The Influence and Role of English Reading on the Development of Critical Thinking Ability of English Major Students

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Abstract: With the continuous improvement of the comprehensive ability requirements of college English education, the problem of over-emphasis on language knowledge teaching and neglect of thinking ability cultivation in traditional basic English teaching has become increasingly prominent. The existing teaching methods have obvious deficiencies in stimulating students' thinking depth, questioning spirit and logical expression. To this end, this paper introduces an English reading teaching model oriented towards the cultivation of critical thinking ability. Through systematically-designed multi-type teaching activities, including pre-class critical questioning, group discussion and debate, project-based PPT report, speculative writing and role-playing, it integrates task-driven and problem-oriented teaching concepts to improve students' critical thinking ability in five dimensions: analysis, interpretation, reasoning, evaluation and reflection. The experimental results show that the post-test scores of the experimental group students in each dimension are significantly higher than those of the control group (p<0.01), among which the analysis and reasoning ability are improved most significantly, indicating that this teaching strategy not only effectively improves the quality of students' thinking but also enhances students' learning motivation and comprehensive language application ability.

1. Introduction

With the acceleration of globalization and informatization, English, as a global language, has become increasingly important in academic research, cross-cultural communication and career development. However, simply imparting language knowledge can no longer meet the requirements of today's education for students' comprehensive literacy, especially in the cultivation of thinking ability.

In order to solve this problem, this paper proposes to combine the cultivation of critical thinking ability with English reading teaching, and designs a teaching model based on task-driven and project-based learning (PBL). Through comparative experiments, this paper explores the effect of this teaching model on the cultivation of students' critical thinking ability, especially the performance differences in the five core dimensions of analysis, interpretation, reasoning, evaluation and reflection. In addition, the experimental data also shows that innovative teaching

activities not only improve students' critical thinking level but also enhance their learning interest and participating enthusiasm.

2. Related Work

In order to further explore the cultivation of critical thinking in different educational environments, many scholars have conducted a series of studies. The following are several representative research results, which explore the cultivation of critical thinking and its relationship with other academic abilities from different perspectives.

Guo and Lee used Georgia Gwinnett College as an example to explore the use of ChatGPT in introductory chemistry courses to improve students' critical thinking skills. The study showed that students made significant progress in asking questions, analyzing, and understanding complex concepts, and were willing to recommend the tool [1]. Teng and Yue used a structural equation model to explore the relationship between metacognition, critical thinking skills, and academic writing among Chinese college students. The results showed a significant correlation between the three, emphasizing the importance of improving metacognition for writing skills [2]. Orakci's survey of 575 Turkish teacher trainees showed that academic motivation, self-efficacy and problem-solving ability all significantly affect creativity and critical thinking, and creative thinking has a partial mediating effect on critical thinking, which has important implications for teacher training [3]. Jamil used thematic analysis and NVivo12 software to analyze the manifestation of critical thinking in the documents of the 2006 biology curriculum standards. The results showed that the course objectives clearly emphasized critical thinking, attached importance to evidence, rationality and honesty, and recommended the use of inquiry-based learning, concept mapping and other teaching methods [4]. Although the existing studies have explored the cultivation of critical thinking, most studies are still limited to the application of a single subject or teaching method, and lack in-depth discussions on interdisciplinary and comprehensive teaching interventions.

3. Method

In the current English major teaching, cultivating students' critical thinking ability has become an important task. The traditional teaching method, which focuses on knowledge explanation and language skills training, helps students master basic language skills, but often ignores the improvement of thinking quality. As an important part of students' comprehensive literacy, critical thinking ability covers the ability to understand, analyze, judge, reflect and innovate information, and can effectively improve the depth and breadth of their language application. Therefore, teachers should make full use of the diversity and openness of English reading teaching, take proper methods, carefully design teaching content and activities, and gradually guide students to establish and develop critical thinking ability in the process of language learning through reading, understading, analyzing.

3.1 Pre-class Stage: Design Inspiring Tasks to Activate Thinking Awareness

The first step of English reading teaching often starts with pre-class preparation, which is the starting point for stimulating students' critical thinking. Teachers can set inspiring questions based on the reading content to encourage students to think actively during the pre-class preparation process. Taking *Thinking as a Hobby* in *Modern College English (Intensive Reading) Volume 2* as an example, teachers can ask the following questions in advance: Why did the author write this article? Do you like this article? Why? What are the symbolic meanings of the statues in the text? Through these questions without standard answers, students are guided to have a deeper

understanding of the text and personal thinking, thus breaking the thinking mode of mechanical acceptance of the text and gradually developing the habit of questioning and reflection.

These questions not only help students understand the structure and basic content of the text but more importantly, they encourage them to express their judgments in their own language and cultivate their ability to analyze and evaluate information after pre-reading themselves. In particular, when faced with different viewpoints and interpretations, students need to compare, choose and judge between information, thereby effectively improving their basic critical thinking skills.

3.2 Classroom Stage: Implementing Multi-form PBL Teaching to Promote Cognitive Depth

In the classroom teaching process, teachers can introduce the project-based learning (PBL) model to promote students to carry out thinking training in a real context by a task-driven way. The "Professional English" textbook involves multiple topics such as culture, society, and environment, which are suitable for transformation into background materials for PBL projects. For example, teachers can design background knowledge as problem tasks, such as "The impact of globalization on local culture", requiring students to consult materials, work in groups, write reports, and present them in the form of speeches or debates. In this process, students must not only master the skills of language expression but also learn key skills such as information screening, logical analysis, and point of view construction.

In addition, various activities, such as role-playing, brainstorming, group debates, and thematic presentations, not only increase classroom interaction but also encourage students to think about problems from different perspectives.

3.3 More Reading: Deepen Your Understanding and Reflection by Asking Yourself Questions

During the reading process, self-questioning is an effective method of critical thinking training. Teachers should guide students to shift from passive reception to active knowledge construction, and encourage them to ask valuable questions about the text. For example, you can start with the relationship between the title and the content, and ask the question "Does the title accurately reflect the main idea of the article?"; or guide students to compare the author's point of view with their own through the comparison method; or use reverse thinking to challenge the conclusion of an article and stimulate the multi-dimensional expansion of thinking.

The ability to ask questions is not innate, and teachers need to guide students to establish thinking models through long-term training. In teaching, methods such as mind maps, question lists, and question relay can be used to systematically improve students' problem awareness and questioning ability, and ultimately enable them to form an internal driving force for critical thinking in reading.

3.4 After-school Stage: Diversified Tasks to Consolidate Thinking Habits

Reading teaching is not limited to the classroom, and the extension tasks after class are equally important. Teachers can design a variety of task-based and research-based assignments to guide students to continue to deepen their understanding and thinking of the text. For example, students can be asked to write summaries, group reports, critical essays or research reports on related topics. These tasks not only help the internalization of language knowledge but also prompt students to organize and reflect on their own cognitive processes, and constantly hone the logic of expression and thinking in practice.

In addition, organizing small seminars, survey projects or data analysis tasks can also cultivate students' sense of cooperation and research ability. Teachers can group students according to their

interests and learning abilities, and assign subtasks such as data review, structural analysis, and viewpoint refinement, encouraging them to transform personal thinking into team results, and present them in the form of PPT, and accept questioning, argumentation and feedback in class exchanges.

4. Results and Discussion

4.1 Research Subjects and Groups

This experiment uses students from two natural classes of the second year of English major in a certain university as the research subjects. The number of students in both classes is 40, and the gender ratio and English foundation are similar. In order to ensure the reliability and validity of the experiment, they are set as experimental group and control group, respectively.

Before the experiment begins, all students need to take a pre-test of critical thinking level to ensure that the initial levels of the two groups are comparable.

4.2 Experimental Content and Teaching Intervention

The experimental period is one semester (about 16 weeks). The unified textbook "Modern College English (Intensive Reading) Volume 2" is used for teaching, and systematic teaching intervention is carried out around the six core units in the textbook.

Teaching strategy design of the experimental group:

Pre-class stage: The teacher designs 3-5 open-ended thinking-guiding questions (such as "Does the author have a biased position?", "Do you agree with his point of view? Why?", etc.), and arranges students to complete pre-study and preliminary thinking in groups or individually.

Classroom stage: A variety of teaching methods are used, such as role-playing, thematic debates, group presentations, etc., combined with the PBL project-driven approach to organize classroom tasks, encourage students to ask questions, question viewpoints, and conduct critical discussions.

Post-class stage: Task-based homework with critical thinking is assigned, such as writing critical essays, preparing group PPT reports, conducting questionnaires and data interpretation, etc., to encourage students to transfer what they have learned in class to the analysis of real problems.

Teaching arrangement for the control group:

The original teaching method of reading class, which mainly focuses on knowledge transfer, emphasizes the explanation of text content, vocabulary and grammar analysis, and text retelling.

Before class, students mainly complete preparatory tasks such as looking up vocabulary and memorizing phrases. In class, the teacher mainly explains and students listen. After-class homework mainly consists of supporting exercises, lacking in-depth cognitive training and thinking participation.

4.3 Data Processing and Analysis Methods

From the experimental data in Figure 1, it can be seen that after a one-semester teaching intervention, there is a significant difference in the performance of students in the experimental group and the control group in the critical thinking ability assessment. As shown in Figure 1, the average score of students in the experimental group in the pre-test is 61.4 points (standard deviation is 5.2), and the average score in the post-test increases to 75.8 points (standard deviation is 4.9), with a total increase of 14.4 points, and a significant growth trend.
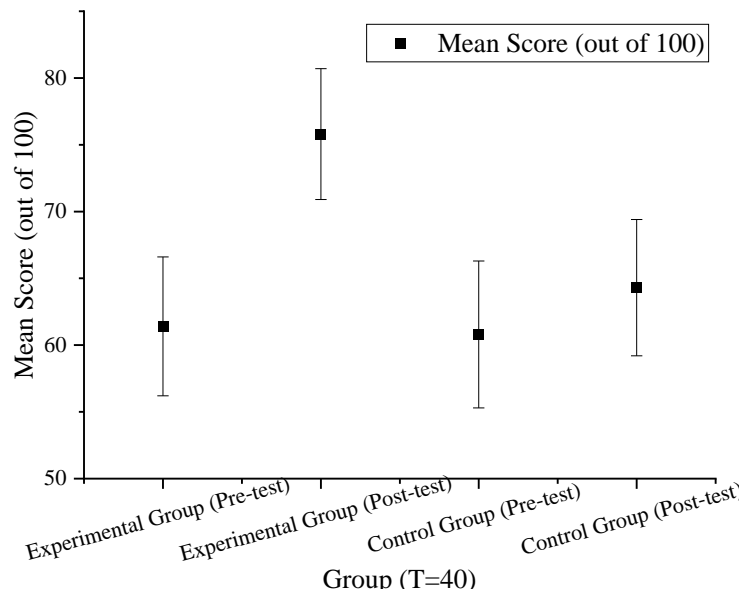
Figure 1 Total scores of critical thinking in the pre-test and post-test of the experimental group and the control group

From the post-test results in Figure 2, there are significant differences between the experimental group and the control group in the five core dimensions of critical thinking, indicating that the teaching intervention based on reading teaching has produced positive effects at multiple cognitive levels.
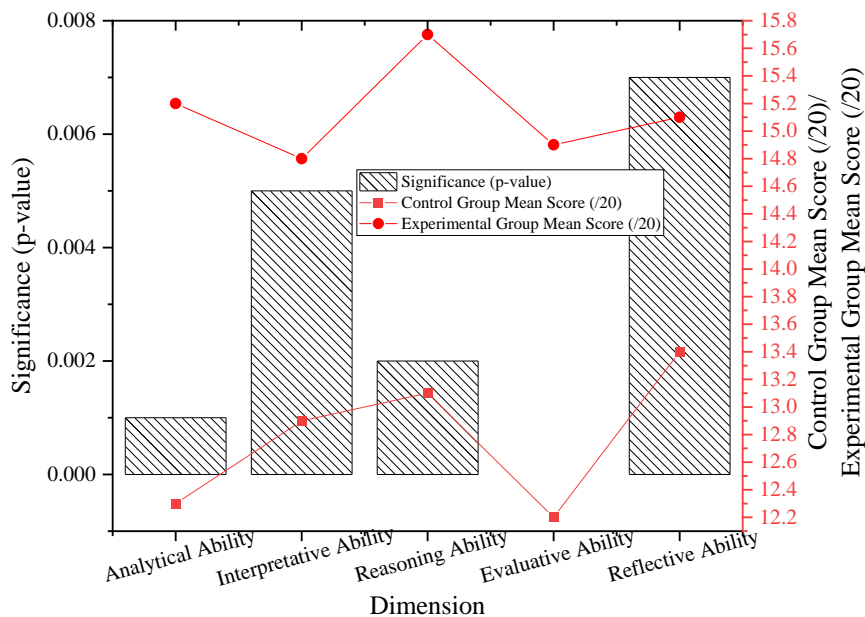

Figure 2 Comparison of scores on the five dimensions of critical thinking (post-test)

The average score of the experimental group's analytical ability is 15.2 points, significantly higher than the 12.3 points of the control group (p=0.001), indicating that through systematic text deconstruction, sentence group logic combing, and position analysis and other teaching activities, students' ability to decompose and organize information has been effectively trained. In the dimension of interpretation ability, the experimental group scores 14.8 and the control group scores 12.9 (p=0.005).

Table 1 Statistics of the frequency of participation in teaching activities by the experimental group (in units of 16 weeks)

Type of teaching activities	Average number of participations (per student)	Student activity satisfaction (out of 5 points)
Critical Questioning Tasks	12 times	4.3
Group debate/discussion	10 times	4.5
Project-based PPT report	3 times	4.2
Critical writing tasks	4 times	4.1
Role Playing and Point of View Interpretation	2 times	4

The average number of participation in critical questioning tasks is as high as 12 times, and the activity satisfaction is 4.3 points, indicating that this task form is widely used in daily classes and is well received by students. The frequency of participation in group debate and discussion activities is 10 times, and the satisfaction is the highest (4.5 points), indicating that the collaborative and viewpoint collision teaching methods are the most challenging to students' thinking and can best stimulate their enthusiasm for learning. Although the average number of project-based PPT reporting activities is only 3 times, the satisfaction is 4.2 points, indicating that students highly recognized this type of task, as shown in Table 1.

5. Conclusion

This paper aims to explore the impact of English reading teaching on the cultivation of critical thinking ability of English major students, especially by combining task-driven and project-based learning (PBL) models to analyze its effect on improving students' critical thinking. The experimental results show that after a one-semester teaching intervention, the students in the experimental group are significantly better than those in the control group in the five dimensions of critical thinking (analysis, interpretation, reasoning, evaluation and reflection), and the improvement is obvious, especially in the reasoning and evaluation ability. In addition, students in the experimental group expressed high satisfaction with the various teaching activities they participated in, indicating that the innovative teaching design not only promoted the development of students' thinking ability but also enhanced their learning interest and class participation. Since the experimental subjects are English majors from a single university, the regionality and professional background of the sample may have a certain impact on the universality of the results. And future research can also be expanded to student groups in different regions and disciplines to verify the universality and long-term effectiveness of this teaching model to improve students' critical thinking and analyzing ability by reading and more learning of English.

Acknowledgement

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