

Applying Action Research by Following Flipped Classroom Model in the Context of Teaching English Linguistics

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Abstract — The traditional teaching model of English linguistics does not apply to the current college English major in China. Against the background, teachers should create the suitable ones in their context. Therefore, under the guidance of action research, it is suggested that an empirical study should be conducted in order to investigate the feasibility of using flipped classroom model in teaching English linguistics courses with a view to constructing its flipped classroom model and exploring the validity of corresponding teaching strategies. Findings of this study show that applying flipped classroom model helps to promote students' learning abilities and comprehensive quality and improving teaching effects as well. This is to recommend that modern teaching methods characterized by information technology require teachers' growth in a professional way.

Keywords — English linguistics, flipped classroom model, action research

I. Introduction

English linguistics is the core course of English major. The objectives of the course are to enable to accumulate the basic knowledge of English linguistics, develop the initial interest in linguistics, and strengthen the ability to observe and analyze English phenomena. However, it is a matter of fact that there are some defects in the teaching methods in delivering the course. Some researchers point out that teachers just perform what the book presents, while students only have a superficial understanding of the abstract theory (Ju, 2007). The others conclude the limitations from survey such as, poor teaching methods, abstract theory, boring teaching content, low teaching efficiency, etc. (Chen, 2007) In addition, teachers have imperfect language knowledge system, teaching materials lack a sense of times, and teaching evaluation is devoid of scientific and reasonable method. The problems mentioned above propel researchers and teachers to ponder over how to improve the teaching quality of the course.

Flipped classroom model (FCM thereafter) has been applied recently as a teaching model which helps students inverting knowledge instruction and knowledge internalization.

To be more specific, students receive knowledge instruction by watching teaching video clips before the class while they internalize knowledge through participating in various teaching activities in the class (Zhang, 2013). Since the research focused on FCM (Bergmann and Sams, 2012, 2013; Kathleen, 2012; Pape et al., 2012) in 2010s, a large number of researchers paid attention to flipped classroom in China. Some of the researchers discussed the essential features and application value of FCM (Zhang et al., 2012; Wang, 2012), while others conducted empirical research to explore whether it is feasible to apply FCM to the teaching of a course (Li and Wu, 2015; Wang, 2016; Zhang and Tao, 2017), and still others are investigating the teachers' teaching ability and meditative function in FCM (Li, 2015; Cheng, 20116). The previous studies mentioned above have brought about a series of teaching reform in terms of teachers' role, teaching model, learning management, and so on. However, the previous studies failed to construct FCM in a dynamic way. The authentic teaching environment involves more factors than before. A successful FCM, therefore, cannot be achieved overnight. Instead, it is advised to be adjusted continually until teachers and students become familiar to each other. Under the circumstances, action research may be adopted to facilitate the dynamic construction of FCM.

II. The Connotation of Action Research

Action research is one of the research methods in the field of experimental social psychology. Burns (2011, P.2) held that action research "involves taking a self-reflective, critical, and systematic approach to exploring your own teaching contexts". It aims to "intervene in a deliberate way in the problematic situation in order to bring about changes and, even better, improvements in practice." She pointed out that action research model covers two cycles based on Kemmis and McTaggart (1988), including *Plan-Action-Observe-Reflect* and *Revised Plan-Action-Observe-Reflect*. Wen (2011) suggested that action research is a study which focuses on action with purpose, motivation, supervision and reflection.

The authors advanced that action research is not a simple cycle, but a dynamic terraced model, shown as Figure 1.

It is noticed that action research in each phase covers four steps which are: Problems – Plan – Action – Appraisal. That is to say, the researcher reflects on the teaching problems in the real classroom, makes a careful plan to revise the teaching activity, implements the plan and assesses the effects of the updated teaching activity. After the completion of the tasks in

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the lower phase, the researcher starts the research in the higher phase. As a result of that, action research is certain to improve the teaching effects.

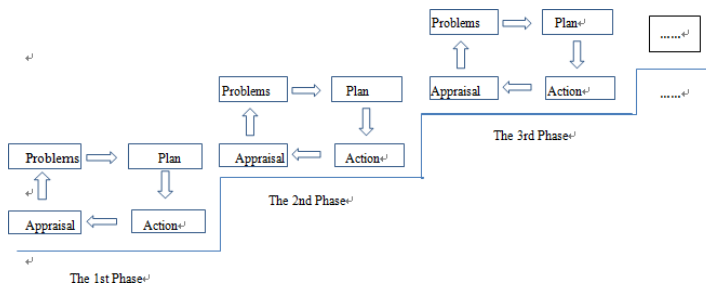


Figure 1 Action Research Model

Action research features research in teaching and teaching in research. Therefore, it can guide the teacher to combine teaching and research together. The teacher who implements FCM should absorb the thought behind action research and get into the habit of adopting action research: make a systematic plan about teaching activities; take action according to the plan; observe and resolve teaching problems to improve teaching effects and heighten the teacher's professional quality. Therefore, the authors, under the guidance of action research, examined whether it is feasible to draw on FCM in the teaching of English linguistics. The research was a mixed one, combining qualitative research and quantitative research. It not only took advantage of action research to perfect the construction of FCM, but also made use of experimental research to judge whether the change in teaching model led to improving teaching effects.

III. Methodology

A. Research Participants

Samples of 128 students were taken in four parallel classes as research subjects. The author, a teacher researcher, taught the four classes in different ways. Class 3 and Class 4 were the experimental group classes and followed teaching English linguistics through FCM, while Class 1 and Class 2 which were the control group classes were taught the course following the teacher-centered model.

B. Teaching Arrangement

A New Concise Course in Linguistics for Students of English was used as the main teaching material. For each class, there were 32 periods in 16 weeks, two hours a week. The teaching time allocated for the whole course could be divided in three phases. There were 10 periods in the first phase, which covered Introduction and Phonology. The second phase included 12 periods, focusing on Morphology and Syntax. The third phase had 10 periods, discussing Semantics and Pragmatics. Students were expected to study the other chapters by themselves because of time limitation.

C. Teaching Tools

The main teaching tool is Tencent QQ, also known as QQ, is an instant messaging software offering services that provide online social games, music, shopping, microblogging, movies, group chat and voice chat. It is used as a function for students' online communication platform. Accordingly, a QQ groups were specially built for exchanging learning experience in each experimental class.

D. Research Instrument

According to Zhai's (2015) Questionnaire of Satisfaction in FCM and the real teaching environment, the authors revised the questionnaire to make it understandable and readable by the samples of the study. It contains 52 items, covering preview, online communication, classroom teaching, learning reflection, and the overall assessment of the course. Each item was designed based on Likert scale, including "Totally Disagree" (1 point), "Disagree" (2 points), "Neutral" (3 points), "Agree" (4 points) and "Totally Agree" (5 points). At the end of each phase, the authors adopted the questionnaire to investigate the effects of FCM in the experimental classes.

Two technological index, KMO (Kaiser-Meyer-Olkin) and Bartlett test of sphericity, could be adopted to test validity of the questionnaire. Running Factor Analysis in SPSS revealed that $KMO=0.895>0.8$ and Bartlett test of sphericity was significant ($p=0.000<0.05$). Therefore, the questionnaire had higher validity.

Cronbach's coefficients can be used to calculate the reliability of the questionnaire. It was $0.864>0.8$, proving that the items were used in the questionnaire were connected and related with each other and the questionnaire had higher reliability.

E. Research Questions

The paper aimed to inquire into the following three questions.

- How could FCM in the teaching of English linguistics be constructed?
- What effective teaching strategies could be adopted to achieve teaching objectives?
- Compared with the traditional teaching model, could FCM improve teaching effects? And could it heighten students' learning ability and professional quality?

IV. Action Research on FCM of English Linguistics

In each teaching phase, the authors carried out a complete action research, covering four steps: identifying teaching problems, proposing a plan, implementing the plan and evaluating the effects.

A. The First Phase

In the first phase, the authors guided students to adapt themselves to FCM. The main objective is to help students find proper learning methods, and create a harmonious learning atmosphere.

1) Identifying Teaching Problems

The authors examined the problems in the teaching of English linguistics from the literature review and their past own teaching experience, and summarized the following teaching problems.

- Teaching contents were so theoretical and profound that students felt it might be hard to learn the course.
- Students received the teacher's instruction in the teacher-centered classroom and they do not have a role in participating or interaction.
- Teaching effects were not satisfactory, for students found it difficult to grasp the basic theories, let alone explain language phenomena under the guidance of the theories.
- Summative assessment was mainly adopted, and less attention was paid to formative assessment.

2) Proposing a Plan

The authors decided to take some corresponding strategies to deal with the aforementioned problems.

- According to real teaching environment, the authors updated syllabus to make the teaching contents satisfy students' needs.
- The authors introduced FCM to the real teaching environment, and tried to increase students' learning enthusiasm and strengthen students' learning initiative.
- The authors presented students with more familiar topics relevant to language phenomena, thus attracting students to analyze and solve the problems.
- The authors carried out multiple forms of learning assessment, combining summative assessment and formative assessment. This issue might not have space at the meantime, but it would be investigated in another paper.

3) Implementing the Plan

The authors updated syllabus according to learning demand and teaching materials. Three days before a class, the authors prepared a teaching plan and uploaded a video clip to QQ groups. Students were supposed to preview the teaching materials and watch the video clip so that they could know focal points and difficult points of the upcoming class. If students had problems, they could have online discussion to solve the problems or recorded the problems in QQ groups. In the classroom, the authors organized students to discuss some problems or topics, and then made a comment and summary. In the end, students may solve all the problems and understand the learning contents. After the class, students had online discussion and offline written homework to consolidate what

they had learned, and submitted learning reflection to share their own learning experience. Accordingly, a preliminary version of FCM could be represented in Figure 2.

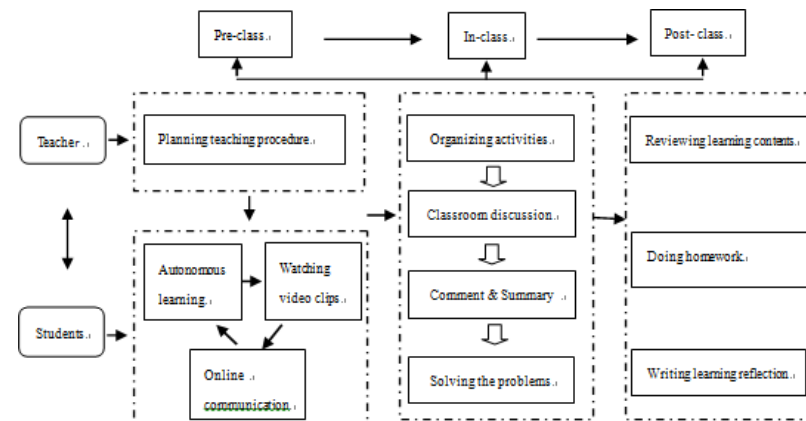


Figure 2 FCM Based on QQ Group Online Communication Platform (Preliminary Version)

4) Evaluating the Effects

At the end of the first phase, the authors employed the questionnaire to make the first survey among 59 students in the experimental classes, aiming to find students' satisfaction of the main steps in FCM, including preview, online communication, classroom teaching, learning reflection, homework and the overall impression on the course. The results of the first survey were reflected in Table 1.

TABLE 1 STUDENTS' SATISFACTION OF THE MAIN STEPS IN FCM

Items	Preview	Online Communication	Classroom Teaching	Learning Reflection	Homework	The Overall Impression
Percent (%)	72.2	73.4	78.5	74.3	83.8	76.7

Table 1 revealed the following results.

- Students had the lowest satisfaction of preview effects. Some students wrote down their experience in learning reflection, "I was very busy, so I failed to preview the teaching contents and watch video clips before the class."; "I couldn't understand a large number of technical terms."
- Students' satisfaction of online communication was only 73.4%. "We didn't have the same learning period to communicate the learning problems with each other, so I felt some classmates were not active in the online communication."
- Some students thought that "Learning reflection is a heavy burden". Therefore, only 74.3% of the students were willing to fulfill the task.

- 78.5% of the students showed satisfaction of classroom teaching effects. Some students believed that “they did not have a clear idea of the discussion topics”, and that “limited teaching time” restricted the process of discussion.
- Because of the problems discussed above, 76.7% of the students were satisfied with the effects of FCM.

B. The Second Phase

Based on the implementation results of the first phase, action research on FCM in the second phase aimed to improve teaching steps and heighten students’ satisfaction of FCM.

1) Identifying Teaching Problems

According to students’ learning reflection, students recognized the role of FCP, but four problems existed in the first phase.

- It was difficult to supervise students’ preparation before the class. If students failed to preview the teaching contents and watch video clips, they could not follow the teaching progress effectively. Students’ learning effects depend on the design of teaching procedure (Wen, 2012). Hence some strategies should be taken to supervise whether students were active in previewing the teaching contents.
- Online communication lacked substantial contents. Students had different learning time. When one student raised a question in QQ group, the others could not offer timely feedback for they were busy with other things. This phenomenon made the student feel a little frustrated in online communication.
- Some students felt it a burden to write learning reflection. The main reason lay in that students did not comprehend its importance. Consequently, some students only submitted superficial reflection on learning procedure. In addition, some students just repeated the other students’ opinion without thinking on their own.
- Discussion in the classroom was not active. Teaching time was limited, so students could not have heated discussion on a certain topic, and the discussion could not engage as many students as possible.

2) Proposing a Plan

The author adopted the following strategies to cope with the aforementioned problems.

- Students were required to offer oral presentation in the class. Students in each class were divided into 4 smaller groups with a group leader. The group leader set up a smaller QQ learning group and invited the author to enter the group. Before the class, the author assigned learning tasks for each small group. After previewing the next teaching contents and watching video clips, the group leader

organized the classmates to prepare for the learning tasks. In the class, each member, in turn, delivered an oral presentation on a particular topic and then defended orally against the questions raised by the teacher or other students. According to the performance of presentation, the author gave a grade and recorded it for later evaluation. In the end, the author made a comment or a summary to emphasize some notions or conclusions. The management mechanism of oral presentation required that all the students should make a full preparation before the class; otherwise they would feel embarrassed or lose face when they could not fulfill the task of presentation in the classroom.

- Student reached a compromise on the fixed time of online communication. Each group was required to have online communication twice per week, once is before the class and the other is after the class. This measure aimed to engage all the students in online communication to deepen the understanding of learning contents.
- The authors explained the importance of learning reflection to the students. Reflection on learning not only reviewed the past learning activities, but also offered the suggestions for future improvement.
- The authors presented the relevant questions in video clips. In the first phase, learning questions did not show in video clips. Therefore, the discussion on some topics could not thoroughly be held in the class. By contrast, in the second phase, some questions were added in every section to remind students that they could use them as a self-examination practice and as the guiding topic for discussion. Accordingly, the questions functioned as a bridge between online communication and classroom discussion.
- The authors guided students to read more useful learning materials from some websites or reference books. Thus, students could broaden their fields of vision, and improved the quality of performance in the class.

3) Implementing the Plan

The authors divided the preparation for the teaching plan into uploading video clips and assigning learning tasks for each small group. After autonomous learning and watching video clips, students examined whether they could understand learning questions in video clips. Then group leaders organized group members to discuss the questions online and assigned presentation topic for each member. In the class, each member presented their understanding of a certain topic in a task-driven model. The teacher made a comment on students’ performance and laid stress on the main teaching contents. After the class, students conducted online communication and finished written assignment to consolidate what they had learned; they found more relevant materials from different channels to deepen the understanding; they wrote down their reflection on learning performance, including achievement,

defects, and suggestions for improvement. The revised FCM is presented in Figure 3.

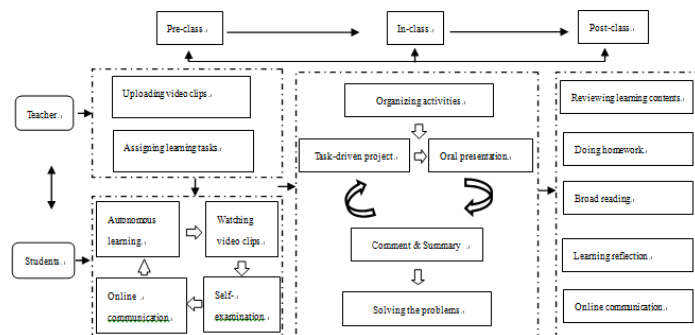


Figure 3 FCM Based on QQ Group Online Communication Platform
 (Revised Version)

4) Evaluating the Effects

At the end of the second phase, the authors made the second survey by means of the questionnaire to investigate students' satisfaction of FCM. The results of the second survey were reflected in Table 2.

TABLE 2 STUDENTS' SATISFACTION OF THE MAIN STEPS IN FCM

Items	Preview	Online Communication	Classroom Teaching	Learning Reflection	Homework	The Overall Impression
Percent (%)	82.3	84.3	85.6	83.8	88.0	86.7

In the second teaching phase, students increased their satisfaction of the main steps of FCM. The two measures, oral presentation and online communication at fixed time, facilitated students' learning initiative. Explanation of the importance of learning reflection also enabled students to complete the task more meticulously. Moreover, some questions were added to each section in video clips, offering students more time and opportunities to think about them and discuss them and making students improve the quality of speech in the class.

However, satisfaction of preview was still at the lowest degree. Students' learning reflection revealed that "when we could not get answers in time, we often felt frustrated", and that some students "are not strict with" themselves. If the teacher failed to pay attention to the two problems, students' learning motivation and learning effects would be negatively influenced.

C. The Third Phase

In the third phase, students were thoroughly adapted to FCM. The key point was to lead students to overcome the defects and find the effective learning methods.

1) Identifying Teaching Problems

In the second phase, students had two learning problems.

- After autonomous learning and online communication, some problems in students' learning procedure were not solved in due course.
- Some students lowered learning motivation and did not spend enough time in autonomous learning. Therefore, they did not have proper participation in online communication.

2) Proposing a Plan

In the third phase, the authors adopted the following measures.

- The questions during students' learning procedure were the key points the author should solve in classroom teaching. If students received timely feedback, they would heighten self-confidence and played a more important role in group discussion online. Therefore, the authors required the group leaders to sum up the learning problems after each online communication. Then the authors could satisfy students' learning needs by guiding students to solve the problems. As a result, the cognitive gap between online communication and teaching discussion could be removed.
- The authors added individualized guiding step in classroom teaching to handle the inactive phenomenon among some students. For instance, the teacher explained the role of online communication in accumulating knowledge, chose a student who was active in online communication as an example, encouraged students to persevere in online communication or submit learning reflection in time, and stipulated that the quality of online communication was regarded as a recorded learning performance.

3) Implementing the Plan

In the third phase, the authors adopted two measures to improve FCM.

- The authors paid more attention to the learning problems and managed to help students deal with them. For the problems only an individual student had, the authors offered a definite answer as a timely feedback. For the common problems, the authors collected the problems summarized by the group leaders before the class, and guided students to think about the ways to solve them.
- While students were giving oral presentations in the class, the teacher offered them individualized guidance, not only mentioning their strong points, but also showing their defects and expounding how to deepen their understanding. For example, after students presented tree structure of phrases according to XP rule, the teacher directed students to consider how to draw coordinate structure.

The two measures observed "student-based principle", showing respect for individual difference and guiding students

to make progress. Consequently, FCP could be further improved as Figure 4.

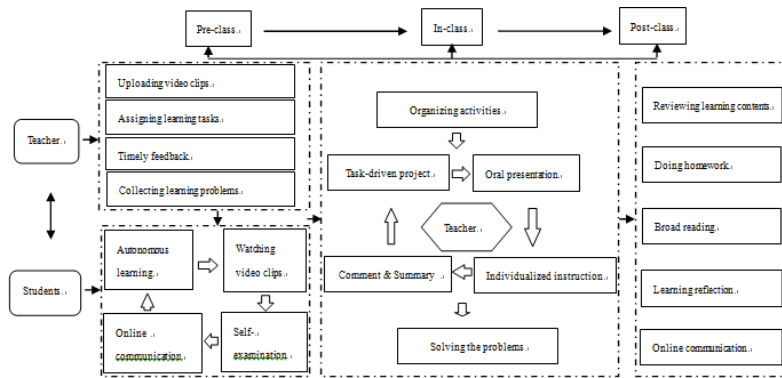


Figure 4 FCM Based on QQ Group Online Communication Platform
 (Extended Version)

4) Evaluating the Effects

Before the final examination, the authors made the third survey to inquire into students' satisfaction of FCM. The results of the third investigation were reflected in Table 3.

TABLE 3 STUDENTS' SATISFACTION OF THE MAIN STEPS IN FCM

Items	Preview	Online Communication	Classroom Teaching	Learning Reflection	Homework	The Overall Impression
Percent (%)	88.3	91.3	91.6	89.8	91.0	92.7

Table 3 revealed that students were more satisfied with the main steps of FCM in the third phase than those in the second phase due to timely response and individualized instruction.

v. Results of the Research

A. Pre-test Results

Before the first period, the grades of the course of Advanced English were taken to investigate students' written English proficiency. The authors employed SPSS 22.0 to do Independent-Samples T Test and obtained the following results.

TABLE 4 PRE-TEST RESULTS OF THE CONTROL CLASSES AND THE EXPERIMENTAL CLASSES

Class	Number	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Class 1, 2	61	74.8852	8.44610	1.08141			
Class 3, 4	59	76.33904	8.09344	1.05368	-0.962	118	0.338

In Table 4, mean of the advanced English for the control classes, Class 1 and Class 2, were 74.8852, while that for the experimental classes, Class 3 and Class 4, were 76.33904.

According to Independent-Samples T Test, significance level of pre-test result was $0.338 > 0.05$. Therefore, under the condition of 95% confidence interval of the difference, there was no significant difference in students' written English proficiency. This fact proved that the students in the four classes had the similar English basis, i.e. the precondition of the teaching experiment was valid.

B. Post-test Results

The authors conducted the empirical teaching experiment in the course of English linguistics. In one semester, the traditional teacher-centered teaching model was adopted in Class 1 and Class 2, while FCP was employed in Class 3 and Class 4 simultaneously. English linguistics scores in the final examination were used as post-test result, which were reflected in Table 5.

TABLE 5 POST-TEST RESULTS OF THE CONTROL CLASSES AND THE EXPERIMENTAL CLASSES

Class	Number	Mean	Std. Deviation	Std. Error Mean	t	df	Sig. (2-tailed)
Class 1, 2	61	75.7049	8.51537	1.09028			
Class 3, 4	59	80.7458	7.16455	0.93275	-3.503	118	0.001

In Table 5, mean of English linguistics for the control classes, Class 1 and Class 2, were 75.7049, while that for the experimental classes, Class 3 and Class 4, were 80.7458. According to Independent-Samples T Test, significance level of pretest result was $0.001 < 0.05$. Therefore, under the condition of 95% confidence interval of the difference, there was significant difference between the traditional teacher-centered teaching model and FCP.

VI. Interpretation

A. The Role of Action Research

The main purpose of action research is to guide teachers to take a planned, systematic, self-reflective approach to solve some problems in real teaching environment. Its guidance role means that the design of a research approach may follow the notion of action research, and that the primary target of the research is to solve practical problem, heighten action quality and improve practical work. After the completion of research tasks at the lower level, the researcher may conduct the research at the higher level. Therefore, the course of action research takes on a spiral progress by means of the teacher's self-reflection, not only bettering teaching quality, but also promoting the teacher's own professional competence.

B. The Construction of FCM of English Linguistics

As Figure 4 shows, FCM of English linguistics is divided into three phases, before the class, in the class, and after the

class. Before the class, the teacher should produce teaching resources, assign learning tasks to students, offer timely feedback to students, and collect learning problems, while students, in the form of group work, should have autonomous learning, watch video clips, do self-examination, and hold online communication. In the classroom, the teacher organized various teaching activities, especially task-driven projects. Students gave oral presentation on particular learning contents in groups. Then the teacher guided students to remove all the learning obstacles and concluded the learning of one section by offering comment and summary, and further started the learning of the next section. After the class, students experienced a series of learning tasks, like reviewing what have learned in the past class, doing homework, having broad reading, writing learning reflection, and holding online communication again, etc. As a result, students could consolidate the learning contents, form a positive learning habit, and lay a solid foundation for the next class.

c. The Potential Teaching Strategies in FCM

It is mentioned that the essence of FCM is a return to the logic start of teaching activity – students’ learning (Wang, 2016). In FCM, the teacher can realize the teaching objectives on condition that he or she adopts teaching strategies according to students’ learning needs. During the whole teaching procedure, teaching strategies should be learner-centered, covering teaching design, learning needs, timely feedback, cooperative learning, learning ability, and so on.

- Teaching design is the means to realize teaching objectives. The teacher may design teaching activities according to the theory of Zone of Proximal Development proposed by Vygotsky (1994), base new knowledge on the old cognition system, stimulate students to expand “Zone of Proximal Development” and guide students to fulfill learning tasks with interest. This may make more motivation for able and less-able learners.
- The teacher should pay attention to students’ learning needs to maintain their learning interest. Before the class, the teacher collects the problems in students’ learning groups. In the class, the teacher leads students to solve the problems. Satisfaction of learning needs will change into internal motivation, enable students to keep long learning interest, and propel them to learn the next section.
- Timely feedback is a respect for students’ personality and support for learning. Before the class, students may be puzzled by some problems. If group work fails to overcome these problems, the teacher’s timely feedback will become encouragement and support. In the class, the teacher guides students to solve the problems, which is another response to provide students with self-confidence and motivation.
- Cooperative learning can create a harmonious learning atmosphere. In a learning group, students have different learning styles. Both extroverted and introverted students can share learning experience and resources with each other, and complement each other. Cooperative learning

is a collective behavior with definite target and joint efforts. In addition, a student’s oral presentation in the class usually reflects the collective wisdom.

- Cultivation of learning ability is a kernel objective of FCM. During the learning course, it is not by teacher’s single lecture but by autonomous learning and group work that students acquire knowledge. Once students possess sustainable learning ability, they will benefit a lot from it during their lifetime.

D. The Advantages of FCM

It is noted that the advantages of FCM are not the application of technology, but the improvement of the whole teaching model propelled by the development of technology (Li and Wu, 2015). Compared with the traditional teaching model, the advantages of FCM are reflected in students’ learning ability, comprehensive quality, teaching effects, etc.

- Individualized learning and instruction can promote students’ learning ability. Before the class, students take initiative to explore professional knowledge. When they do not understand a point, they can avoid receiving unified teaching progress. Instead, they may repeat the learning behavior. In the class, students present what they have previewed to the whole class. If they have misunderstanding, the teacher offers them timely individual instruction. After the class, students are supposed to write their reflection on learning, presenting their understanding or cognition of what they have learned. The teacher may pick out the misunderstanding or error to offer more individual instruction.
- The learner-centered teaching procedure can help students promote their comprehensive quality. For example, when they prepare the presentation before the class, students can develop the preliminary academic research ability. When they make the presentation in the class, students can practice oral English. When they have cooperative learning, students can enhance interpersonal ability and cooperative ability. When they write the learning reflection, students can improve self-reflective ability.
- FCM brings about better teaching effects. Students in the experimental classes had higher grades than those in the control classes, and there was significance between FCM and the traditional teaching model. Students’ evaluation of teaching revealed that the students in the experimental classes gave 91.5 while the students in the control classes offer 88.2. Therefore, the students in the experimental classes were more satisfied with the teaching model.

VII. Conclusion

FCM has brought about development power for teaching reform. In view of this phenomenon, the paper, under the guidance of action research, tried to build FCM during the course of English linguistics teaching, and took some teaching strategies to realize the teaching objectives of the course. After comparing FCM and the traditional teaching model, it reaches the conclusion that FCM can improve the teaching effects of English linguistics. The main cause lies in that the teacher-centered teaching pattern is transferred into learner-

based and learner-centered teaching pattern, absorbing learners' attention and interest, putting their enthusiasm into learning the course, optimizing their learning methods, enhancing language proficiency, and improving learning effects. FCM also requires that teachers should not only possess higher professional dedication and qualification, but also grasp teaching research methods and teaching technology. Only by updating teaching notions and perfecting professional quality, can teachers draw on FCM to improve teaching effects.

The samples in the study can be improved to cover more classes and increase the number of the subjects. This was not easy available due to the schedule of the teachers in the four groups which represent the experimental and control groups. It was suggested to apply the same study on other core courses which are provided in the institute, but it was not at hands due to the teachers' thoughts and following their own teaching plan and teaching methods that they have been following for long time.

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