

Application of Peer Instruction in College English Vocabulary Teaching

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Abstract: In order to test the effectiveness of Peer Instruction teaching method in College English vocabulary teaching and provide a basis for the reform of English vocabulary teaching, the study employs the interactive Peer Instruction teaching method to test its impact on students' academic performance and attitudes. The subjects are divided into two teaching classes. The control class adopts the conventional teaching method, while the experimental class employs the interactive Peer Instruction teaching method. The data between the experimental class and the control class shows that the interactive Peer Instruction teaching method can effectively improve the students' academic performance of College English vocabulary, verifying the feasibility of application of Peer Instruction in College English Teaching.

Keywords: Peer Instruction; College English Vocabulary Teaching; ConcepTest

1. Introduction

Tertiary education has been moving towards more flexible teaching and learning environments. In 1991, Eric Mazur developed Peer Instruction, a practical and effective method for teaching science. Through more than 30 years of researches by Mazur and others, it has proved that Peer Instruction plays an important role in understanding and mastering of students' physical concepts, and the improvement of their learning interest^[1]. Peer Instruction breaks the monotony of passive lecturing, and, more importantly, the students do not merely assimilate the material presented to them; they think for themselves and put their thoughts into work.

The general sense of frustration with College English vocabulary learning is widespread among non-English majors required to take College English courses. One of the problems with conventional College English vocabulary teaching lies in the presentation of the material. It frequently comes out of textbooks and/or slides, giving students little incentive to attend class. And the conventional presentation is mostly delivered as a monologue in front of a passive audience. Only exceptional teachers are capable of holding students' attention for entire lecture period. It is even more difficult to provide adequate opportunity for students to critically think through the arguments being developed.

Study of the application of Peer Instruction in College English education is the attempt to explore the new curriculum reform. This study applies Peer Instruction teaching method to College English vocabulary teaching to examine its impact on student academic performance and attitudes. By comparing with the traditional vocabulary teaching method mainly based on passive lecturing, the study measures the effectiveness of Peer Instruction method in College English vocabulary teaching, providing a basis for the reform of College English teaching.

2. Peer Instruction

Peer instruction, developed by Harvard professor Eric Mazur in 1991, is a simple yet effective method for teaching science. His approach involves students in the teaching process, making physics significantly more accessible to them. His technique has been highly successful, adopted by thousands of instructors across the world. A variety of teaching practices have proved that cooperation and communication among peers can fully mobilize the enthusiasm of students, increase the level of classroom participation and the interaction between teachers and students, and further improve and cultivate students' independent learning ability, innovation ability and critical thinking ability^[2].

2.1 Theoretical Basis

As one of the most influential teaching methods in the field of education, Peer Instruction has its own theoretical basis. In 1946, the famous American scholar Edgar Dale proposed Cone of Learning. The theory (see Figure 1) holds that the nature of involvement affects the retention rates of the learners. According to Edgar Dale, the traditional learning methods of verbal receiving and visual receiving are passive, while those of receiving/participating and doing are active by which the learners tend to remember more after 2 weeks.

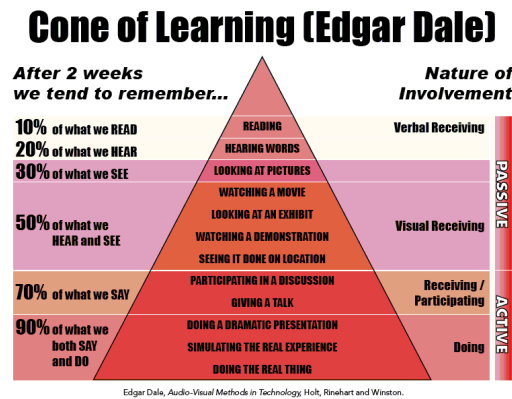


Figure 1: The Cone of Learning

The National Training Laboratories in Bethel, Maine conducted similar researches and put forward Learning Pyramid, which has similar conclusions with the Cone of Learning. According to the theory (see Figure 2), learning methods affect the average retention rates of students. The students tend to remember 90% of what they have learned by "teaching others".

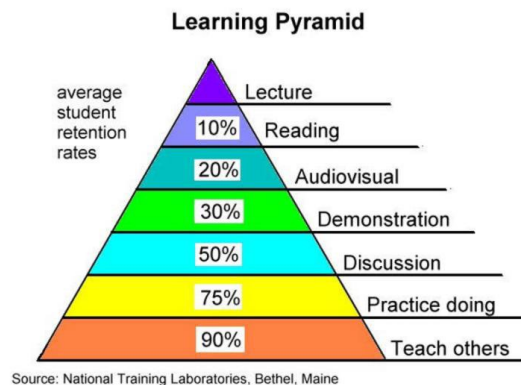


Figure 2: The Learning Pyramid

It can be seen from the above theories that different learning methods can produce vastly different learning outcomes. Therefore, while changing the learning methods of students, teachers should also reflect on the changes of classroom teaching methods, strategies, and models, so as to stimulate students' interest in learning and enhance the efficiency of classroom teaching.

2.2 Peer Instruction

As one of the most popular interactive teaching methods, the basic goals of Peer Instruction are to exploit student interaction during lectures and focus students' attention on underlying concepts. ConcepTest, discussion and feedback are the three essential and indispensable components of Peer Instruction.

Instead of presenting details covered in the textbook or lecture notes, lectures consist of a number of short presentations on key points, each followed by a ConcepTest -- short questions on the subject being discussed. The students are first given time to formulate answers and then asked to discuss their answers with each other. If most students choose the correct answer to the ConcepTest, the lecture proceeds to the next topic. If the percentage of correct answer is too low (say less than 30%), the teacher

slows down, lectures in more detail on the same subject, and reassess with another ConcepTest. Each ConcepTest has the following general format (see Figure 3)^[3].

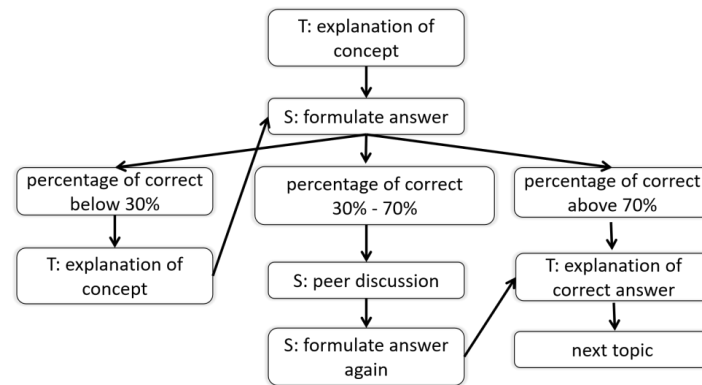


Figure 3: The Format of Peer Instruction

This repeat-when-necessary approach prevents a gulf from developing between the teacher's expectations and the students' understanding--a gulf that, once formed, only increases with time until the entire class is lost. Meanwhile, peer discussion is an important part of Peer Instruction, and the quality of peer discussion has a significant impact on the effectiveness of peer instruction. The convince-your-neighbors discussions systematically increase both the percentage of correct answers and the confidence of the students. And the new lecture format elicits far more questions from the students than the teacher has encountered before. Often these questions are to the point and profound, and the teachers usually attempt to address as many of them as the teachers can. Because Peer Instruction lectures are much less rigid than those of the conventional method, with the former, a certain amount of flexibility is necessary to respond to the sometimes unexpected results of the ConcepTests. One of the greatest advantages of Peer Instruction is that the ConcepTest answers provide immediate feedback on student understanding^[3]. And tallying the answers can be accomplished in a variety of ways, depending on the purpose. The students' responses are relayed to the teacher on the learning management system which allows students to enter their answers to the ConcepTest.

3. Teaching Practice of College English Vocabulary Based on Peer Instruction

This study explores the application of interactive Peer Instruction in the teaching of College English vocabulary through a teaching experiment. The data obtained indicates that in this experiment the students playing the instructing role perform better than the students playing the learners' role.

3.1 College English Vocabulary Teaching

Vocabulary is a building block for other skills of English. And compared with the communicative function of grammar, vocabulary is primary, while grammar is secondary. Vocabulary expresses actual meaning, while grammar expresses relational meaning^[4]. However, the hot spots of language teaching were once focused on grammar teaching, and the importance of vocabulary teaching was not fully recognized until the rise of Communicative Approach in the 1970s.

Yet the way College English vocabulary is taught today is not much different from the way it was taught, and the audience has vastly changed, which has caused a significant change in students' attitude toward the subject and made the teaching of College English vocabulary a considerable challenge. That is, far too many students are not motivated by the conventional teaching method. Therefore, in order to motivate students in English vocabulary learning, it is necessary to design some innovative and interactive teaching activities.

3.2 Teaching Practice of College English Vocabulary Based on Peer Instruction

3.2.1 Subjects

To fully investigate possible pathways, the study tests the method of Peer Instruction in College English vocabulary teaching against 59 non-English majors required to take College English courses. All the students are divided into two teaching classes. One of the teaching classes is the experimental

class, which conducts Peer Instruction in College English vocabulary teaching, while the other teaching class serves as the control class, adopting a traditional teaching method mainly based on lectures.

3.2.2 Procedure

In this new lecturing format, the ConcepTests take more time of each lecture period, leaving less time for lecturing. Therefore, the study reduces the number of vocabulary covered during the semester at the beginning of the study. And the study designs a number of questions for each key vocabulary (see Figure 4). Then the teacher assigns the experimental class to finish the pre-class assignments. Before each lecture, the students in the experimental class are required to memorize the vocabulary assigned by the teacher. The students are expected to master the spelling, pronunciation and meaning of each vocabulary and go through examples of vocabulary. While students in control class are required to memorize the vocabulary after lecture.

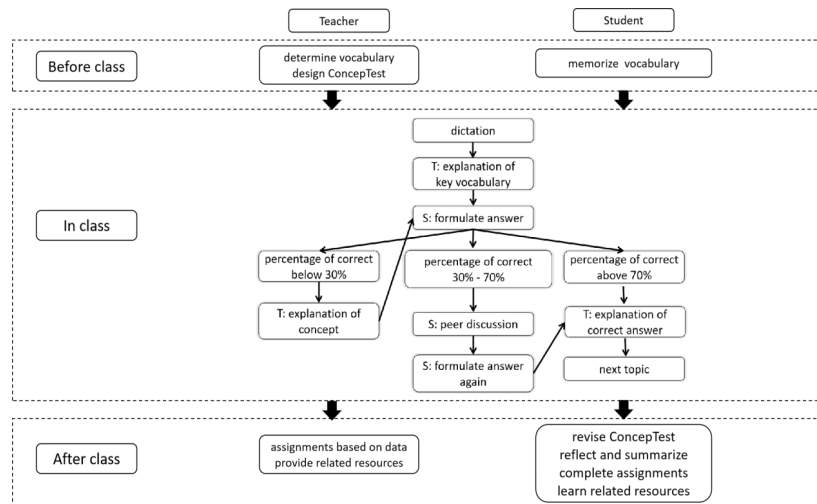


Figure 4: The Procedure of College English vocabulary teaching based on Peer Instruction

In the experimental class, to make sure the students in the experimental class finish their pre-class assignments, the teacher administrates a dictation, a very effective technique that is complementary to peer instruction at the beginning of each lecture period. Then the teacher explains the key points of vocabulary. After that, the teacher explains the ConcepTest assignment to the students, making sure there are no misunderstandings about it. Next, the teacher tells the students they have one minute to select an answer for each ConcepTest. In order to make each student answer individually, the teacher does not allow them to talk to one another; the teacher makes sure it is dead-silent in the classroom. After that, the teacher asks the students to formulate their answers on the learning management system for the first time, and then the students try to convince a neighbor of the rightness of those answers.

During the convince-your-neighbors discussions, the teacher always participates in some of the discussions. Doing so allows the teacher to assess the mistakes being made and to hear how students who have the right answers explain their reasoning. After the discussion, the teacher asks the students to formulate revised answers. Then the teacher spends few minutes explaining the correct answer before going on to the next topic. It should be noted that in order to make the students completely free of any pressure or competition the teacher tells students that their performance on the ConcepTest will have no bearing on their final grades. In the control class, the teacher delivers lectures in the traditional way.

After lectures, in the experimental class, the teacher assigns assignment based on the data of ConcepTest during the lecture and provides related resources. The students revise ConcepTests, reflect and summarize, complete assignments, and learn related resources. In the control class, students are required to memorize vocabulary and learn related resources.

3.2.3 Teaching Effects of College English Vocabulary Based on Peer Instruction

Using the lecture format described above, it has, with relatively little effort and no capital investment, improved students' performance in College English vocabulary--to double their gains in understanding as measured by the tests and improved their performance on conventional examinations. Meanwhile, survey questionnaire shows that student satisfaction, an important indicator of learner success, is high as well.

To test the effectiveness of Peer Instruction in College English vocabulary teaching, the experimental class employs the interactive Peer Instruction teaching method, while the control class adopts the conventional teaching method. The conclusions are finally drawn by measuring and analyzing the scores of the experimental class and the control class.

Table 1: Comparison Results of College English Vocabulary Teaching.

Test	Control class	Experimental class
College Entrance Examination (Total 150)	78.8	77.9
Test 1 (Total 15)	8.8	10.1
Test 2 (Total 15)	11.6	14.0
Test 3 (Total 15)	5.9	9.9
Test 4 (Total 15)	9.2	13.5
Final Exam (Total 30)	13.0	17.1

As shown in Table 1, under the condition that the average scores of College Entrance Examination between experimental class and the control class are close, tests and final exam are of the same difficulty and the assessment methods are the same, the average vocabulary scores of the four tests and final exam are compared and analyzed. The data shows that adopting the teaching model of Peer Instruction in College English vocabulary teaching can effectively improve the students' performance. This is also consistent with the study hypothesis.

The survey questionnaire conducted after the teaching experiment is completed in the experimental class. It mainly aims at testing the students' learning attitudes towards Peer Instruction.

Table 2: College English vocabulary teaching based on PI interview results.

Question	Proportion of each level				
	very good	good	average	poor	very poor
1.I can effectively participate in peer discussions.	18.9	67.5	13.6	0	0
2.PI can improve my classroom involvement.	19.7	76.8	3.5	0	0
3.PI can promote my understanding of vocabulary.	21.3	76.1	2.6	0	0
4.PI has increased my interest in learning.	23.7	67.5	8.8	0	0
5.PI has cultivated the spirit of cooperation between peers and me.	20.8	66.7	8.9	3.6	0
6.PI is helpful for me to solve problems.	19.7	66.7	10.7	2.9	0

As seen in Table 2, the results show that the adoption of the Peer Instruction teaching method can effectively improve the classroom involvement and learning interest of students. At the same time, the students' understanding of vocabulary is promoted, and the spirit of cooperation is cultivated. The students can effectively participate in peer discussion.

Through teaching practice and questionnaire survey, the results show that the application of Peer Instruction to College English vocabulary teaching is feasible. This teaching model improves the student performance on conventional examinations, changes the students' way of learning, and balances the relationship between the traditional model and the open one. It develops the students' ability of autonomous learning and cooperation.

4. Discussion

Distinct from the traditional teaching method of College English vocabulary, there exist some issues that require special attention. These issues involve teaching contents, teachers' role and teaching tools.

To convert a conventional lecture, teachers should first determine the vocabulary that must be covered. During lecture, teachers no longer present pronunciation, derivations, and examples which are covered in pre-class assignments. After taking these items out of teacher's presentation, teachers determine the key points they want to get across. Eventually teachers are left with a skeletal lecture outline.

Peer Instruction requires the textbook and/or materials and lectures to play roles different from those they play in a conventional course. Pre-class assignments from the book and/or materials first

introduce the material, address potential difficulties, deepen understanding and add additional examples. The textbook and/or materials serve as a reference and a study guide.

While composing the Conceptests constitutes perhaps the largest effort required to convert a conventional lecture presentation to a Peer Instruction format. The importance of this task should not be underestimated, as the success of the method depends to a large extent on the quality and relevance of these questions. And although there are no hard-and-fast rules for the ConcepTest, they should satisfy a number of basic criteria. For example, each ConcepTest should focus on a single vocabulary, have adequate multiple-choice answers, be unambiguously worded and be neither too easy nor too difficult, etc. All these criteria directly affect feedback to teachers. Ideally, the incorrect answer choices should reflect students' most common misconceptions.

As for peer discussion, involvement of teachers benefits them in two ways. First, teachers hear the students explain the answers in their own words, and it seems that students are able to explain to one another more effectively than their teachers. Because sometimes the students offer a completely different perspective on the problem, in which case teachers frequently borrow from the students. Consequently, the students are teaching teachers how to teach. What is also important is that by listening to students who have reasoned their way to the wrong answer, teachers get a feel for what goes on in their minds. This involvement helps teachers to focus better on the problems they are facing and allows teachers to address these problems directly in his explanations. Finally the personal interaction during the discussions helps teachers keep in touch with the class.

The election of Learning Management System should not be ignored. Although the success of Peer Instruction is independent of feedback method, the increased use of sophisticated mobile devices opens up new possibilities and challenges for language teachers and students. One of the main functions of the system is that analysis of the ConcepTest results is available immediately. In addition, student information (such as name) is available to the teacher, making larger classes more professional.

5. Conclusion

For quite some time, the traditional teacher-centered teaching model has dominated College English teaching, with teachers mainly appearing as leaders and knowledge transmitters. In foreign language teaching, the ultimate goal is to enable students to acquire the ability and skills to communicate by using language. The acquisition of these skills is a process in which students actively involve. However, in traditional College English teaching, as passive learners, the students' initiative and interest are difficult to stimulate.

In order to test the effectiveness and feasibility of Peer Instruction in College English teaching, the study proposes to employ the teaching method to vocabulary teaching. It divides the subjects who are non-English majors into two teaching classes. The experimental class employs the interactive Peer Instruction teaching method, while the control class adopts the conventional teaching method. The data reveals that Peer Instruction teaching method can effectively improve the students' performance of College English vocabulary and improve the students' involvement. Meanwhile, students' enthusiasm and autonomy for learning have been improved^[5]. This study verifies the effectiveness and feasibility of Peer Instruction in the teaching of College English vocabulary, and provides an example for the introduction of Peer Instruction to College English classroom and reconstruction of conventional College English vocabulary teaching^[1].

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