

Research on the Application of Bloom's Cognitive Hierarchy Theory in College English Teaching

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Abstract: This study is based on Bloom's cognitive hierarchy theory and explores teaching strategies for improving students' critical thinking ability in college English classrooms. First the study analyzes the current situation and problems of cultivating critical thinking ability in college English teaching. In Chinese universities, language skills are emphasized over the cultivation of thinking skills. Many teachers overly focus on imparting language knowledge such as vocabulary and grammar, while neglecting the cultivation of students' critical thinking abilities, which leads to the problem of students having strong language ability but weak cultural cognition and thinking ability and seriously constrain students' academic development and future career competitiveness. Then based on Bloom's cognitive hierarchy theory: memory, understanding, application, analysis, evaluation, and creation, the study designs teaching strategies for college English classrooms from four aspects: teaching objective, teaching content, teaching arrangement, and teaching assessment/evaluation. This study provides new ideas and methods for cultivating critical thinking ability in college English teaching.

1. Introduction

In the context of globalization, the importance of English as an international language is increasingly prominent [1-3]. In the new era, China's higher foreign language education shoulders the responsibility of cultivating excellent foreign language talents who can participate in global governance, and critical thinking ability is an indispensable skill for excellent foreign language talents [4-6]. The 2020 edition of the "Guidelines for College English Teaching" includes critical thinking ability as a core training objective in foreign language teaching. College English teaching should not only cultivate students' language skills, but also focus on improving their critical thinking abilities. Critical thinking ability is one of the core competencies of talents in the 21st century, which is crucial for students' academic development and career success.

Currently, there is a common problem in English teaching in Chinese universities where language skills are emphasized over the cultivation of thinking skills. Many teachers overly focus on imparting language knowledge such as vocabulary and grammar, while neglecting the cultivation of students' critical thinking abilities. Although foreign language teachers recognize the importance

of cultivating students' critical thinking ability, which is gradually being valued in China, the phenomenon of simply explaining language knowledge is still prominent in actual university English classroom teaching due to the influence of traditional educational concepts. The teaching focus is still limited to the explanation and practice of language knowledge such as grammar and vocabulary, and learning methods such as mechanical repetition, imitation, and memory are still very common [7]. The teaching mainly focuses on language training, and the curriculum fails to comprehensively cover cultural cognition and advanced thinking training in terms of content and training focus, which to some extent leads to the problem of students having strong language ability but weak cultural cognition and thinking ability. The teaching of English in Chinese universities is far from cultivating critical thinking skills, neglecting to help students acquire knowledge through language while also strengthening their language proficiency and improving their critical thinking abilities. The problem of "absence of critical thinking" in foreign language classrooms [8] is becoming increasingly prominent. Students tend to rely on standard answers and lack innovative and critical thinking. These problems seriously constrain students' academic development and future career competitiveness. Therefore, reforming the teaching mode of college English and strengthening the cultivation of critical thinking ability have become urgent tasks [9-10].

2. Overview of Bloom's Cognitive Hierarchy Theory

Bloom's cognitive hierarchy theory is developed by American educational psychologist Benjamin Bloom proposed in 1956, which divides cognitive processes into six levels: memory, understanding, application, analysis, evaluation, and creation. These six levels, from low to high, form a complete cognitive system. Memory is the recognition and retention of knowledge, storing it in the brain and retrieving it in a timely manner. This level involves the identification of specific or abstract knowledge, including factual knowledge, conceptual knowledge, etc. Understanding is grasping the meaning of knowledge. When learners connect new knowledge with existing knowledge, understanding arises. Application is the application of learned knowledge to new problems and situations through understanding. It requires learning to correctly apply abstract concepts to appropriate situations without specifying the problem-solving mode. Analysis is the ability to break down complex knowledge into its constituent parts and understand the connections between each part. It is required to decompose the material into its constituent elements, so as to clarify the interrelationships between various concepts and the organizational structure of the material. Evaluation is a persuasive judgment about the intrinsic value of things. It is the synthesis of internal and external data and information to make inferences that conform to objective facts. Only judgments made by clearly applying standards are considered evaluations. Creation (or synthesis) is the ability to recombine learned knowledge or incorporate self-generated information to form a new whole. The Bloom's cognitive hierarchy theory is shown in Table 1. Memory and comprehension belong to low-level thinking skills, involving the acquisition of knowledge and basic understanding; Application, analysis, evaluation, and creation are high-level thinking skills that require students to process and apply knowledge at a deeper level.

Table 1: The Bloom's cognitive hierarchy theory (cognitive thinking development)

Theoretical models	Meaning
Memory	Basic understanding of the meaning of knowledge points
Understanding	Proficient mastery of knowledge points
Application	Correct application of knowledge points
Analysis	In-depth analysis of knowledge points
Assessment/Evaluation	Integration of knowledge points
Creation	Sublimation and innovation of knowledge points

In teaching, Bloom's cognitive hierarchy theory provides a systematic framework for teachers to design teaching objectives and evaluate students' cognitive development. By aligning teaching objectives with different cognitive levels, teachers can design teaching activities more targetedly, promoting students' development from low-level thinking to high-level thinking [11].

3. Design of College English Teaching Strategies Based on Bloom's Cognitive Hierarchy Theory

Bloom's cognitive hierarchy theory provides a systematic framework for educators to design teaching plans that can improve language skills and cultivate critical thinking abilities. This study is based on Bloom's cognitive hierarchy theory and designs teaching strategies for college English classrooms from four aspects: teaching objectives, teaching content, teaching arrangements, and teaching evaluation. The aim is to comprehensively enhance students' language skills and critical thinking abilities through cognitive activities at different levels, and provide new ideas and methods for the reform of college English teaching.

3.1 Teaching Objective

Based on Bloom's cognitive hierarchy theory, the objectives are divided into six levels and combined with specific language skill development.

At the level of memory, we set the goal of mastering core vocabulary and grammatical structures; At the level of understanding, set goals that can accurately comprehend the main idea and general meaning of the text; At the application level, set goals for correctly using language in different contexts; At the level of analysis, set goals that can recognize text structure and logical reasoning; At the evaluation level, set goals that can critically evaluate viewpoints and evidence; At the creative level, set goals that enable independent presentation of innovative ideas and effective argumentation.

The setting of these teaching objectives helps to gradually improve students' English cognitive level, from memorizing and understanding basic knowledge, to applying and synthesizing language skills, and ultimately developing the ability to evaluate and judge language materials and their own language use. During the teaching process, teachers should flexibly choose and adjust teaching objectives based on students' actual situations and learning needs, and design corresponding teaching activities to help students achieve these objectives.

3.2 Teaching Content

In English teaching, not only does it focus on cultivating basic language knowledge, such as word explanation, sentence structure division, and mastery of grammar knowledge, but it also encourages and guides students to experience and evaluate the language characteristics of reading materials, master the common narrative structure, writing logic, stylistic features, and expression methods of English articles. The learning content includes discussions on difficult words and phrases, analysis of article context, interpretation of cultural background, critical reading and evaluation, analysis of literary style and writing techniques, writing and paper projects. The knowledge taught in English classes includes the followings.

3.2.1 Memory Level

English teachers help students remember and reproduce basic knowledge such as vocabulary, grammar rules, and sentence patterns they have learned. Students are able to accurately memorize and retell key vocabulary and phrases learned in class.

3.2.2 Understanding Level

English teachers help students understand the language knowledge and information they have learned, including the meaning of vocabulary in context, the rules of grammar application, etc. Students are able to understand and use the vocabulary they have learned to make simple sentences and grasp the main idea of the article.

3.2.3 Application Level

English teachers assist students in applying their language knowledge and information to practical situations, such as oral communication, writing, etc. Students are able to use the vocabulary and sentence structures they have learned for daily conversations, or accurately apply grammar rules in writing.

3.2.4 Analysis Level

English teachers develop students' ability to decompose and analyze language materials, identify their components and interrelationships. For difficult sentences, students can use scaffolding teaching method to identify the main body of the sentence (subject verb object), then analyze the modifying elements of the main body of the sentence, analyze and translate each meaning group, and finally integrate them to understand the entire sentence. Students are able to analyze the structure of an article, identify the author's viewpoints and arguments, and analyze the logical relationships between paragraphs.

3.2.5 Evaluation Level

English teachers cultivate students' ability to evaluate and judge the language knowledge and information they have learned, including accuracy, appropriateness, and innovation. Students can evaluate the quality of an article, point out its strengths and weaknesses, or provide improvement suggestions.

3.2.6 Creation Level

English teachers assist students in integrating their language knowledge and information, forming new language outputs such as writing articles, giving speeches, etc. Students are able to create a complete article based on the vocabulary and sentence patterns they have learned, or accurately apply their language knowledge to express themselves in speeches.

In terms of teaching content, analyze and understand textual information from different perspectives, and guide students to identify arguments, evidence, and argumentation methods at the level of analysis. English teachers encourage students to engage in critical thinking from multiple perspectives at the evaluation and creation level.

3.3 Teaching Arrangement

In terms of teaching methods, a combination of task-based teaching and project-based learning was adopted, and corresponding teaching activities were designed for different cognitive levels.

3.3.1 Levels of Memory and Understanding

In vocabulary learning, games such as word joining and word cards are used to help students memorize vocabulary. In terms of reading comprehension exercises, design multiple-choice and fill

in the blank questions to help students understand the main idea and details of the text.

3.3.2 Application Level

At the application level, through role-playing and designing situational dialogues, students can apply language in simulated situations or through real-life dialogue scenarios such as shopping, asking for directions, etc., to help students apply the language they have learned.

3.3.3 Analysis Level

English teachers organize group discussions to master the text structure and logical reasoning of the article. And conduct text analysis to guide students in analyzing the arguments, evidence, and argumentation methods in the article.

3.3.4 Evaluation Level

English teachers organize students to engage in positive and negative debates and cultivate critical thinking. Students evaluate each other's assignments and learn how to critically evaluate viewpoints and arguments.

3.3.5 Creation Level

English teachers require students to complete a research paper, independently present their viewpoints, and conduct arguments. Design open-ended writing tasks, such as short story creation, to encourage students to unleash their creativity.

3.4 Teaching Assessment/Evaluation

To ensure the effectiveness of cognitive thinking theory, English teachers design diverse evaluation methods, including formative and summative assessments. Formative evaluation and summative evaluation are two common evaluation methods in educational assessment, with different purposes, implementation times, and methods. According to different teaching content, English teachers use different cognitive levels in teaching evaluation and feedback.

3.4.1 Formative Assessment

The main purpose of formative assessment is to improve the teaching and learning process, help teachers and students understand learning progress, identify existing problems, and adjust teaching strategies and learning methods in a timely manner. Formative assessment is usually conducted during the teaching process and runs through the entire learning cycle. In English teaching, teachers can take various forms, such as classroom quizzes, questioning, homework feedback, group discussions, self-evaluation, and peer evaluation to nurture students' cognitive thinking development. Teachers improve students' memory cognitive level by quizzes, students' understanding cognitive level by questioning, students' understanding and application cognitive levels by homework feedback, and students' analysis, evaluation and creation cognitive levels by group discussions, self-evaluation and peer evaluation. Teachers give rapid feedback, adjust teaching and learning strategies in a timely manner, identify students' learning difficulties and knowledge blind spots, encourage students to participate in the learning process, improve learning motivation and finally push all the cognitive thinking levels of students.

3.4.2 Summative Assessment

The main purpose of summative assessment is to summarize and evaluate students' learning outcomes, usually used to determine their final grades or whether they meet a certain learning standard. Summative assessment is usually conducted at the end of the teaching cycle, such as at the end of the semester, academic year, or course. Summative assessment usually takes the form of standardized tests, final exams, project reports, papers, etc. In English final exams, teachers usually design multiple question types to assess students' various language abilities. Common types of standardized tests include Listening comprehension, grammar and vocabulary, cloze test, reading comprehension, correction of Incorrect questions, comprehensive ability question, translation, and writing. Teachers give a comprehensive summary and evaluation of students' learning outcomes. Through these questions, teachers can comprehensively evaluate students' language skills such as mastery of grammar and vocabulary, listening, speaking, reading, writing, and translation. In summative assessment, teachers can test all the cognitive thinking levels of students.

Formative evaluation and summative evaluation each play important roles in the educational process. Formative evaluation focuses on the process and helps teachers test students in a timely manner; Summative evaluation focuses on outcomes and is used to assess students' learning outcomes and grades. The combination of the two can promote students' learning and growth more comprehensively. In teaching process, English teachers use formative evaluation and summative evaluation to improve students' abilities of critical thinking, especially thinking abilities of higher levels. Comparison between Formative assessment and Summative assessment in teaching process is shown in Table 2.

Table 2: Comparison between Formative assessment and Summative assessment in teaching process

Characteristics	Formative assessment	Summative assessment
Purpose	Improve teaching and learning process	Evaluate learning outcomes
Implementation time	During the teaching process	At the end of the teaching cycle
Method	Classroom questioning, quizzes, homework feedback, etc.	Final exams, project reports, papers, etc
Feedback speed	Timely	Slow
Main functions	Diagnose and promote learning	Summarize and evaluate learning outcomes
Usage of cognitive thinking levels	All the levels	All the levels

4. Conclusion

This study is based on Bloom's cognitive hierarchy theory and designs and implements a teaching strategy aimed at improving students' critical thinking ability in college English classrooms. This teaching method can effectively promote the development of students' critical thinking ability, especially in higher-order cognitive skills such as analysis, evaluation, and creation. Combining Bloom's cognitive hierarchy theory with college English teaching can not only improve students' language proficiency, but also cultivate their critical thinking and innovation abilities, which is of great significance for cultivating versatile talents that can adapt to the needs of the 21st century.

In the future, further research need explore how to extend this teaching method to different levels and types of English classrooms, as well as how to utilize modern educational technology to

enhance teaching effectiveness. Overall, this study provides new ideas and methods for cultivating critical thinking skills in college English teaching, which has important theoretical significance for promoting the reform of college English teaching.

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