Research and practice of flipped classroom teaching mode based on guidance case

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Abstract

This paper chooses 144 students as subjects to conduct a flipped classroom experiment teaching. The results show that before the experiment students from the experimental class and control class universally lack English learning interest, have no habit of preparing lessons before class and are short of consciousness of autonomous learning. However, after the experiment, it is found that score of the experimental class is significantly higher than that of the control class. Furthermore, students' learning attitude, interest and habit, autonomous learning ability, cooperative learning consciousness and degree of satisfaction for learning English in the experimental class are higher than those of the control class. Therefore, it suggests that the flipped classroom teaching mode can effectively stimulate students' interest in learning English, develop their autonomous and cooperative learning abilities, enhance their English learning proficiency and influence the development of English learning attitude and habit actively.

1 Introduction

In the Outline of the National Medium and Long Term Education Reform and Development Plan (2010–2020), it is pointed out that "information technology has revolutionary influence on education development, and we must attach great importance to it. We should promote the modernization of education content, teaching means and methods, strengthen the development and application of high-quality education

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resources, and strengthen the construction of network teaching resources system. Meanwhile, it is imperative to set up and develop network learning courses, renew teaching concepts, improve teaching methods and strengthen teaching effect" (Chinese Ministry of Education 2010). In the T*en-Year Development Plan of Education Informatization (2011–2020),* promulgated by the China Ministry of Education in 2013 also puts forward that "education should be people-oriented, innovation of educational ideas should be prioritized, construction of high-quality educational resources and information-based learning environment should be built, and innovation of learning methods and modes should be the centered, and modern information technology and education should be explored. It is necessary explore full-scale and in-depth integration between education and information technology, promote innovation of educational ideas and education mode by virtue of informationization, and give full play to the supporting and leading role of educational informatization in educational reform and development" (Chinese Ministry of Education 2012). *The Horizon Report of the New Media Alliance (2015 Higher Education Edition)* and *the Horizon Report of the New Media Alliance 2016 Higher Education Edition* point out that the future educational and teaching reform mainly involves four aspects. First, blended learning will become more and more popular, which is a recent trend in the development of higher education. In terms of technology, flipped classrooms and self-contained equipment will enter the mainstream application of higher education in the next 1–2 years (Yin et al. 2016:45). Thus, the rapid development of modern information technology and its wide application in the field of education and teaching not only provide an opportunity for the development of education and teaching reform, but also promote the change of education and teaching ideas, the innovation of teaching mode, the pluralism of teaching process and the innovation of teaching means (Zhang and Zhou 2013). Flipped classroom teaching based on guidance case has become a hot word in the field of educational innovation in the world (Ding 2017:102).

2 Literature review

2.1 What is flipped classroom?

The definition for the flipped classroom abroad is comparatively fuzzy at first. It just refers to a kind of way of learning which changes the traditional learning way (Zhang 2012). Gonzalez Brian argues that the emergence of the flipped classroom is an example of exploring learning space for students and it provides students with more learning interest. He also believes that in the flipped classroom, the instruction of knowledge happens outside the classroom. During the learning, students can follow their own interest to select what they want more freely (Baker 2000). The definition of the flipped classroom given by Gonzalez Brian points the difference of teaching procedures and students' experience between the traditional classroom and the flipped classroom (Wang and Li 2012). Jonathan Bergman together with other teachers states that the flipped classroom is a kind of teaching method and its biggest characteristic is to provide students with a personalized learning environment (Yang and Yang 2012), which sets up the prototype of the flipped classroom. Meanwhile, Jin (2014), Zhong et al. (2013) and Zhu and Zhu (2013) argue that so-called flipped classroom is to

change the traditional teaching structure, that is, it has changed the teaching mode where teachers teach students in class during the day, and students go back home doing homework on their own after class.

2.2 Literature review of the flipped classroom

2.2.1 Research practices abroad

As the flipped classroom has developed over a decade abroad, but it can be traced back to 1991.The physics Professor, Eric Mazur created Peer Teaching Method (Peer Instruction), which is the most representative theory, and also became the theoretical foundation for the development of the flipped classroom (Little 1991). Although Eric Mazur did not put forward the concept of "flipped classroom," it's not hard to detect the shadow of the flipped classroom from the peer teaching (Fu 2010). In 2000, Lage et al. (2000) published an article which has drawn widespread attention and promotion focused on how to more effectively use the flipped classroom to carry out differentiated teaching according to students' different learning styles. From then on, at the 11th international conference on university teaching in 2000, Baker discussed the essence of the flipped classroom: a teacher is no longer a "dictator" in the classroom, but a guide for students to learn knowledge.

Additionally, in the related teaching practices, foreign researchers have made some successful experiences as well. In 2007, in order to help students who asked for a leave make up a missed lesson, Jonathan Bergmann and Aaron Sams (2012) began a teaching reform experiment. After nearly 4 years of teaching reform experiment, they found that the flipped classroom can let teachers have more time for personalized teaching, and help to promote a wider and more intimate relationship between teachers and students, which can contribute to students' stronger and lasting learning motivation (Fu 2010).

In 2011, Salman Khan made an impassioned speech in the TED (Technology, Entertainment, and Design) conference, which triggered a high concern for the flipped classroom among the America's elites. Compared with the traditional teaching mode in which teachers teach students new knowledge during the day in the classroom and students do homework at night at home, it's the opposite of that (Zhang and Zhang 2012). Bill Gates says that the emergence of an important person not only changes the world, but also changes the flipped classroom as well. It is Salman Khan who arouse a revolution of teaching reform. There is no doubt that this is a revolution in education, an important innovation of education and an overthrow of the traditional teaching mode (Davies et al. 2013).

Typical teaching case abroad As a non-profit educational institution, Khan Academy provides high quality teaching micro videos in the form of online video lessons to the world. In 2004, Khan tutored his cousin Nadia math through Yahoo chat software, interactive writing board and network telephone. With the help of Salman Khan, Nadia made a great progress in her math learning (Roehl et al. 2012). After that, he posted his math tutoring material into videos on a video website. More people shared his videos and spoke highly of them. Then, in 2006, Salman Khan founded Khan Academy. Specifically, the flipped classroom teaching mode of Khan Academy is mainly composed of three modules: instructional designers' module, teacher module and student module, as shown in Fig. 1.
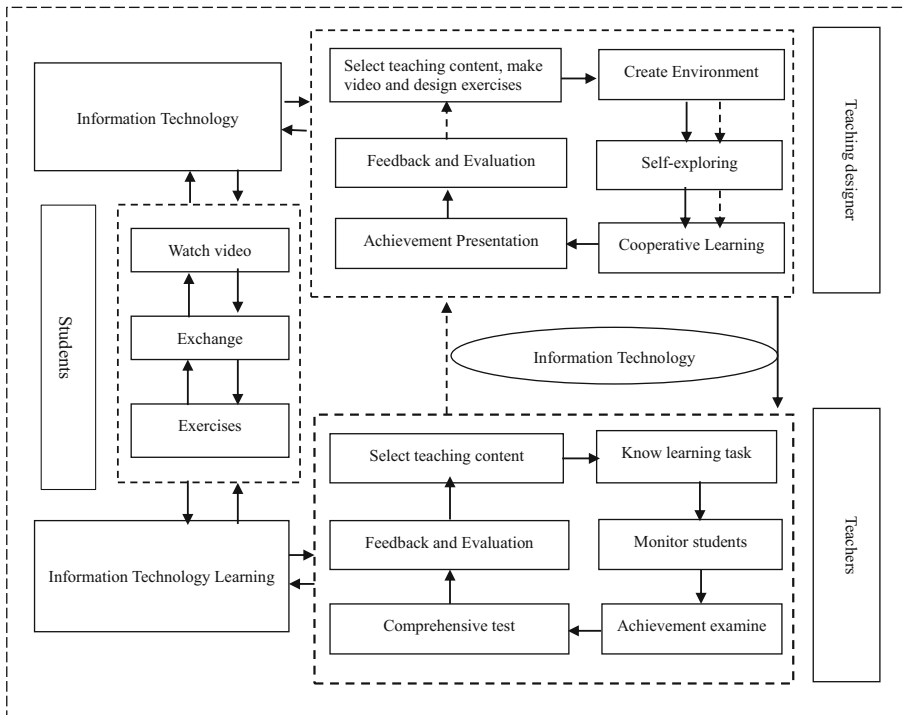
Fig. 1 The Flipped Classroom Teaching Mode of Khan Academy

1) *Instructional designers' module.* The instructional designers in Khan Academy need to do two tasks: One is to create a learning environment so that students can conduct independent exploration, collaborative learning, communication and feedback in the platform. The second is to determine teaching contents, make corresponding teaching videos according to the teaching contents and design exercises.

2) *The teacher module.* The teachers in Khan Academy need to do more work. First of all, they need to determine subjects and contents of their teaching and to develop learning tasks. Then, they track and urge students to learn them online and provide necessary guidance and help. Eventually, they make inspection and evaluation to students' learning achievements and give final feedbacks to them.

3) *The student module.* The students in Khan Academy take mainly part in three learning activities. The first is to learn teaching contents by watching teaching videos. The second is team communication and collaboration on the platform. The third is to practice after class and consolidate the knowledge.

2.2.2 Research practices in China

In 2012, the flipped classroom teaching mode began to draw researchers' attention in China. After 2013, the researches on it are growing rapidly, and it becomes a hot

research topic. But the researches in China are still at an initial and explorative stage. It is mainly involved in the following aspects:

Firstly, many researches only focus on the introduction of foreign and domestic flipped classroom teaching cases and experience. For example, Zhang et al. (2012) with other people introduced and analyzed the flipped classroom teaching cases in Lake Elmo Elementary School. Wang and Li (2012) revealed the development history of the flipped classroom in the United States, discussed its basic characteristics, and put forward effective implementation steps. Yang and Yang (2012) introduced ten foreign successful flipped classroom teaching cases. Chen (2015) analyzed the flipped classroom teaching cases in Khan Academy and Woodland Park High School. Liu wrote an article introducing the application of the flipped classroom teaching mode in some schools in China.

Secondly, some researchers explore the feasibility of the implementation of the flipped classroom in China. Wang Su-min carried on an investigation and study on the acceptance of the flipped classroom mode among Chinese College English learners (Wang and Zhang 2014) and Lu (2014) made some tentative study and researches on combining the flipped classroom teaching with college English learning.

Thirdly, based on the relevant researches, researchers in China have built the mode of the flipped classroom. Although there are differences in each mode, as a whole, it is divided into two stages: before class and during the class such as Zhong et al. (2013), Zhao (2014), Zhang et al. (2012), Wu and Zhao (2014), Wang (2013a) and so on. Zhong et al. (2013) did some researches on the flipped classroom idea by constructing the flipped classroom mode of the Tai Chi circle style fusing Chinese traditional culture and Bloom's teaching goal classification theory. Zhao (2014) analyzed the advancement of the flipped class and the applicability and limitations of the implementation in China, and pointed out the theoretical construct of knowledge internalization during the flipped classroom teaching. Wu and Zhao (2014) studied the teaching design of the flipped classroom combining students' online learning. Wang and Zhang (2013) implemented the flipped classroom teaching mode in professional English class.

Typical teaching case in China The flipped classroom teaching experiment is very successful in Changle No.1 Middle School in Shandong China, which originates students' online learning during the vacation. The teaching mode is always guided by the learning plan through the whole class. The learning plan points out the direction for students' autonomous learning, and records problems and puzzles of students encountered in the process of autonomous learning (Li et al. 2012). The learning plan has basic test questions according to the learning content, which is used to test students' autonomous learning effect. And it is also equipped with the extension questions used to improve students' inquiry ability and cooperation ability. Concretely, the flipped classroom teaching mode is called "two-phase, four-procedure and ten-link" (see Fig. 2).

The "two-phase" refers to the self-teaching and questioning stage and training and presentation stage. The "four-procedure" refers to the four steps teachers need to do before class as academic hour planning, micro video design, guidance case making and micro lesson record. "Ten-link" refers to the students learning activities in class, including target guidance, self-study materials, micro video watching, student's mutual learning and online learning in self-questioning stage.
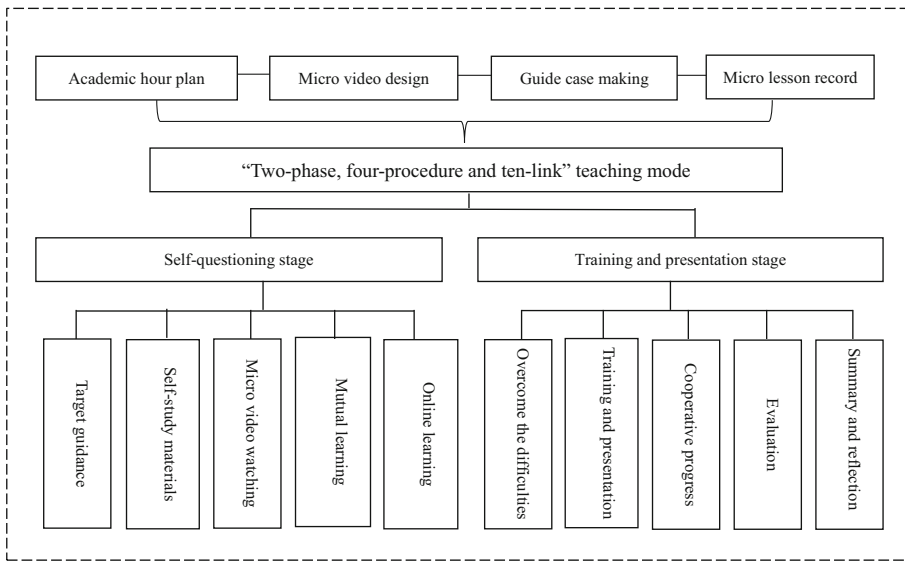
Fig. 2 The Flipped Classroom Teaching Mode of Changle No.1 Middle School

3 Research design and methodology

3.1 Research subjects

In this experiment, subjects are from four natural parallel classes majoring in preschool education. Class one and class two are grouped as an experimental class, which is conducted in the flipped classroom teaching mode. Class three and class four grouped as a control class, which will be taught under the traditional teaching mode.

3.2 Research questions

The following research questions (RQs) informed our project:

RQ1. Can the flipped classroom teaching mode help to stimulate students' interest in learning English?
RQ2. Can the flipped classroom teaching mode contribute to improving students' cooperative and autonomous learning ability?
RQ3. Can the flipped classroom teaching mode conduce to improving students' English level?

3.3 Research instruments

The data used in this research are mainly collected through pre-test, post-test and two questionnaires and analyzed by the statistical software SPSS 22.0. The data

collected from the pre-test, post-test, questionnaire one and questionnaire two are respectively analyzed to find out similarity of English proficiency before the experiment, effectiveness of the flipped classroom, feasibility of carrying out the experiment and improvement of students' learning attitude, learning interest, self-confidence, autonomous learning and cooperative learning.

3.4 Research methods

This study conducted four parallel classes majoring in preschool education in Baoji Vocational and Technical College, Shaanxi, Province. Each class had students from different socio-economic backgrounds. Expressions of interest to participate in the study were displayed on the college noticeboards. Two classes were formed as an experimental class conducting the flipped classroom teaching mode based on the guidance case, and the total number of the subjects is 72 aged 16–17. Two classes were formed as a control class conducting the traditional classroom teaching mode, and the number of the subjects is 72 aged 16–17. Through questionnaires and tests before and after the experiment, the research was implemented and designed to explore whether the flipped classroom teaching mode based on the guidance case is superior to the traditional classroom teaching mode in terms of students' satisfaction, acceptance, and interest in English learning, learning attitude, self-confidence and improvement of learning results.

3.5 Practice of the flipped classroom

In present research, the Basic English teaching is divided into two stages: before class and in class. Before class, each class teaching goal, emphasis and difficulties based on teaching contents and resources are determined, and then the learning-guide list is prepared. The learning-guide list will be distributed to students a week in advance. After the students get the guidance case, they learn the new lesson according to prompts and requirements of the learning-guide list. The knowledge points that individual students cannot understand will be discussed in groups and the ones which they cannot deal with by discussing will be collected by group leaders and be brought to the classroom to turn to the teacher for help (Mason et al. 2013a). Class discussion and evaluation feedback are included in class. In the class discussion session, students firstly present their learning results before class in individuals or groups. Secondly, questions each group meets will be collected and students explore those questions as a whole. Thirdly, with the help of the teacher, the problems are solved to achieve absorption and internalization of knowledge in the end (Bishop and Verleger 2013). Evaluation feedback link is carried out after completing the first three links, during which evaluations and suggestions towards the students learning status and performances are given in the whole class and measures for further improvement and future direction of efforts are put forward. Finally, the teacher and students select an excellent group through voting secretly. The learning-guide list is shown as Table 1:

1) *Learning of words and expressions.*

In this part, two activities are conducted. Firstly, one student reads words, the other student listens to her carefully judging if there are mistakes in pronunciation. If so, they

Table 1 the Learning-Guide List

Everyday English: The Best Way to Make Your Dreams Come True Is to Wake up.

Topic	Unit 5 Reading and Writing
Learning objectives	**Students are able to:** 1. Read and spell the following words and expressions correctly: series, appearance, give suggestions on, attractive, attached file, feel free to do. 2. Master the important expressions in the text: be sorry about, ask sb. to do sth., 3. Attend a meeting, be right for sb. look forward to, detailed information. 4. Master the format of e-mails.
Learning guidance	Learn to read the words according to the pronunciation or with the help of your mobile phone. Get the main idea of the text by reading it over and over again. Solve the problems through group discussion.
Autonomous learning	**1. Read the text and answer the questions:** Why couldn't Mr. Becker meet Mr. White at the Hilton Hotel? What series of computers does Mr. Becker suggest? **2. Read the text again, and try to translate the following phrases into Chinese:** Be sorry about, attend a meeting, and be right for sb. look forward to, detailed information. My /Our questions:
Cooperative exploring	**1. Please try to translate the following sentences into Chinese:** 1. I am really sorry about not being able to meet you at the Hilton Hotel this afternoon. 2. The general manager asked me to attend a meeting with him. 3. Now let me give you some suggestions on the computers you want. 4. You can find the detailed information in the attached file. 5. If you need any more information, please feel free to call me at 888765. **2. Read the text again and try to find out how many parts the text is made up of.** **3. Now can you say how to write an e-mail?** **4. Suppose you were Mr. White, please write an e-mail to Mr. Becker to say that you want to buy the computers he recommended. Please pay attention to the form of e-mails.** **My/Our questions:**
Evaluation and Feedback	**Self-evaluation:** **Teacher's evaluation:**

will correct the mistakes after reading. Secondly, each group chooses two students to take part in a pair-work activity. One student says Chinese, the other one spells the English word. The group who spells correct words most wins the game.

2) *Learning of text.*

In learning of text, four steps were carried out: learn the main idea of the text, master the language points in the text, conclude the format of an e-mail and imitate to write an e-mail.

Firstly, the students are asked to read the text on their own and find answers to the questions in the learning-guide list. This step is finished by autonomous learning.

Then, the students are asked to translate difficult sentences in the learning-guide list through group discussion. In the group discussion, they may encounter some difficulties. If so, they discuss the difficulties among groups. Finally, some necessary help is given to them on the sentences they cannot understand.

Thirdly, the students are asked to discuss the format of an e-mail.

Finally, the students are encouraged to write an e-mail to Mr. Becker to say that they are going to buy the computers Mr. Becker suggested. This activity is the most difficult one and it is fulfilled by a group discussion. After a comparatively long period of discussion, each group presents their writing results.

4 Results and discussion

4.1 Results

4.1.1 Results of questionnaire one

The five dimensions A, B, C, D and E of Questionnaire One and Two respectively indicate that they are totally inconsistent, inconsistent, general, comparatively consistent and completely consistent. From Table 2, it can be seen that 38% of the subjects have no interest towards English learning, even 42% of them claim that they completely have no interest towards English learning probably because most of them have a weak English learning foundation. 85% of them think that they have no habit of preparing lessons before class and it is another possible reason why they have no

Table 2 Results of the Students' Learning Situation

Percentage of options Question item	A	B	C	D	E
Q1. I am very interested in English and enjoy the current English learning process.	42%	38%	14%	6%	0%
Q2. I have the habit of previewing before class.	46%	39%	15%	0%	0%
Q3. I like to learn English with several people.	21%	19%	26%	18%	16%
Q4. I often use the Internet or other means of reference to learn English.	49%	29%	10%	12%	0%
Q5. I think I have strong self-study ability in English learning.	50%	28%	12%	10%	0%
Q6. Now, the English classroom often relies on network technology and high-tech.	33%	27%	20%	15%	5%
Q7. My teacher often give students time to study independently in teaching	20%	36%	15%	20%	9%
Q8. I hope to use more modern teaching methods in classroom teaching.	7%	20%	10%	20%	43%
Q9. I well know the concept, mode and implementation process of "flip teaching".	40%	50%	8%	2%	0%
Q10. I want to try a new mode of "pre-class learning, in-class practice" in learning.	0%	5%	5%	12%	78%

learning interest and show great learning anxiety. It is found that the subjects investigated have no clear attitude towards cooperative learning, which is beneficial to subsequent experimental development. Generally, network should be one of the best ways to learning English, but the fact is that 78% of them never or seldom turn to network or other related means to learning English.

Meanwhile, only 10% of them think that they have a strong autonomous learning ability, which tells us that developing students' autonomous learning ability should be one of the focuses of attention in the future. It is also be found that total 20% of them do think that the teacher usually draws support from network techniques and high technologies in English teaching and it suggests that probably behindhand teaching means and teaching techniques are another important reason of a low teaching effect. In the meantime, it reminds English teachers and related teaching administrations to improve teaching means, teaching techniques and equipment.

36% of them claim that the teacher doesn't give them time and space of autonomous learning, even 20% of them complain that their teacher never gives them autonomous learning time. It is obvious that more than 63% of them hope English teachers use modern teaching means in classroom teaching, but 27% of them are reluctant to expose themselves to those modern teaching means, which suggests although most subjects are keen on new teaching means being used in English classroom teaching, some of them are already used to accepting the traditional "duck-stuffing" type of teaching. Obviously, quite a few subjects (63%) are willing to attempt to participate in cooperative learning in the English teaching in groups. 90% of them are unfamiliar with the concept, teaching mode and conduct process of the flipped classroom and it is obvious that the flipped classroom teaching mode is a new thing to them. From another angle, probably it is more helpful for English teachers putting it into practice in the English classroom (Mason et al. 2013b). Most subjects (90%) are eager to attempt to participate in a new teaching mode, which contributes to carrying out the experiment of the flipped classroom teaching mode in practical teaching.

4.1.2 Results of questionnaire two

From Table 3, it is found that the subjects claim that knowledge and exercise quantities of autonomous learning stage before class are appropriate, respectively 58% and 52%. It is a good phenomenon and also suggests this design is suitable from the angle of knowledge and exercise quantities. 60% of them believe that difficulty of knowledge and exercises of autonomous learning stage before class is moderate. From this question, a conclusion can be reached that the knowledge listed and exercises provided before class are basically successful, which can promote development of the experiment. 66% of them think that various learning materials provided by the teacher before class are quite enough before class. It can be seen that 59% of them come to liking the autonomous learning style of the flipped classroom teaching.

It is obvious that they have more complete and deep understanding towards related English language knowledge through performances, reports, debate and discussion (72%). Most subjects (62%) think that they can communicate with each other quite

Table 3 General Understanding of the Flipped Classroom before Class and in Class

Percentage of options Question item	A	B	C	D	E
Q1. The amount of knowledge about self-regulated learning is proper before class.	9%	17%	16%	38%	20%
Q2. The amount of exercises for autonomous learning is appropriate before class.	12%	13%	23%	18%	34%
Q3. The difficulty of autonomous learning before class is appropriate.	17%	12%	11%	15%	45%
Q4. In autonomous learning, the resources provided by teachers are sufficient.	17%	11%	6%	24%	42%
Q5. I have a sounder knowledge of the English learned in the flip class.	3%	10%	15%	56%	16%
Q6. There is enough interaction between teachers and students in the flip class.	5%	9%	24%	19%	43%
Q7. I think the teaching effect of the flipped class is good.	0%	5%	9%	68%	18%
Q8. The flipped classroom is more conducive to the mastery of English knowledge	0%	3%	13%	70%	14%
Q9. I have more chances to practice English in the flipped class	0%	4%	8%	72%	16%
Q10. The flip class is much better to the cultivation of autonomous learning ability.	0%	2%	10%	78%	10%
Q11. The flip class is conducive to the cultivation of cooperative learning ability.	0%	1%	7%	77%	15%
Q12. In the flipped class, my interest in English learning increased.	6%	9%	22%	53%	10%
Q13. In the flipped class, my self-confidence in English learning increased.	4%	10%	25%	49%	12%
Q14. The English flipped class has made great progress in my English learning.	2%	7%	26%	55%	10%
Q15. My English learning ability is greatly improved in the flipped classroom..	12%	4%	9%	11%	64%
Q16. I hope to continue using the flipped classroom model in the future.	0%	2%	30%	58%	10%

well, which suggests that cooperative learning ability of them has been made progress as well. It can be seen that 86% of them think that teaching effect of the flipped classroom is preferable, which indicates most of them have already recognized this teaching mode. Meanwhile, they believe that learning efficiency of the flipped classroom is much higher (84%). It suggests that the flipped classroom plays an important role in English learning. Quite a few subjects (88%) believe that they have much more opportunities to practice English in the flipped classroom than that in the traditional classroom. It further proves that the flipped classroom teaching mode really emphasizes the role of students during the course of English learning and regards them as the center or main part of learning process (Stone 2012). It is obvious that 88% of them claim that the flipped classroom is beneficial to educating and enhancing their autonomous learning ability. Furthermore, 92% of them recognizes the role of the flipped classroom teaching mode that it contributes to the development and improvement of cooperative learning ability.

It is seen that over 60% of them indicates that they are starting to like English, which shows that their learning interest has been enhanced. Meanwhile, learning confidence has been improved, too, percent of which is 61% in the flipped classroom. Moreover,

Table 4 Data of T-Test from the Pre-Test

Class	Number	Mean	Std. deviation	Mean deviation	T-Value	Sig.
Control class	72	67.94	14.210	.202	.688	.494
Experimental class	72	68.08	14.452			

65% of them claims that they did make great progress in the flipped classroom. It is found that 75% of them think that their English learning ability has been improved. Seen from question16, it is clear to see that 68% of them hope the flipped classroom can be used in the future teaching.

4.1.3 Data analysis of the pre-test

Microsoft Excel 2003 and SPSS 22.0 were used to get and analyze those data. Data from Table 4 show that there is no significant difference between the two classes, where it can be clearly seen that mean and standard deviation are respectively 67.94 and 14.210 for the control class, while mean and standard deviation are respectively 68.08 and 14.452 for the experimental class. The comparison shows that mean deviation is 0.202, T-value is 0 .688 and Sig. is 0.494 (P>0.05), which suggests that there is no significant difference between the two objects investigated. Therefore, it can conclude that the English level of those subjects is almost the same before the flipped classroom teaching is implemented.

4.1.4 Data analysis of the post-test

It is also found that the subjects taught on the basis of the flipped classroom teaching mode are significantly different from those taught in the traditional teaching mode. Concerning the control class, it is obvious that mean is 68.06, standard deviation is 14.066, while as for the experimental class, mean is 71.14 and standard deviation is 12.363. Moreover, the comparison suggests that mean deviation of the two classes is 0.788, T-value is 3.911 and Sig. is 0.000 (P<0.01). It can be seen that the score of the subjects taught based on the flipped classroom teaching mode (71.14) is higher than the one taught in the traditional teaching mode (68.06). At the same time, it is well known that if P is less than 0.01, it shows that there is a significant difference. Sig. is 0.000 (P<0.01), thus the two classes have significant difference after the experiment, which proves that the flipped classroom teaching mode adopted is acceptable and successful (see from Table 5).

Table 5 Data of T-Test from the Post-Test

Class	Number	Mean	Std. deviation	Mean deviation	T-Value.	Sig.
Control class	72	68.06	14.066	.788	3.911	.000
Experimental class	72	71.14	12.363			

5 Discussion

5.1 Learning interest

Compared with the data from question1of questionnaire one and question 19 of questionnaire two, it is obvious that learning attitude and interest towards English learning of the subjects are increasingly improved. It is believed that the following reasons should be considered:

(1) The flipped classroom teaching satisfies personalized learning need of students. At present, the most prominent contradiction of English teaching is that individual difference of students is too large, and classroom teaching cannot satisfy various learning needs of students. Students are keen on touching a new teaching mode of a personalized and suitable for all kinds of students (Mukherjee 2013). Fortunately, the flipped classroom teaching mode may be the most optimum selection for the moment because it changes the traditional teaching method and mode and really makes a personalized teaching based on a student-centered mode come true.

(2) The flipped classroom teaching pays close attention to students' subjective experience. A person's experience plays a very important significance in his life existence, life sublimation and spiritual emancipation (Sun 2001). Therefore, in classroom teaching, it is important to focus on teaching subjective experience and set up an idea that teaching serves for learning subjects. However, it is the flipped classroom that makes this desire possible. It not only changes classroom form, but also changes its teaching idea Moreover, the flipped classroom based on the guidance list breaks teaching temporal and spatial constraints and provides various conditions for teaching extension.

5.2 Cooperative and autonomous learning ability

Through comparing with questionnaire one and two, it is found that students do improve their autonomous and cooperative learning abilities. Meanwhile, the flipped classroom teaching actually advocates the idea of first post –teaching and actively encourages autonomous learning. The first post-teaching is that students learn autonomously under the teacher's guidance, and then the teacher instructs them concretely. Actually, its essence is to make students be main learning parts, the teacher be a learning fugleman or prompter of students. Autonomous learning refers to learners actively, independently and self-controlled learn what they should learn (Demetry 2010). Concretely speaking, it is the change from asking me what to learn to what I want to learn. Thus, the idea of the first post-teaching and autonomous learning contributes to changing the traditional learning concept and teaching idea (Wang 2013b).

   In the meantime, the reason why the flipped classroom teaching mode is recognized by the subjects is that it does improve students' autonomous learning ability, where it can be seen from questionnaire two clearly. In the flipped classroom, students are responsible for finishing preliminary learning of knowledge (Tucker 2012). They arrange for their own learning step autonomously, independently internalize and

construct language and culture knowledge and finally complete learning tasks (Lowell et al. 2013). Out of question, the flipped classroom teaching mode plays a vital role in improving students' autonomous learning ability.

5.3 English proficiency

The flipped classroom teaching mode transforms learning tasks of imparting knowledge from the beginning of classroom teaching. Time of interaction and cooperative explorations between the teacher and students or among students in the classroom is greatly extended (Smith et al. 2015). Compared with the pre-test and post-test, it is found that score of the experimental class is significantly higher than that of the control class, which proves its effectiveness and it is quite suitable for the teaching aims of college English and learners' learning needs and contributes to enhancing students' English proficiency, which is one of the reasons why the subjects have a high degree of recognition to the flipped classroom teaching mode, too.

6 Conclusion

The research mainly analyzed and reflected on the current situation, problems and solutions of English teaching in higher vocational colleges. In this research, questionnaires, pre-test and post-test are designed to learn about the basic information of English learning about the subjects' learning interest, habit, means, confidence, anxiety and foundation, autonomous learning ability, cooperative learning ability and changes of those elements before the research and after it.

On the basis of the above aims, the data from the questionnaire two, pre-test and post-test indicate that the students in the experimental class are found to become interested in English learning and begin to like learning English. Meanwhile, their autonomous and cooperative learning consciousness and abilities have been improved and their learning habit of preparing lessons before class and practice in class have been gradually built up as well. Moreover, almost all the students hold an active attitude or evaluation towards the new teaching mode, show desire for continuing to use it in future classroom teaching and English proficiency has been enhanced too, which is what this research wants to achieve.

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Compliance with ethical standards

Competing interests I have no competing interests.

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