An Empirical Research on FCM of English Course for Chinese High-education from the Perspective of MOOC

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Abstract: How to innovate teaching models so as to improve the quality of teaching has already been one of the hottest topic of a new-round teaching reform in China nowadays. Based on the previous research findings, this thesis, by using the existing platform of campus network, created a FCM (Flipped Classroom) Model for English-major courses from the perspective of MOOC, which was then applied successfully to classroom teaching of English course for English majors of a Chinese university. The results indicated that compared with traditional teaching model, the FCM had a more obviously positive effect on motivating interest and correcting attitude of Chinese students' learning, and was more able to effectively promote English proficiency and learning autonomy of Chinese students.

1. Introduction

Constantly advancing of globalization and rapid development of internet technology has exerted a revolutionary influence on educational reforms of China. In Outline of national medium and long term educational reform and development plan (2010-2020), It is clearly put forward that "Information Technology application will be strengthen. Teachers' technical level in IT application should be enhanced, teaching concepts renewed, and teaching methods reformed in order to improve teaching effectiveness." [1] Therefore, How to innovate teaching models and perfect teaching methods and ways to satisfy students' individual and autonomous learning needs, and improve the quality of education and teaching in virtue of internet technology, has already been one of the hottest topic of a new-round teaching reform in China nowadays. The present research, guided by Constructivism and Mastery Learning Theory, aiming at improving students' English proficiency and communicative ability, by using the existing platform of campus network--SPOC, attempted to create a FCM (Flipped Classroom) Model for English-major courses from the perspective of MOOC and examined its practical effect in English course teaching for English majors[2] of Chinese universities.

2. Literature Review

Flipped Classroom, begun from chemistry teaching practice of two teachers, Jonathan Bergman and Aaron Sams, of American Middle School of Wood-land Park, has now been a new high-profile teaching model in the educational field of the world. Flipped Classroom (abbreviated form: FCM), also called as Inverted Classroom, inverts the learning processes of imparting knowledge and internalizing knowledge, in which students autonomously finish knowledge imparting before class by watching teaching video and finish knowledge internalizing in class by some teaching methods such as collaborative model, inquiring model, and so on. Since students truly become the masters of classroom, FCM fully embodies the "student-centered" educational idea. In abroad, scholars focus

their researches on exploring and applying FCM to teaching practice, and on examining its practical effects by comparing with traditional teaching models (Bergmann J. &Sams A, 2012[2]; Robert Talbert, 2012[9]; etc.); while at home the researches on MOOC, SPOC and FCM has went through three periods of development, i.e. the initial period round in 2011, the rising period in 2013 or so and the rapid developing period after 2014. Currently, With emerging of SPOC's advantages (SPOC: Small Private Online Courses),a large number of based-on-SPOC subject teaching models for higher education are surging (such researches by Liu Weiping, 2015[5];An Jufang,2016[1]; Xiao Haipeng, 2016[12]; etc.). Likewise, more and more researches on FCM models are taking English course as their subjects (Lin Caiying, 2012[7]; Wang Xiaodong, Zhangcen Liangzai, 2013[11]; Qiu Hui, 2014[8]; Shen Ying, Sheng Yuedong,2015[10]; Lanlan,2016[6]; Deng lihong,2016[3]; etc.); However, there are still few empirical researches on FCM model that took English-major courses as their subject.

3. Research Methodology

3.1 Research Questions

1) How is the FCM model of English-major course conducted in practical situation?

2) What is the effect of FCM model of English-major course on improving students' English proficiency and knowledge? Is it superior to the traditional teaching model?

3) Compare with the traditional model, is the FCM model of English-major course able more effectively to arouse interest in English learning and to promote development of learning autonomy and selection of learning strategies of students?

3.2 Research Design

1) Research Subject. Subjects participating in this research were two English-major parallel classes newly enrolled in Jiangxi Police Institute in 2016, totaling 80 students, including 18 boys, and 62 girls. The two classes were not significantly statistical differences in achievement of English course of college entrance examination, and were taught by the same teacher with same teaching materials; among them, one was the empirical class of 38 students (6 boys and 32 girls), instructed under the FCM model of English-major course, and the other was the control class of 42 students (12 boys and 30 girls), taught under the traditional teaching model. After the 1-semester (16 weeks) teaching experiment finished, English proficiency of the empirical class and the control class was compared through a test (post-test, including paraphrase, cloze, reading comprehension, translation, and writing); Meanwhile, one week before the end of the teaching experiment, we surveyed and contrasted students' attitude toward English learning, autonomous learning ability and learning strategies usage from the empirical and control classes by the questionnaires designed by ourselves.

2) Research Tools. a) Questionnaire. This research adopted the Questionnaire on English Majors' Learning Course of 'Intensive Reading' Burnout of that is recomposed on the basis of the former scholars' researches. The questionnaire was mainly designed from three dimensions (i.e. attitude towards English learning, autonomous learning ability and learning strategies) with total 15 questions, each of which was followed by an answer of multiple choices A, B, C, D, E, F that were set to select one or more according to the present research practicality. Reliability and Validity of the questionnaire was examined by predicted data, whose results showed that The Cronbach a coefficient of general scale was 0.865; that the split-half reliability was 0.880; that correlation between each question and the general scale was from 0.408 to 0.762 (P < 0.01); thus it can be seen that the sample of the questionnaire was representative and its results were valued with high confidence. b) The term test paper for English proficiency. This paper, also called as post-test paper, was designed to test the subjects' English proficiency after the 1-semester (16 weeks) teaching experiment finished. It consists of five parts with total mark of 100: paraphrase occupying 10%, cloze occupying 10%, reading comprehension 20%, translation 20%, and writing 20%. Reliability, validity and discrimination of the paper had been examined to other English-major classes before the actual post-test, whose results showed that average discrimination degree of each part of the

paper was above 0.30, that coefficient of difficulty was 0.3625 and Alpha was 0.8613. On the other hand, the content of the paper was strictly checked by the evaluation group of English tests and was accepted by professors and experts from the English department because it satisfied the requirements of the curriculum syllabus for testing students' reading comprehension, master of vocabulary & grammar, and written expression ability.

3) Research methods. The research mainly adopted experimental method, questionnaire survey and semi-structure interview.

4) Data collection and analysis. In June 2017 after finishing 1-semester (16 weeks) teaching experiment that took the FCM model and the traditional model of English-major course as independent variables, the empirical class and the control class were tested by the term test paper for English proficiency (i.e. post-test) and their score means were compared by Independent Sample t-test(SPSS17.0). And all questionnaires were issued and collected on the spot in English class by the researcher herself one week before the end of teaching experiment. Totally, 80 questionnaires were issued and 80 valid questionnaires were collected. After data is collected, the social sciences statistical software SPSS17.0 was used for descriptive statistical analysis and independent-samples T test.

4. Research results

4.1 Specific operation procedures of FCM Model for English-major courses from the perspective of MOOC

This study, based on Constructivism and Mastery Learning Theory, through two platforms of network and classroom, by effectively integrating excellent parts of face-to-face interaction of the traditional classroom teaching model and high-quality instructional resources of web-based teaching platform like MOOC, constructed "FCM Model for English-major courses from the perspective of MOOC" (see Chart 1). This model aimed to highlight the "student-centered" teaching idea and realize the course objective of training and internalizing students' comprehensive competence of using English language by the FCM's three-steps instructional mode of self-study before class, internalization in class, and advance after class, by the FCM's learning modes of collaborative learning, autonomous learning, and individualized learning, and through three stages of teaching.

As Chart 1 shows, the English teacher in FCM Model for English-major courses went through three main stages-preparation, implementation, and reflection, in which completion of the previous stage's task was requirement for going into the next stage and in which one stage couldn't work without other two stages. On the other hand, Students' learning in FCM Model for English-major courses mainly happened in the second stage-implementation and could maximize effect of learning by cooperation of the teacher and students.

1) Preparation: The English teacher orderly completed two tasks in this stage, firstly the course objective analysis, then the design & development of teaching resources. a) In the sub-stage of the course objective analysis, the teacher analyzed and determined learning content about language knowledge & competence of each learning unit such as vocabulary, grammar, sentence patterns, discourse comprehension, reading skills, etc. by thoroughly understanding related teaching materials; Meanwhile, the teacher carefully analyzed the students' learning condition like existing language foundation, knowledge of new course, learning motivation, learning autonomy, learning willing, group characteristics, and so on by using tests, questionnaires, and interviews; In addition, the teacher should confirm which objective level of memorization, comprehension, and comprehensive application each teaching content should arrive at by Blum's Education Objective System. b) In the sub-stage of the design & development of teaching resources, the course teacher made by herself or clip from MOOC platform 10-15 minutes' teaching video based on teaching objectives of each course unit, made and informed the students of the learning task list before, in, and after class, and designed the knowledge syllabus and the self-test paper for guiding and checking students' autonomous learning before class; All of which were uploaded to the network teaching platform of the course for the students' autonomous learning before class and further

learning after class. In-class teaching activities were designed diversely and was aimed to provide for the students as many opportunities of training and practicing language skills as possible so as to arriving at the course goal of internalizing and consolidating language knowledge; for instance, teacher-student interactive activities including answering difficult questions, one-by-one individualized tutoring, group tutoring, whole-class tutoring, homework helping, and so on, and student-student interaction including group discussing, cooperative learning, lecturing, role playing, word guessing, etc.

2) Implementation: The stage was accomplished successfully only by the teacher and students' joint efforts. a) Autonomous learning before class was independently done by the students on the network platform, through watching teaching videos, learning about learning task list, finishing before-class exercises and after-class tests. In the process of autonomous learning, the students immediately made an on-line communication with the teacher when having difficulties in learning, and determined learning schedule and pace by themselves. b) Knowledge internalization in class was completed under the teacher's leading and assisting. Its operating procedures were as follows: Firstly, the teacher solved the common or individual problems appearing in the students' before-class autonomous learning; Secondly, the teacher posed some questions in sequence from difficult sentences analysis, passage comprehension, structure of the text to writing features, and required students to discuss in group, who got the teacher's help if necessary; Then, the students presented their discussion results in group; Finally, the teacher commented on the students' presentation. c) Further learning after class was finished by the students on the network platform with the teacher's participation. In this sub-stage, the students finished the post-test exercises for knowledge internalization and further-developing tasks, and then evaluated their own learning results of course unit and accepted the peers' & teacher's comments or feedback, which aimed at effectively monitoring the students' learning.

(3) Reflection: In order to construct the most effective FCM Model for English-major courses, the teacher, after completing instruction of each course unit, thought over whether the design of each stage from before-class autonomous learning, in-class knowledge internalization to after-class further learning was reasonable, whether its implementation arrived at expected effect, reflected the problems immediately appearing in the teaching process and then put forward ideas and suggestions for improving teaching.
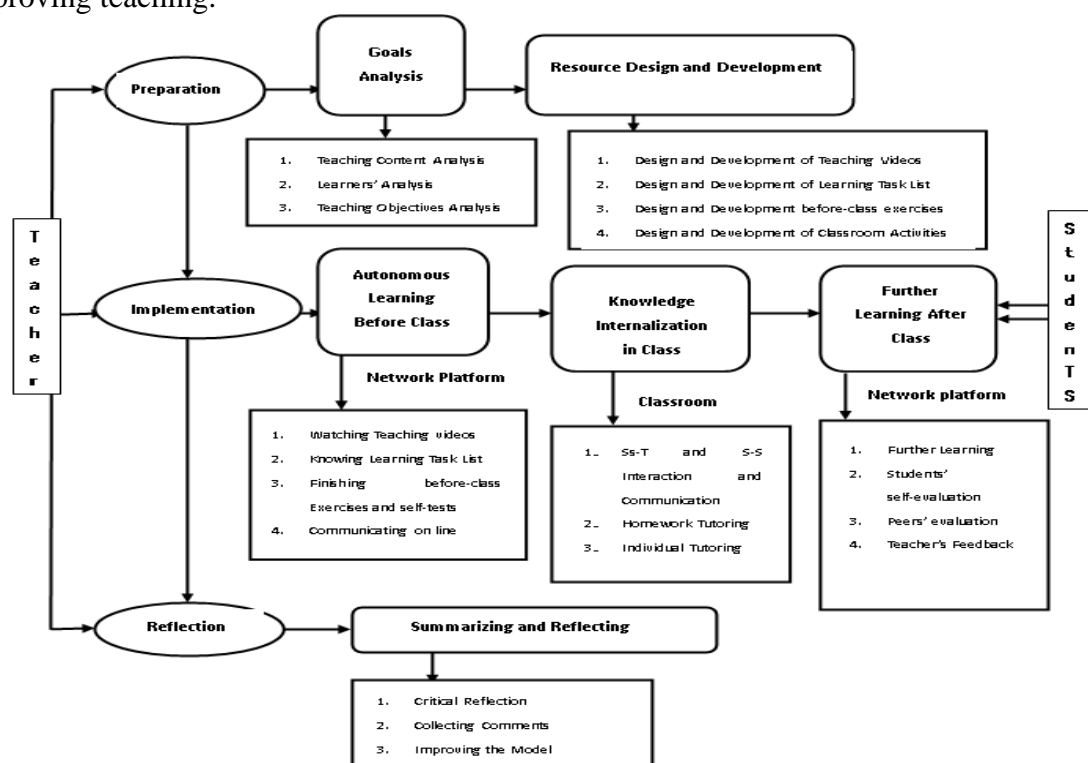

Fig. 1 FCM Model for English-major courses from the perspective of MOOC

4.2 Research results and comparative analysis: effect of FCM model and the traditional teaching model of English-major course on improving students' English proficiency and knowledge

After finishing 1-semester (16 weeks) teaching experiment that took the FCM model and the traditional model of English-major course as independent variables, the empirical class and the control class were tested by the term test paper for English proficiency (i.e. post-test) and their score means were compared and analyzed by Independent Sample t-test(SPSS17.0)(See Table 1).

Table 1 shows that: the empirical class' average scores in paraphrase, cloze, translation, writing and total point except reading comprehension are higher the control class', conversely, the former is lower than the latter in standard deviation; which indicates the empirical class' English proficiency is superior to the control class', and improvement of the former's English proficiency as a whole is more balanced and less polarized than the latter. Insignificant as the difference is in the total point, the empirical class is significantly better than the control class in paraphrase, cloze, and writing, the statistically significant level being P=.045, P=.006, P=.039 respectively. Moreover, unlike the control class, the students' score of the empirical class in these three parts are not only passing grade but much higher. Paraphrasing was designed to test the students' competence of explaining sentences in English, Cloze was used to check discourse competence in coherence and sense of English language, and writing was employed to test the students' comprehensive competence of English language expression; Therefore, the conclusion can be drawn from the data of Table 1 that FCM model of English-major course made significantly promoting effect on improving the students' English expression competence, did better in internalizing the students' English-language knowledge and skills and in achieving the course goal of enhancing students' comprehensive application of English language.

Table 1: Comparison of English Post-Test Score of the Empirical Class and the Control Class

Classes Question Types	Empirical(38 students)		Control(42 students)			
	Average Score	Standard Deviation	Average Score	Standard Deviation	T-value	P
Writing(20%)	13.1	1.7288	10.9	2.0976	2.210	.045
Paraphrasing(10%)	7.73	1.000	6.13	1.9396	1.085	.006
Translation(40%)	25.0	3.7193	24.95	3.7431	.120	.906
Cloze(10%)	6.85	1.2698	5.08	1.4060	1.064	.039
Reading Comprehension(20%)	13.4	2.5034	15.2	2.7928	-.318	.876
Total(100%)	66.08	12.5857	62.26	13.5794	1.298	.125

All significant differences between empirical class and control class seemed to be caused by the following factors. 1) Difference of in-class teaching content: The traditional teaching model of English-major course was typical of teacher-center class, which was completely dominated by teachers' indoctrination of English language knowledge with few opportunities for the students to practise and use language in a authentic or simulated language situation, as a result, it was less possible to achieve the course goal of cultivating the students' comprehensive application and communicative competence of English language. On the contrary, in the FCM model, in-class teaching was the place for the teacher's feedback or answers to the students' learning questions and for the teacher-students interaction and communication in English which provided enough opportunities of language communication and language input & output for the students to internalizing English language and skills that they had learned. 2) Difference in teaching form: In the traditional model, because the students' language learning entirely concentrated on the 45-minutes class, the teacher hadn't enough time to took diverse teaching activities to internalizing the students' language knowledge and skills for finishing instruction of language knowledge and skills according to the requirement of the course syllabus. Conversely, in the FCM model, since instruction of language knowledge and skills was advanced before class that was autonomously finished by the students themselves at their own learning speed, the in-class teaching could be left

for the teacher to diversify classroom communicative activities to improve the students' internalization and comprehensive application of English language.

4.3 Survey Results & Comparative Analysis: effect of FCM model and the traditional teaching model of English-major course on arousing interest in English learning and promoting development of learning autonomy and selection of positive learning strategies of students

One week before the end of the teaching experiment, we surveyed and contrasted students' attitude toward English learning, autonomous learning ability and learning strategies usage from the empirical and control classes by the questionnaires designed by ourselves, some items of which is listed in Table 2.

Table 2: Survey Results of the Students' Attitude, Autonomy, Strategies, Effect of English Learning
(Unit: Numbers): Partly

Numbers Items	A		B		C		D		E	
	Empirical	Control	Empirical	Control	Empirical	Control	Empirical	Control	Empirical	Control
1. Are you willing to attend the current English Intensive Reading Course?[①]	25	5	5	6	3	7	4	18	1	6
3. What do you think about your attitude toward English learning?[②]	8	17	17	9	3	77	6	20	4	6
5. For what do you think you take the current English Intensive Reading Course?(Multiple Choices)[③]	30	6	21	11	4	32	8	9	3	2
6. Can you often make a learning plan for the course and make sure to carry it out or adjust it upon need of learning?[④]	12	5	15	7	5	10	4	14	2	6
7. Can you always be active to preview, sort out and summarize what you've learnt in the course learning process? [⑤]	10	4	16	6	5	1	4	26	3	5
10. My learning autonomy has been enhanced under the influence of the current teaching model of the course. [⑥]	9	1	23	5	3	5	2	19	1	12
11. In what ways do you mainly improve your English knowledge and proficiency ? (Multiple Choices) [⑦]	29	12	25	9	3	33	5	10	8	5
13. On which aspect do you focus your attention while communicating? [⑧]	7	10	3	14	3	8	23	7	2	3

Notes:[①]:A. very willing; B. willing; C. uncertain; D. unwilling; E. very unwilling

[②]:A. very active; B. active; C. neither active not passive; D. passive; E. very passive;

[③]:A. To improve comprehensive language competence; B. To get information of text; C. To learn

vocabulary; D. All of the above; E. others___

④:A. often can;　　B. usually can;　　C. uncertain;　　D. sometimes can;　　E. never can

⑤:A. often can;　　B. usually can;　　C. uncertain;　　D. sometimes can;　　E. never can

⑥:A. strongly agree;　　B. agree;　　C. uncertain　　D. disagree;　　E. strongly disagree

⑦:A. Reading a large number of English materials; B. Seeking opportunities to practice English language knowledge and skills; C. Memorizing and reciting English vocabulary　and grammatical rules; D. All of the above;　E. Others_____

⑧:A. vocabulary;　　B. grammar;　　C. pronunciation and tone;　　D. meaning expression E. non-verbal factors like facial expression

Generally speaking, the data of Item 1-5 (see Table 3) shows that the empirical-class students had keener interest, more positive attitude and more reasonable and clearer goals in English learning than the control-class ones. For example, 78.9% students of the empirical class expressed that they were "willing or strongly willing to have the present English intensive reading course" whereas over half of the students (57.1%) in the control class expressed they were "unwilling or strongly unwilling". Moreover, the empirical-class students believed that "the course goal is to improve students' comprehensive competence of English language" (78.9%) or " to get useful information from articles" (55.3%), however, the control-class students generally (76.2%) believed that "the course goal is to learn vocabulary and grammar of articles." As for their attitude toward the course learning, the former' students generally presented more positive (21.1% showing "very positive", 44.7% showing " positive") while 47.6% and 14.3% students of the latter agreed "they were negative" and "very negative" respectively. In conclusion, the above data stated that teaching model has obvious effect on students' interest and attitude toward English learning.

The items 6-10 was designed to examine the effect of both the FCM model and the traditional model on the students' learning autonomy. As Table 3 shows, 71.1% students of the empirical class believed that they "were able to or entirely able to independently make and carry out a learning plan suitable for their situation", 68.4% of whom argued they "often actively previewed and summarized what they have learnt"; so, 84.2% of the empirical class agreed or strongly agreed that "my learning autonomy has been enhance under the current teaching model of English course." Nevertheless, only 28.6% students of the control class believed that they could independently make and especially implemented a suitable learning plan, and only 23.8% of them often actively previewed and summarized the learnt knowledge, as a consequence, 84.2% of them disagreed or strongly disagreed that their autonomous learning had been improved. All in all, the above data proves that FCM model of English-major course has more positive effect on improving students' learning autonomy.

Item 11-15 aimed to survey the students' learning strategy usage under the FCM model and the traditional model. By analyzing the data, we found that compared with the control class, the empirical-class students were more preferred to employ the learning strategies of focusing on language practice and improving language application and were better at using autonomous learning strategy. For instance, 76.3% and 65.8% students of the empirical class selected "to improve their English proficiency by reading largely English materials and looking for opportunities to practise their English knowledge and skills" while 78.6% of the control class selected the learning strategies of "memorizing and reciting English vocabulary and grammatical rules by heart". Likewise, only 19.0% of the control class agreed that they "often or sometimes actively and voluntarily participated in such oral and communicative activities as answering questions, role-play, oral presentation", however, the percentage of the empirical class reaches to 73.7%. In addition, while communicating with others, 60.5% and 47.4% students of the empirical class admitted that "I focused my attention on the meaning gap" and "thought about expression in English rather than in Chinese" respectively, but, 57.1% students of the control class said that they paid their attention on vocabulary and grammatical rules while communicating. The above results indicate that there is great difference in learning strategy selection under different teaching model.

What caused the results? By deeply interviewing the students of the empirical class and the control class, we found the reasons for it. 1) Difference in the students' role in course learning:

Thanks to sticking to student-centered idea, the students under the FCM model always played a dominant role from before-class autonomous learning, in-class interaction to after-class further learning who could decide their own learning speed and selected in-class interactive role based on their own learning foundation; consequently, their English learning became active, voluntary, initiative and happy behavior. Conversely, the control class was teacher-center and boring mode in which the students were forced and pushed to do the same things in class and had no rights to decide their learning, and in which the students' internalization of language knowledge and skills could be partly accomplished by their rote learning after class; as a result, the students gradually became more negative, passive, dissatisfied with their English learning. 2) Difference in the students' learning methods: In interviewing, most students of the control class said that they mainly applied the four-steps learning methods of listening to the teacher's instruction, taking notes while listening, reading repeatedly and recited what had learnt after class with less language practice, which was very boring and tiresome. On the contrary, the students of the empirical class mainly applied a task-drived, cooperative, autonomous combined learning method in which they actively, consciously and autonomously previewed the learning course and made, carried out their learning plans, and summarized what they had learned, finally all of which advanced their development of learning activeness and autonomy.

5. Conclusion

The followings can be concluded from this research: 1) Because the students could independently finish instruction of English language knowledge and skills before class according to their own learning situation through the network platform and in-class teaching became the place of internalizing language knowledge and skills and language communication, FCM model of English-major course from the perspective of MOOC can more effectively promote and develop students' English proficiency which is superior to the traditional teaching model. 2) Application of FCM model of English-major course from the perspective of MOOC is more helpful for China's students to arouse interest in learning, develop positive attitude, clarify reasonable learning goals, do initiative and autonomous learning, and is profitable for China's students' individualized learning with the help of resource advantages of the network platform. 3) Under the influence of FCM model of English-major course from the perspective of MOOC, China's students made great changes in their learning strategy usage, preferring to the learning strategies emphasizing "language practice and application", and autonomous-learning strategy getting effective training.

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