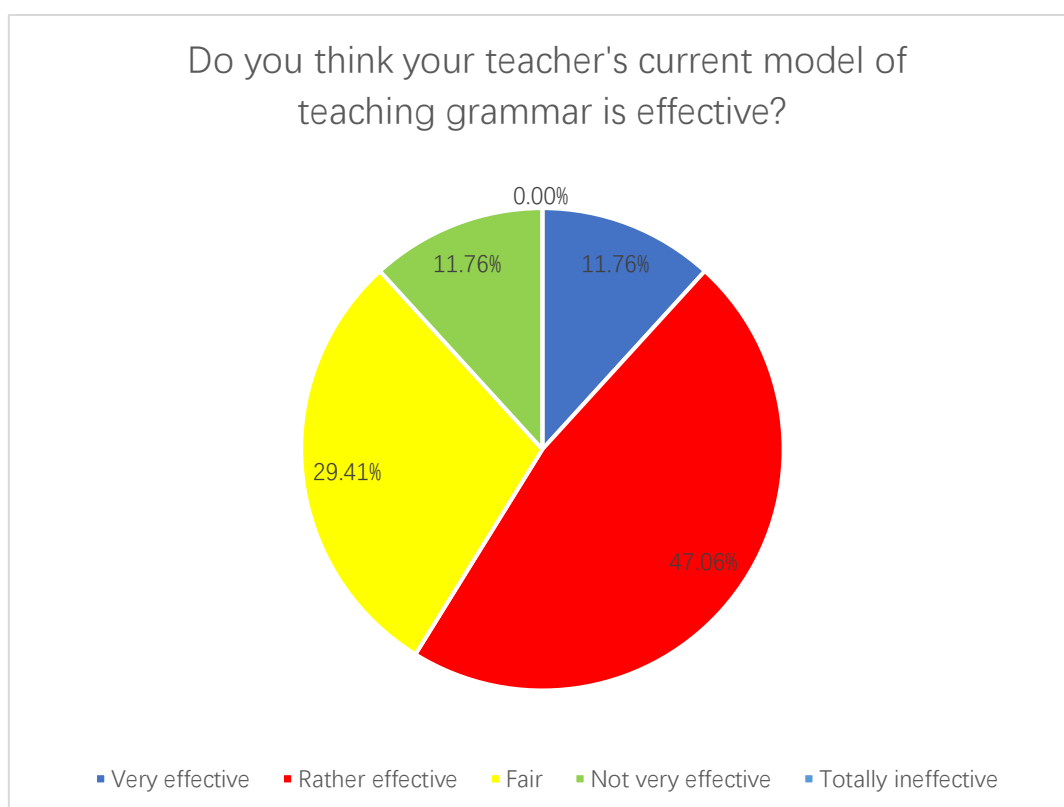


Table 31. Satisfaction survey of grammar teaching methods

Two students chose "Very effective", eight students chose "Rather effective", five students chose "Fair", two students chose "Not very effective", and no one chose "Totally ineffective". 2 students chose "Not very effective", and no one chose "Totally ineffective", 58.82% of the students chose the existing grammar teaching method. The grammar teaching method is effective.

The next step was to investigate whether learning grammar using the corpus would be more effective or what limitations or problems existed. The

results of question 10 of the questionnaire, "Please observe the following example. The only thing you can do is wait and see; Anything we could do was empty the bottle; What I want do is take a holiday right now; All thy said is hurry up. The above example shows the "infinitive as an epithet omitting to". Do you think you can infer the grammar rule by looking at the italicized part? (i.e., under what circumstances can the "to" be omitted when the infinitive is used as an epithet, and what conditions are usually required for the subject before the be verb?)", reflect the acceptance level of students who have not used the corpus when they use it for the first time to learn grammar, as shown in Table 32 below.

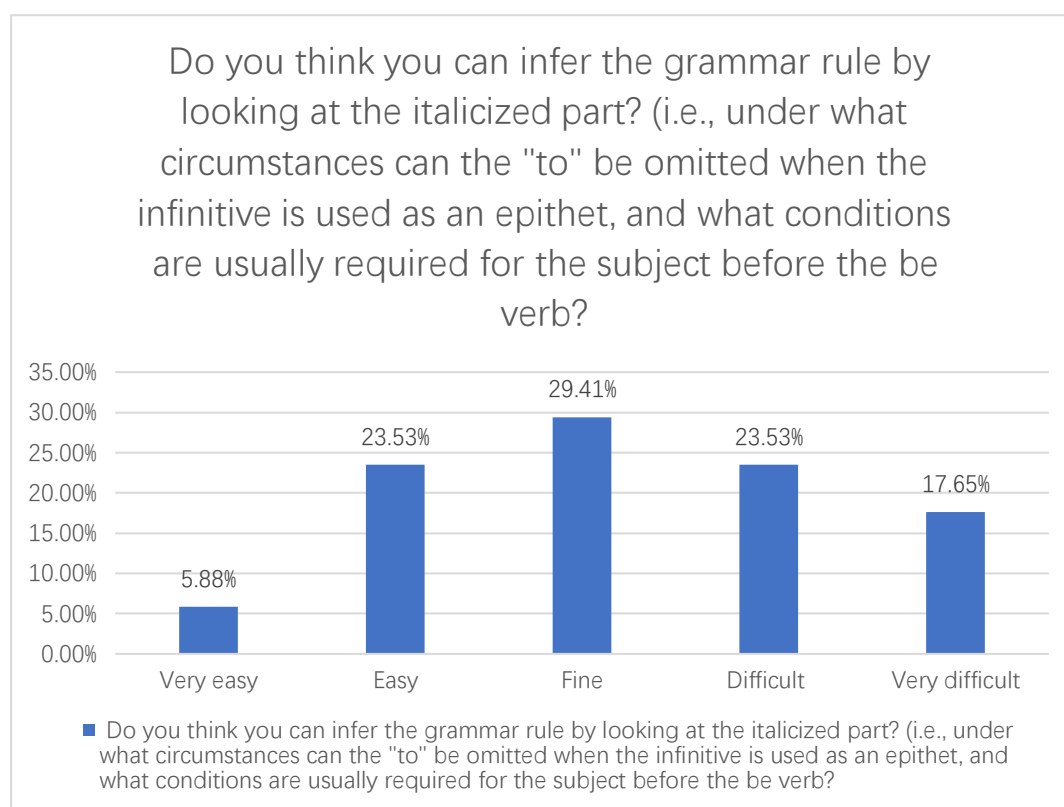


Table 32.Students' receptiveness about using corpora to learn grammar

As seen from the above bar chart, 5.88% of students found it very easy, 23.53% easy, 29.41% okay, 23.53% difficult, and 17.65% very difficult. Compared to the data in Table 30, it can be seen that the students did not master the corpus as

well as expected, instead only 29.41% of the students found this method easy, which is much lower than the 58.82% satisfaction with the traditional language teaching method. Therefore, I have the following recommendations for teaching grammar that is less effective than expected as reflected by the first use of the corpus:

1. Features of corpus-based functions and retrieval techniques: Under the existing conditions, teachers can arrange time to introduce the corpus to students initially according to the actual situation. This includes its construction, usage, and deepening students' impression through specific operation cases. Since the retrieval functions of the corpus are relatively complex and cannot be mastered overnight, it is necessary to arrange relevant post-class exercises for students so as to consolidate their learning achievements. Based on classroom demonstrations, teachers can also issue relevant corpus retrieval instructions for students to refer to.

2. Based on the principle of students' independent learning: this model is similar to the daily listening class lesson model. Using computer network classrooms for corpus-assisted English teaching has the following advantages.

a) Students can directly access the teaching resources released by the teacher according to the online teaching platform.

b) Students can use the grammar learning software on their computers to obtain reference resources for grammar learning.

c) It is easy for students to exchange and discuss with each other.

d) Teachers can enter the classroom and share summaries of excellent grammar knowledge points for students to observe and appreciate, and teachers and students can discuss and summarize grammar rules.

4.2.3. Questionnaire 3

In this chapter, the questionnaire "On the use of flipped classrooms in English

language teaching" was used to study teachers' feedback. 30 questionnaires were returned and 30 were valid. The following is the specific analysis.

In question 3, "How often have you used the method of flipped classroom?", 40% of teachers chose "never", 20% chose "once or twice", 10% chose "two to three times", and none chose "three to five times". 20% of teachers chose "Once or twice", 10% chose "Two to three times", no one chose "Three to five times", and 30% chose "Five times or more". "Another 30% of teachers chose "Five times or more".

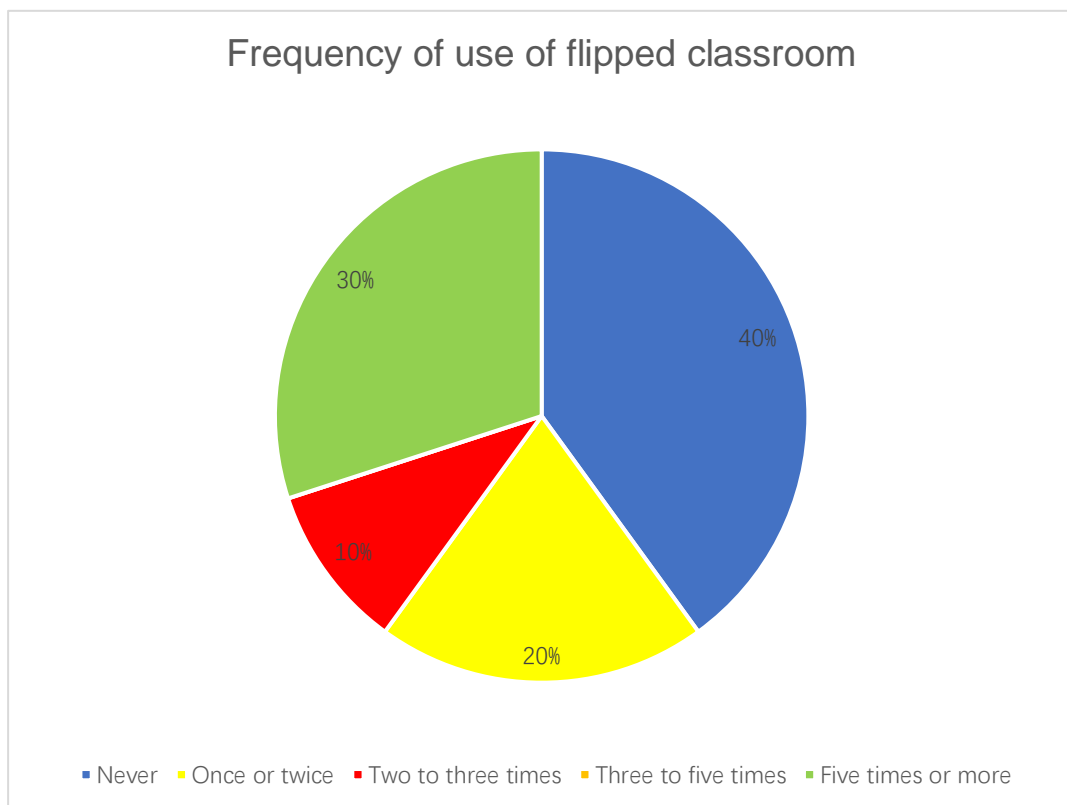


Table 33.Frequency of use of flipped classroom

60% of teachers use flipped classrooms, but they don't use them very often. For the 13th question of this chapter, "What do you think are the limitations of the flipped classroom?", we summarized the valid responses of 27 teachers who participated in the questionnaire and found that the problems that they faced in the practical application of the flipped classroom were as follows:

1. Increase the time cost and economic cost of teaching and learning. The operation of flipped classroom requires networked teaching environment and teaching micro-video, both of which increase the cost of teaching and learning. For micro-video, teachers can put basic concepts, principles and other knowledge units in the micro-video to explain, saving a lot of classroom time. So it seems to reduce the teaching burden, but in fact, it is not. There are two kinds of sources for micro-videos: teachers make them themselves and download them online. Obviously, to produce colorful and vivid micro-teaching videos requires not only artistic teaching design, but also excellent professional information technology, and of course, a lot of time and equipment. And although downloading videos online saves the trouble of making them by yourself, there are difficulties in finding videos suitable for real teaching situations, or they need to be modified after downloading, which will also face the same technical difficulties and increase the time and economic costs of teaching. For a networked teaching environment, a large number of computers, smartphones, network cables and technical maintenance are essential, which may constitute a considerable economic burden for students, teachers and schools in poor areas and poor families.

2. It causes the entertainment and casualization of learning, which is not conducive to the cultivation of learning ability. The teaching videos of flipped classroom can be watched repeatedly at any time, which on the one hand gets rid of the traditional classroom restrictions on the time and place of knowledge transfer, so that students can freely choose the time and place of learning; on the other hand, due to the lack of classroom tension and seriousness, students are easily distracted and easily disturbed by the environment, making it difficult to ensure learning efficiency. In order to ensure the learning effect, there are two ways: one is for students to watch the video repeatedly; the other is for teachers to increase the fun of the video, or even set up a game session to attract students. The first approach will increase students' learning time; the

second approach, in addition to increasing teachers' teaching costs, will cause the entertainment and casualization of learning, which is not conducive to cultivating students' concentration and the ability to think deeply.

3. It relies too much on students' self-consciousness, which makes it difficult for teachers to supervise students and ensure the teaching effect. In order to achieve better teaching effect, teachers should design teaching videos and online assignments carefully to achieve both knowledge and interest. However, no matter how rich and interesting the teaching videos and online assignments are, students' conscious and persistent efforts are indispensable to achieve good teaching effect. For students with poor self-motivation, teachers' reminders and supervision are indispensable, while in the flipped classroom model, students mainly learn outside the classroom, and teachers cannot participate in the pre-study process and supervise effectively, which makes it difficult to ensure the teaching effect.

4. The lack of teacher's leading role is not conducive to personality infection and idea transmission. The pre-class learning of flipped classroom is mainly the interaction between students and machines, classroom exploration is mainly the interaction between students, the direct interaction between teachers and students is relatively small, and it is difficult to show the teacher's personality charm.

Moreover, as early as 1998, J. Beentjes and T. van der Vort summarized a number of international studies that inferred that television has a dramatic negative effect on the higher cognitive skills needed for comprehension; it replaces after-school reading; students watch television with less mental engagement than reading requires; reduces children's attention span and problem-solving resilience.

In question 4, "In your opinion, a flipped classroom should have a teacher speaking time of...", 40% of the teachers thought it was "Ten to fifteen minutes", 50% of teachers thought it was "Fifteen to twenty minutes", and another 10%

thought it was "Twenty to twenty-five minutes" and no teachers chose "Less than five minutes", "Five to ten minutes" and "More than twenty-five minutes". The table below shows this:

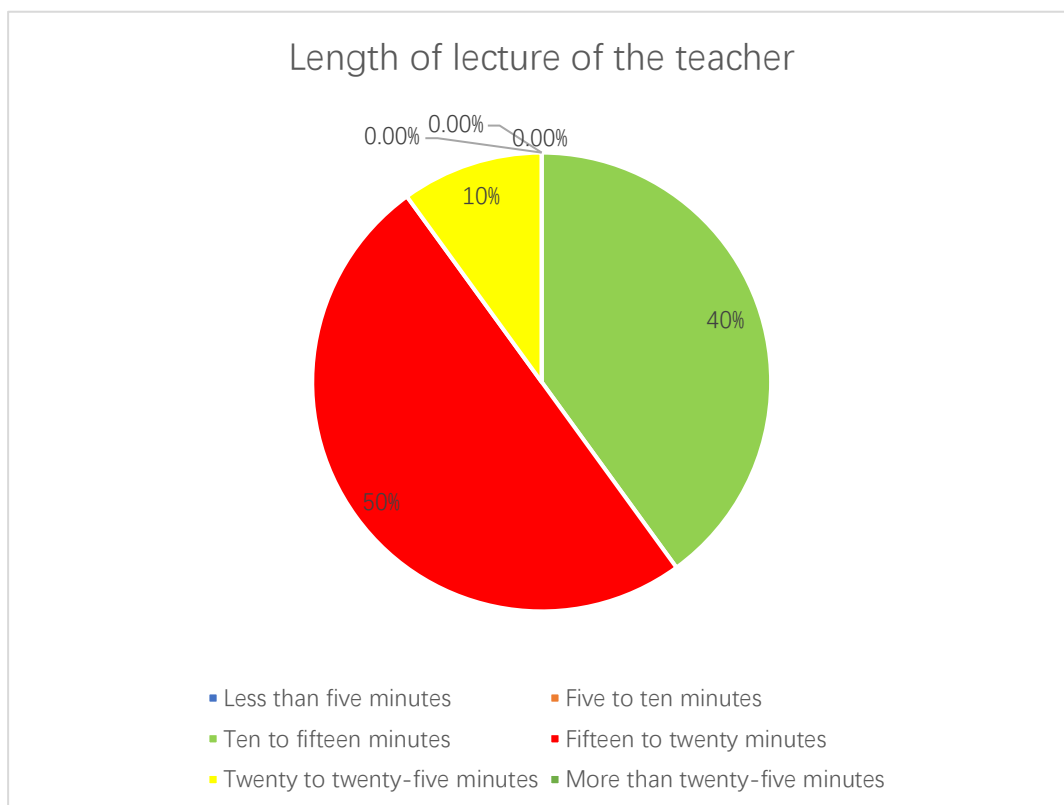


Table 34.Length of lecture

In contrast, in the traditional classroom teaching mode, teachers mostly follow the syllabus and teaching plan in a step-by-step manner, more often take the textbook as the teaching content, and the transmission of knowledge is one-way, so the teacher's role is more like a "teacher". However, the above table shows that the teacher's role in the classroom has changed from that of a lecturer to that of a facilitator and an answerer for students (Chang, 2018:6). The following is a list of changes in the role of the Chinese teacher from ancient times to the present (Chang ,2018:1374-1379):

Period	Status	Role	Cause
--------	--------	------	-------

xia shang zhou dynasty	High	with great virtue and high prestige	Rulers to consolidate power
Han Dynasty	Extremely high	moral saint	rejecting the other schools of thought and respecting only confucianism
Wei-Jin North-South Period-Ming and Qing Dynasties	Lower	Oppressed by the feudal system	Ruler autocracy
Before and after the founding of the People's Republic of China	Slowly improving	Knowledge Disseminators	The feudal dynasty was overthrown and the new China was established
Reform and opening up to the present	Gradually improving	Those who teach and educate	The development of society and the opening of exchanges with the outside world

Table 35. Overview table of teacher's role change in history

As shown in Tables 34 and 35 above, the role of teachers has been changing over time, and the emergence of a new teaching model, the flipped classroom, requires not only the cooperation of students inside and outside the classroom, but also more effort from teachers to change from "leading" to "guiding" to maximize the effectiveness of the flipped classroom. The teacher needs to make more effort to change from "leading" to "guiding" to maximize the effectiveness of the flipped classroom. Only when both teachers and students realize that students are the main subjects of learning can we insist that teaching activities start from students, improve from students' feedback, and create a classroom that aims to improve students' learning ability and overall

quality.

In question 9, "What factors do you think the flipped classroom is constrained by?", a survey was conducted on the constraints of the flipped classroom in the eyes of teachers, as follows.

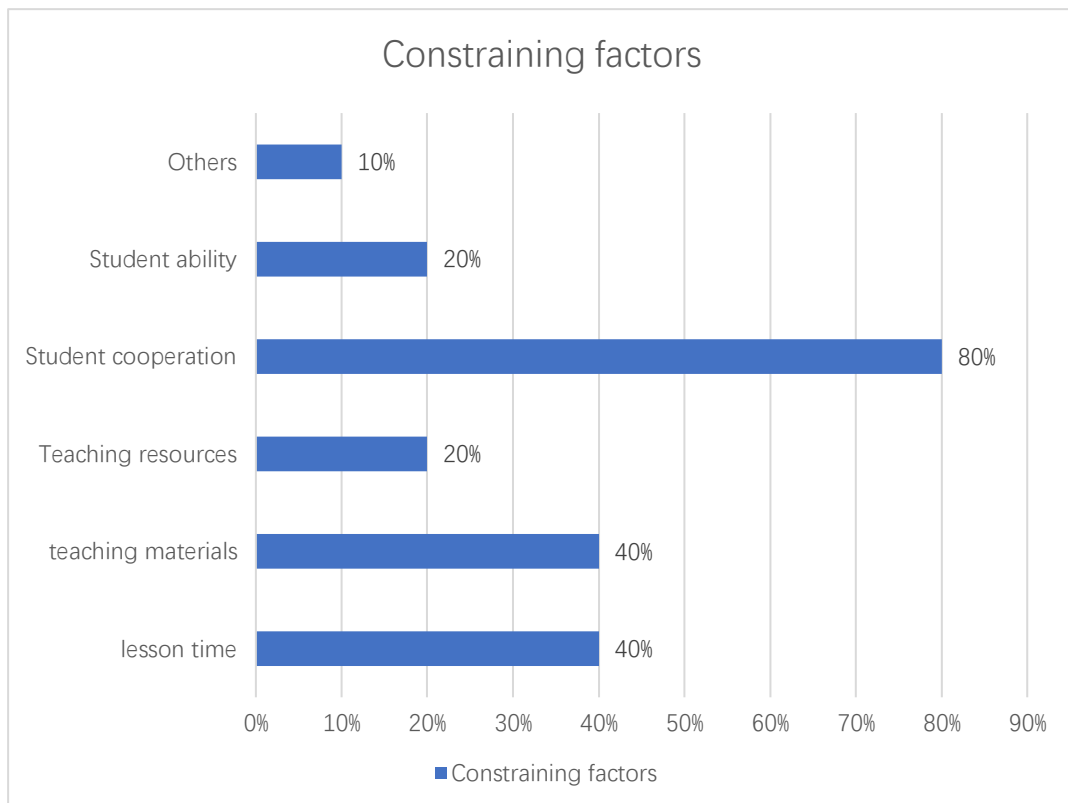


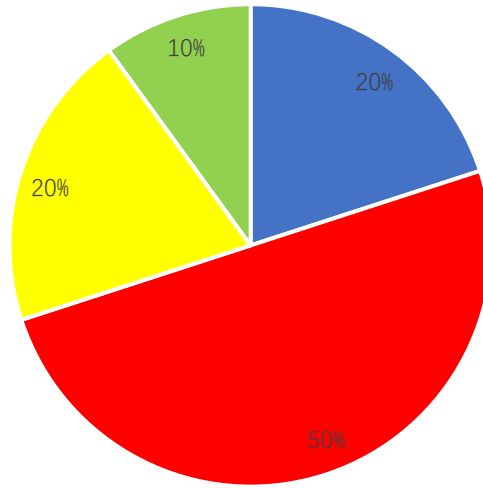
Table 36.Constraining factors

From the above table, it can be observed that 40% of teachers thought it was "lesson time", 40% thought it was "teaching materials", 20% thought it was "teaching resources", 80% thought it was "student cooperation", and 20% thought it was related to students' ability. "Teaching resources", "Student cooperation" accounted for 80% of the teachers, 20% of the teachers thought it was related to students' ability, and 10% of the teachers chose "other". The highest percentage was "Student cooperation". In this regard, we can learn from Chapter 2 that one of the important aspects of the flipped classroom is to watch videos before class to learn new knowledge so as to discuss with

classmates and ask questions to the teacher, but it is also obvious from questionnaire 1 that some students do not have the habit of studying before class, and the flipped classroom requires the use of the Internet to watch videos recorded by the teacher through cell phones or computers. However, the temptation of the Internet is so great that many students are playing on the Internet under the title of learning instead of really learning, so that students may not really complete the teaching tasks, and as time goes by, students will not be able to master the knowledge they should master, resulting in a vicious effect. Therefore, the successful implementation of the flipped classroom does depend on the cooperation of students as well.

As to whether students' interest and ability in independent learning are enhanced in the flipped classroom, we can see from the teacher's feedback in question 10, "Does the flipped classroom motivate students to learn?", that 50% of the teachers agreed that students did have increased autonomy in learning in the flipped classroom, 20% strongly agreed, while 20% did not, and 10% strongly disagreed, but overall, 70% of the teachers indicated that the flipped classroom did help increase students' autonomy in learning. This is consistent with the results of the analysis in Table 17 above and will not be repeated here.

Does the flipped classroom motivate students to learn?



■ Strongly Agree ■ Agree ■ Disagree ■ Strongly Disagree

Table 37. Teachers' Feedback

5. Conclusions

The purpose of this study was to explore whether the implementation of corpus-based classes and flipped classroom had facilitative or relatively limiting effects on secondary school students' English learning, and if so, in what ways. This study was conducted with students in remedial classes that I had taught in China, as well as with English teachers in remedial institutions in China. A variety of methods were used during the study, through questionnaires and post data collection. SPSS was used to analyze the data from the questionnaires.

One of the preliminary findings from this study is that students expressed a preference for and acceptance of the corpus-based flipped classroom for English language instruction and a willingness to learn in this mode of instruction. In addition, the implementation of this model allows teachers to make each preparation session more refined and targeted, and students to make each learning session more specific and in-depth, reinforcing English learning skills, summarizing learning experiences, and building English acquisition skills through repeated observation, discussion, and practice. In the past, many scholars have discussed the positive effects of corpus-based and/or flipped classroom on English teaching and learning, and have carried out teaching practices. However, the "discovery" teaching that relies on corpus participation can also motivate students to participate in the classroom, but it cannot guarantee the degree and amount of students' participation in classroom activities, let alone the indirect participation of students in the design of classroom activities through the interaction with the teacher in the pre-class session. In this regard, flipping the classroom can remedy this deficiency. However, simply "flipping" cannot bridge the demand for higher and more updated content due to changes in teaching purposes, processes, etc. Therefore, a close combination of corpus-based and flipped classroom can form a complementary advantage and break through the limitations of previous

teaching models.

Finally, this model can effectively guarantee the richness and immediacy of English teaching resources and solve the problem of insufficient resources for teachers in lesson preparation. At the same time, it can track students' learning situations and adjust the next teaching plan according to students' feedback at any time. It helps teachers improve the quality of lesson preparation and organize classroom activities effectively. In addition, the interaction between teachers and students and the communication between students are conducive to the creation of a more harmonious teaching atmosphere.

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Appendix I

The impact of flipped classroom on secondary school students' English learning ability

Flipped classroom: This refers to the realignment of time in and out of the classroom, shifting the decision to learn from the teacher to the students. In this model, teachers no longer take class time to deliver information that requires students to complete independent learning before class, where they can watch video lectures, listen to podcasts, read functionally enhanced e-books, and discuss with other students on the web, and be able to access the material they need at any time. Teachers are also able to have more time to interact with each individual. At the end of class, students plan their own learning content, pace, style and presentation of knowledge, while teachers use didactic and collaborative approaches to meet students' needs and enable their individual learning

Part I: Personal Information

1. Your grade level is: _____
2. Your academic performance:
A. Excellent B. Good C. Moderate D. Need to improve
3. The nature of the high school you are attending:
A. High-quality public B. General public

Part II: Questionnaire

1. Did you know about the flipped classroom as a teaching model before taking the questionnaire?

- A. Not at all

- B. Slightly
- C. Moderately
- D. Very
- E. Extremely

2. Have you ever studied the theoretical contents of a topic at home before class?

- A. Yes
- B. No

3. How much time are you willing to spend before class on self-study of teaching contents?

- A. Not willing
- B. Less than 20 minutes
- C. 20 to 40 minutes
- D. More than 40 minutes

4. After studying before class, do you feel more confident and willing to participate in class activities?

- A. Very confident
- B. More confident
- C. I'm not sure

3. ⁷After watching the learning video, can you complete the pre-class exercises independently?

⁷ The illogical numbers here are due to the fact that in the web version of the survey there are links to jump to the questions, for example, students who choose "yes" in the second question will answer a different question than those who choose "no".

- A. No
- B. I can complete part of it
- C. I can complete all of it

5. Is the classroom group discussion helpful to your English learning?

- A. No
- B. A little
- C. It helps a lot

6. Can the flipped classroom model improve your interest in learning English?

- A. No
- B. It can improve a little
- C. A lot

7. When you encounter a problem in the flipped classroom, do you ask your classmates or look for information to understand it?

- A. No
- B. Rarely
- C. Yes

8. Under the flipped classroom model, the teacher's lecture time in class is shortened and our students' activity time is increased?

- A. Not really
- B. Not really sure
- C. Yes

9. Through the flipped classroom, can you reflect on and summarize your English learning methods?

- A. Never
- B. Occasionally
- C. Often

Do you think the flipped classroom provides a diverse range of resources?

- A. yes
- B. no

10. Which aspect of the flipped classroom do you find most satisfying?

- A. Strong student subjectivity
- B. Free learning time
- C. The group learning is more relaxed

12. In the flipped classroom model, what are the assessment methods for learning activities? [Multiple choice] *

- A. Self-assessment
- B. Student-student assessment
- C. Teacher-student evaluation

13. What skills can you improve in the flipped classroom model? [Multiple Choice](Multiple options available) *

- A. independent learning ability
- B. communication and expression skills
- C. independent thinking ability
- D. Problem-solving skills

14. Can flipped classroom help you _____? [Multiple Choice](Multiple options available) *

- A. effectively review the lessons or other contents you have learned at regular intervals
- B. facilitate classroom group work, communication and discussion to deepen your understanding of what you have learned
- C. develop critical thinking and find solutions to problems from various aspects
- D. to have enough time to practice in class, which can effectively help you consolidate what you have learnt

15. Do you support the promotion and popularization of the flipped classroom personalized teaching model in schools?

- A. Support
- B. Don't support

16. Do you like the flipped classroom method? Please write down the reasons [Fill in the blank] *

Appendix II

An investigation of the application of corpus-based teaching models in English classrooms

This questionnaire is designed to investigate the application of corpus-based teaching models in English classrooms and to provide data analysis for English teaching research, without involving personal privacy issues and in anonymous form.

Your grade level:

Junior 1 Junior 2 Junior 3 Senior 1 Senior 2 Senior 3

1. Have you ever heard of a corpus?

Have heard of it (Please skip to question 3) No (Please skip to question 11)

2. In which course did you come across corpus knowledge or resources?

[Multiple choice] *

- Basic English
- Reading
- Writing
- Listening
- Grammar
- Advanced English
- Translation
- Other _____

3. What teaching content does your teacher mention or use corpus resources for? [Multiple choice] *

- Vocabulary: including word sense analysis, collocation, etc.
- Grammar: tense, syntactic structure, etc.
- Discourse: articulation, analysis of chapter structure, etc.
- Specialized English: business, academic English, etc.
- Other _____

4. What is the specific way to carry out the teaching model based on corpus resources? [Multiple choice] *

- Students search on the machine independently

The content is decided by the teacher or chosen by the teacher, and students learn individually or in small groups.

- Teacher retrieval in class

In-class teacher retrieves in the corpus immediately and leads students to discuss and learn.

- Teacher's pre-class retrieval

The teacher selects the retrieved content, makes the necessary edits and then presents the content to the students for discussion and learning.

- Other _____

5. Do you think this teaching model is effective?

- Very effective
- Rather effective
- Fair
- Not very effective
- Not effective at all

6. Then, what do you think is the effectiveness of this teaching model? [Multiple choice] *

- It can provide language that fits the actual usage situation

- it brings out the language facts in bulk that contain context
- it activates attention to linguistic phenomena
- it can develop the cognitive ability of analysis and induction
- it can improve the initiative and motivation of learning
- it can improve the understanding of language
- Other _____

7. What do you think are the problems with this teaching model? [Multiple choice]

*

- The corpus is difficult to obtain, especially the pedagogical corpus which is suitable for students' level
- Retrieval methods (especially when extracting complex structures) are difficult to master
- The volume of search results is large, and it takes time and effort to analyze them one by one
- The vocabulary in the index line context is too difficult to understand
- insufficient ability to operate computers and related software
- lack of ability to summarize search results, not very good at finding patterns based on phenomena
- Other _____

8. At what learning level do you think the corpus-based teaching model is suitable for students?

- Secondary school students
- Undergraduate students
- Graduate students or above

9. Do you think the use of corpus in class or after class is more beneficial or

burdensome to learning? Please give your reasons [fill in the blank] *

2.⁸ How does your teacher teach vocabulary in the classroom? [Multiple choice]

*

- He/she explains the meaning of words
- He/she gives examples
- He/she practices filling in the blanks, making sentences, translating, etc.
- He/she asks the students to explain the vocabulary
- Other _____

3. What do you think of the examples teachers use when teaching vocabulary?

(1). Difficulty of vocabulary.

Appropriate Inappropriate

(2). Contained typical usage.

Yes No

(3). Contributes to the acquisition of vocabulary.

Yes No

4. When your teacher teaches vocabulary [Multiple choice] *

- He/she explains the meaning of words
- He/she mentions collocation information, e.g. an adjective usually goes with certain nouns
- He/she gives the grammatical structure of the vocabulary
- He/she gives the grammatical structure of the vocabulary, e.g. a verb is usually followed by a *doing* or *that* clause
- He/she points out the semantic tendencies that certain words may have, e.g., certain words are usually used in conjunction with words that have a negative _____

⁸ The illogical numbers here are due to the fact that in the web version of the survey there are links to jump to the questions.

connotation

- He/she identifies the differences between words that are similar or easily confused
- He/she hints at their stylistic characteristics. For example, certain words are often used in news style

5. In general, how do you think your teacher currently teaches vocabulary?

- Very effective
- Rather effective
- Fair
- Not very effective
- Totally ineffective

6. Please observe the following examples.

Example 1: lack

but it eventually fell by the wayside for ***lack of*** interest

Lack of regular exercise may increase the chance of illness.

They simply ***lack*** the subtle energy fields or mental configuration

People do not ***lack*** strength, they ***lack*** will.

He's ***lacking*** in practical experience.

Do you think you can summarize the three uses of lack based on the sentences arranged above (observe the italicized bolded parts)?

- Very easy
- Easier
- OK
- More difficult
- Very difficult

Example 2 adverb of degree+ important

It's ***quite important*** for us.

They are not just my pets to me, they are also my ***very important*** family members

Do you think you can master the expression "it is important" based on the sentences presented above (observe the italicized parts)?

- Very easy
- Very easy
- Fine
- Difficult
- Very difficult

7. The example in the above question is an index line extracted from an English corpus. Do you think it would be effective to introduce such an index line in the classroom to support vocabulary teaching?

- Very effective
- Rather effective
- Fair
- Not very effective
- Not at all effective

8. How does your teacher teach grammar in class? [Multiple choice] *

- There is no separate lecture on grammar rules
- He/she explains grammar rules with examples
- He/she uses grammar exercises
- He/she corrects grammatical errors in students' language output (such as speeches or essays)
- Other _____

9. Do you think your teacher's current model of teaching grammar is effective?

- Very effective
- Rather effective
- Fair
- Not very effective
- Totally ineffective

10. Please observe the following example.

The only thing you can do is wait and see.

Anything we could do was empty the bottle.

What I want do is take a holiday right now.

All thy said is hurry up.

The above example shows the "infinitive as an epithet omitting to". Do you think you can infer the grammar rule by looking at the italicized part? (i.e., under what circumstances can the "to" be omitted when the infinitive is used as an epithet, and what conditions are usually required for the subject before the be verb?)

Very easy Easy Fine Difficult Very difficult

11. Do you think that introducing the index line as in the question above in your classroom would help you learn grammatical phenomena or rules? [Single-choice] *

- Very helpful
- Somewhat helpful
- Fairly
- Not very helpful
- Not helpful at all

Appendix III

On the use of flipped classrooms in English language teaching

1. How long have you been teaching?

0-5 years

5-10 years

10-15 years

15-20 years

2. The grade you are teaching is

3. How often have you used the method of the flipped classroom?

Never

Once or twice

Two to three times

Three to five times

Five times or more

4. In your opinion, a flipped classroom should have a teacher speaking time of...

Less than five minutes

Five to ten minutes

Ten to fifteen minutes

Fifteen to twenty minutes

Twenty to twenty-five minutes

More than twenty-five minutes

5. What are your thoughts on the state of flipped teaching?

Not at all satisfied

slightly satisfied

Very satisfied

Extremely satisfied

6. Do you agree with the flipped teaching method?

Strongly Agree

Agree

Disagree

Strongly Disagree

7. Do you think flipped classrooms can improve students' overall skills?

Strongly Agree

Agree

Disagree

Strongly Disagree

8. Does the flipped classroom method pose a challenge to you?

Strongly Agree

Agree

Disagree

Strongly Disagree

9. What factors do you think the flipped classroom is constrained by?

lesson time

teaching materials

Teaching resources

Student cooperation

Student ability

All of the above

Others

10. Does the flipped classroom motivate students to learn?

Strongly Agree

Agree

Disagree

Strongly Disagree

11. What are your preferred teaching methods?

Micro-lessons with lesson plans and in-class question and answer sessions

Group discussions and debates

Strings of questions

Traditional teaching

Other

12. In the survey, a certain percentage of students felt that the flipped classroom did not

Improve their academic performance. How do you interpret this?.

Students are unable to understand the nature of knowledge

Insufficient pre-reading due to the pressure of school work

Incompatibility between subjects and flipped teaching

Knowledge in the flipped classroom is scattered and not systematic

Different levels of students, difficult to cater for all

Time problems in class, unable to complete teaching tasks

Student discipline problems in flipped classrooms, which affects the teaching process

Other

13. What other suggestions do you have for research on the use of the flipped classroom model in English classroom teaching?