

Study of Problem-Based Learning in English Grammar Teaching

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This thesis took students from Grade one of Xuancheng No. 3 Middle High School as the research objects, mainly employing the classroom observation, the questionnaire, and test to investigate the effect of problem-based learning method in English grammar teaching. The findings are as follows: (a) the scores of students in the experimental class obviously improved; and (b) compared with the traditional teaching method, the application of problem-based learning method in grammar teaching can stimulate students' interest in learning. To sum up, this method can improve students' English competence and learning interest significantly, which suggests it can be applied in grammar teaching.

Keywords: problem-based learning, grammar, English competence, interest

Introduction

Grammar is an indispensable part both in English teaching and learning, because it serves as framework on which writing forms or spoken phases are based. English Curriculum Standards for Compulsory Education issued by Chinese Ministry of Education (Ministry of Education, 2011) highlights the importance of grammar learning in junior high school and lays stress on the strategies and motive of English learning. However, many students lack interest in learning grammar in that traditional teaching method is too tedious. Under this circumstance, teachers assume the responsibility for arousing students' interest. Teachers are supposed to search for an appropriate method to improve the ability of students and their interest at same time.

Problem-based learning is a way that teachers need to stimulate students' independent thinking through questioning, and guide them to find solutions to problems through hypotheses and experiments based on their own learning experiences and knowledge (Gao, 2015, p. 316). Problem-based learning method is the way that has merits to fulfil these needs required in junior high school mentioned above. Thus, it will be proper method for teachers to teach English grammar in junior high school. This paper chose students from Grade one of Xuancheng No. 3 Middle High School as the research objects, using the classroom observation, the questionnaire, and test in the experiment to investigate the effect of problem-based learning method in grammar teaching.

Literature Review

Problem teaching method was first raised by Socrates, which was named as the art of midwifery. He advocated that in the process of question and answer, teacher should reveal the contradictions in the student's statement, gradually improving his understanding of universal rationality, definitions, and knowledge.

Since the 1960s, problem-based learning method has developed gradually in foreign countries. After more than 60 years of development, the method is becoming more and more mature.

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Servant-Miklos (2019) pointed out that it first developed as a teaching method in the medical curriculum at McMaster University and proposed by a team of Canadian doctors led by Drs. John Evans, Bill Spaulding, Fraser Mustard, Jim Anderson, and Bill Walsh in 1969. Up to the 1990s, more and more researchers paid attention to problem-based learning method and made deep research, which greatly promoted the development and maturity of problem-based learning method. The problem-based learning was implemented in education outside the medical field in 1990s. Mayo, Donnelly, Nash, and Schwartz (1993) point out “It is a pedagogical strategy for posing significant, contextualized, real world situations, and providing resources, guidance, and instruction to learners as they develop content knowledge and problem-solving skills” (Üzel & Özdemir, 2012, p. 1155). Nandi et al. (2000) thought that students who received problem-based learning curriculum found learning to be “more stimulating and more humane”, while students who received conventional curriculum found learning to be “non-relevant, passive, and boring”.

By the beginning of 2010s, problem-based pedagogy has been introduced into the field of education in many countries and become a more influential teaching method in the world. Yadav, Subedi, Lundeberg, and Bunting (2011) implemented this method in Electrical Engineering course and found that students’ learning gains were twice their gains from traditional method. Üzel and Özdemir (2012) even investigated the effects of problem-based e-learning (PBeL) on teachers’ achievement and attitudes. He found that PBeL positively develops success and attitude towards mathematics, which indicated that it is an effective teaching method both for teacher and students. Birgili (2015) assumed that the environment in classroom under problem-based learning method instruction is a helpful for cultivation of creativity and critical thinking skills. Martinović (2019) found that the application of problem-based learning serves as a catalyst to the global (organization, purpose, readers) and the local (style, grammar, and mechanics) aspects of writing.

Although many scholars have investigated problem-based learning method in different respects, grammar teaching does not obtain much attention, especially in our country. This study applies the problem-based learning method to the English grammar teaching in junior high schools in order to have a positive impact on the grammatical achievement of English learners and even the overall competence of English.

Method

Research Question

This research aims to study the problem-based learning method on grammar teaching of grade one students in junior high school, mainly probing into the effect of this teaching method in terms of students’ interest and achievement. The researcher looks the aims from two specific questions:

1. Whether problem-based learning method can improve students’ grammar ability?
2. Whether problem-based learning method can improve students’ interest and motivation in grammar learning?

The Participants

The participants come from two classes of Grade one in Xuancheng No. 3 Junior High School by sampling. One is the experimental group, the other is the control group. Students from two classes have the same English level. Problem-based learning method is applied in Class 1 to contrast with Class 2 which is in normal teaching. To eliminate the influence of other elements, the gender ratio of the two classes is balanced (as shown in Table 1), and they are taught with the same textbook and by the same teacher.

Table 1

The Gender Ratio of Two Classes

Class	Male	Female	Students number
Class 1	23	31	54
Class 2	21	33	54
Total	44	64	108

Instruments

There are three instruments used in the thesis: test, questionnaire, and observation.

First instrument of the research is the test used as the measurement of students' English achievements. There are three parts in the test: Part one is multiple choice used to check the basic knowledge students acquire; Part two is filling the blanks which test students' overall grammatical competence; and Part three is sentence pattern transformation used to check the comprehensive English ability of students. Test is conducted before and after using the teaching method in order to make a comparison between the two classes to check the effect of problem-based learning method.

Second instrument implemented before and after a series of tests is questionnaire. Questionnaires are divided into two parts: pre-questionnaire and post-questionnaire. Pre-questionnaire mainly contains four dimensions: (a) learning interest; (b) attitudes towards teacher; (c) learning behaviour; and (d) learning achievements. Post-questionnaire mainly contains five dimensions: (a) learning interest; (b) attitudes towards teacher; (c) learning behaviour; (d) learning achievements; and (e) attitude towards teaching method. The answer of Questionnaires 1, 2, and 4 is designed on the basis of the range "Yes", "No", and "Have no idea". The rest is in written form.

Third instrument is observation. Through observation of the learners learning process both in class and after class, students' reaction, attitude, attention, and their participation towards the grammar teaching class can be surveyed. The method concentrates on effect of problem-based learning method from the teachers' point of view.

Research Procedures**Pre-questionnaire**

Before the application, a questionnaire was conducted to survey students' attitude, interest, and even the time and effort they spent on English grammar learning. It took three minutes before class. Teacher collected these questionnaires to contrast with latter one in order to analyze the changes of students' inner consciousness.

Pre-test

Then the pre-test was carried in the experimental class and the control class before the experiment. When conducting the test, teacher must invigilate strictly in order to preclude the students from cheating in the examination. After the students finished the test, teacher corrected the answers on the paper and calculated the scores of the paper, the result of which was kept for later use.

Experiment

Two classes from Xuancheng Middle School were separated. Problem-based learning method was applied to Class 1 while Class 2 was taught in traditional method.

Teaching procedures of each grammar item are displayed in Table 2. Generally, the experiment can be divided into five parts:

Table 2

Teaching Schedule in Experiment

Grammar items	Time (weeks)
Agreement	2
Tense	2
General and special question	4

At first part, teacher taught students as usual. During this period, teacher should occasionally put forward some questions in order to let students have a passing knowledge about this method and have a briefly information about the procedures.

The second part was to teach agreement. Agreement is the most basic grammar knowledge in junior high school. The reason why teacher choose this grammar as the first one is that it serves as a foundation for the rest of teaching points. Agreement is the easiest grammar knowledge; thus students can get accustomed to problem-based learning used in grammar class more easily.

The third part was to teach tense. This part is the combination of the agreement and tense. Not only can teacher review the grammar points learned last week, but also he can deep use this method to teach other knowledge. During this period, students were used to this learning method. Hence, teacher shift their role into a class controller rather than just a question producer.

The fourth part was the independent exploration. In this stage, the teacher was to guide students to discover problems, solve problems, and draw conclusions, which is different from traditional methods.

The fifth part was the cooperative learning. In this stage, teacher designed appropriate activities and tasks. Then each group shared their ideas and teacher corrected their mistakes in time during the process.

Post-test

After the experiment, both the experimental class and the control class should take participant in the post-test. After the students finished the test, teacher collected the paper from students and corrected their scores, comparing the scores of the pre-test and post-test between the experimental class and the control class to verify whether there is a significant difference between the two classes.

Post-questionnaire

The teacher conducted a questionnaire survey on the students in the experimental class and the control class after experiment and analyzed questionnaires data. It aimed to collect data on students' attitudes and interests towards English grammar after using the problem-based learning method.

Results and Discussion

Table 3

Descriptive Statistical of Pre-test

Descriptive statistics					
	<i>N</i>	Minimum	Maximum	<i>Mean</i>	<i>Std. deviation</i>
Pre-E	54	87	95	90.06	1.642
Pre-C	54	86	95	90.00	1.505

Note. Pre-E refers to "pre-test in experimental class"; and Pre-C refers to "pre-test in control class".

Table 3 is a descriptive statistical table of English grammar pre-test in the experimental and the control classes, which is used to compare the mean and standard deviation of English grammar scores between the two classes. Table 4 is the independent sample *t*-test result of English grammar test before the experiment in the experimental class and the control class.

Table 4

Independent Sample T-Test Results of Pre-test

Independent sample test					
	<i>t</i>	<i>df</i>	<i>Sig.</i>	<i>MD</i>	<i>Std. deviation</i>
EC-CC	0.183	106	0.723	0.056	0.303

Note. EC refers to “experimental class”; and CC refers to “control class”.

As shown in Table 3, before the experiment, the mean score of English grammar is 90.06 and standard derivation is 1.642; the mean score of the control class is 90.00 and standard derivation is 1.505. It shows that, before the experiment, there was little difference between the English grammar scores of the experimental and control groups. The *t*-test data from the Table 4 verify that there is no difference between the two classes ($t(105.205) = 0.183, p > 0.05$). It can be found that before the experiment, the experimental class and the control class have the same level of English grammar, which can be concluded that it is very appropriate for these two classes to be used in the comparative study.

At the end of the experiment, the researchers conducted a post-test on two classes. Table 5 is a descriptive statistical table used to compare the mean and standard deviation of English grammar scores between the two classes. Table 6 is an independent sample of the post-test English grammar scores of the two classes. The main purpose of this study is to find out whether there are significant differences between the two classes.

Table 5

Descriptive Statistical of Post-test

Descriptive statistics					
	<i>N</i>	Minimum	Maximum	<i>Mean</i>	<i>Std. deviation</i>
Post-E	54	100	110	105.56	2.806
Post-C	54	86	95	89.81	1.530

Note. Post-E refers to “post-test in experimental class”; and Post-C refers to “post-test in control class”.

Table 6

Independent Sample T-Test of Post-test

Independent sample test					
	<i>t</i>	<i>df</i>	<i>Sig.</i>	<i>MD</i>	<i>Std. deviation</i>
EC-CC	36.188	81.969	0.000	15.741	0.435

As shown in Table 5, the mean scores of the students in the experimental class and the control class were 105.56 and 89.81 and standard derivation is 2.806 and 1.530, respectively. The students in the experimental class scored significantly higher than those in the control class. In addition, as shown in Table 6, the independent sample *t*-test data show that there was a significant difference between the two classes in post-test English grammar ($t(62.189) = 21.42, p < 0.01$), which means that problem-based approach can improve the students’

English grammar performance in the experimental class. It should be noted that the standard derivation in post-test of experimental class is higher than that of the control class and that in pre-test of the experimental class, which means that students' adaptive faculty to this method is different, but they all get improved in grammar competence.

The discrepancy between achievement of two classes shows that problem-based learning method indeed acts as a catalyst for students' improvement. Students in Class 1 have dramatically improved both in achievement and class performance over the non-applied one. Through observation of class interactions and individual performance, students are more active in class activities, typically those who used to be silent. On the contrary to be a knowledge receiver, many students become "the knowledge producer".

Table 7 presents the pre-questionnaire results of the experimental class and the control class. The results of the questionnaire survey before the experiment are as follows.

Table 7

Results of Pre-questionnaires

Items	Support		Neutral		Disagree	
	EC	CC	EC	CC	EC	CC
Motivation towards English	13	12	20	21	21	21
Interests	10	11	22	19	22	24
Learning achievement	13	13	19	23	22	18

According to Table 7, it can be observed that students from the experimental class and the control class both show less interests towards English and do not get satisfied in their learning achievement. More than half students from the experimental class and the control class both held that they pose a neutral or disagreed attitude towards English learning. In written questions students expressed that traditional teaching class is boring to students. And this method fails to capture their attention.

Table 8

Results of Post-questionnaires

Items	Support		Neutral		Disagree	
	EC	CC	EC	CC	EC	CC
Motivation towards English	31	13	13	21	10	20
Interests	40	11	10	19	4	24
Learning achievement	29	13	16	23	9	18

According to the statistics in Table 8, it can be concluded that after the use of problem-based learning method, students from the experimental class show more positive attitudes towards English teaching and learning. Compared with Table 7, 18 students deem that their attitude towards English become supportive from neutral or disagreed. And 16 students become more content with their learning achievement. There are 40 students in the experimental class voting their support in the post-questionnaire. In the pre-questionnaire, only 10 students pose their support to traditional teaching class. It shows that after applying problem-based learning method, students' interest in grammar learning significantly gets improved. Meanwhile, attitudes towards English, interests, learning achievement of students from the control class comparatively remain invariable.

The questionnaires carried out before and after test indicate that problem-based learning method stimulate

students' interest, especially for those who used to have bad achievement because of lacking interest and monotonous teaching method. Many students also expressed their desire of attending problem based English grammar class in the future.

Conclusions

Qualitative research and quantitative research were used in the experiment to investigate the problem-based learning method in Xuancheng junior high school. The following findings were concluded: (1) The teaching of English grammar based on the problem-based learning method is helpful to improve junior high school students' English grammar achievement; and (2) problem-based approach can change the attitude of junior high school students towards English grammar learning. To sum up, firstly, through observation problem-based learning method, a relaxed and pleasant learning atmosphere can be created in English grammar class, which can help students overcome their inner tension to a certain extent. Secondly, problem-based learning method can change the traditional grammar teaching mode and turn the classroom into an interactive classroom for teachers and students. Finally, through problem-based grammar teaching, students can form good grammar learning habits and independent thinking ability, and at the same time, they can develop the ability to cooperate and communicate with others.

There are some limitations in this experiment. First of all, on the one hand, in this experiment there is only one English learning class under the guidance of the problem-based method; the number of students both in the experimental group and control group is limited. Second, the ratio of gender in the two classes tends to be even. Thus, it is not possible to determine if this method can be applied to classes in different situations. Third, in the post-test, it can be found that standard derivation of the experimental class is comparatively high than the control and that in pre-test. In this experiment, the fact that diverse students have different adaptive faculty for this method is ignored. It is hoped that future research will address these limitations, broaden the breadth and depth of research, and put forward strategies that are more effective and appropriate for English teaching and learning, and truly promote students' English learning effectiveness.

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