

## **The Cultivation of Students' Critical Thinking Ability by Formative Questioning -- Taking Reading Teaching as an Example**

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**Abstract:** Senior High School English Curriculum Standards requires high school English curriculum to develop students' core English competences and take students as the main body in learning so as to promote their all-round development and healthy and personalized development. In discourse teaching, the new curriculum standard requires students not only to master the stylistic and linguistic knowledge of different types of discourse, but also to promote the development of students' thinking and improve students' appreciation and evaluation ability in discourse learning. Based on Bloom's classification theory of educational objectives, this paper discusses the cultivation of students' critical thinking ability by formative questioning in senior high school English reading teaching, reveals the feasibility of formative questioning to improve students' critical thinking ability, and provides feasible methods for the cultivation of students' critical thinking ability in English reading teaching.

**Key words:** core competence; formative questioning; reading teaching.

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### **I. Introduction**

Senior High School English Curriculum Standards (2017 Edition) points out that the core competence is the concentrated embodiment of the value of discipline education and the correct values, necessary character and key ability gradually formed by students through discipline learning. (Ministry of education, 2018) English subject core competence is not only the outline of curriculum content, but also the main line of teaching process. It is not only the goal of students' development, but also the pursuit of teachers. It is not only the guidance of learning activities, but also the standard of academic quality. The core competences of English discipline mainly include language ability, cultural awareness, thinking quality and learning ability. The core competence of English subject requires students to develop their thinking quality, which can help improve students' ability to analyze and solve problems, so that students can observe and understand the world from a cross-cultural perspective and make correct judgments on things. (Ministry of education, 2018) In the teaching of discourse knowledge, the core competence requires students to understand the language knowledge of idioms, form clear logic and think on this basis so as to promote the rise of their own thinking and enrich their ability to analyze and solve problems.

According to Bloom's classification theory of educational goals developed by Anderson and kraswall, in the field of education, people's cognitive goals follow six levels from simple to deep: remember, understand, apply, analyze, evaluate and create. (Anderson, I.w.Krathwohl, D.R., airasian, P.W., etal, 2009) In the cognitive process, students' critical thinking ability can be further strengthened through reasonable formative question design, which helps students continuously achieve these cognitive goals in the process of learning. Moreover, under the requirements of core competence, in English reading, we no longer only pay attention to the teaching

of language knowledge and text content, but are committed to using text to express students' own understanding and thoughts, and require students to pay attention to using their own thinking quality to understand the text. However, the existing research mainly adds critical thinking elements from the selection of classroom teaching content and teaching methods, homework assignment, academic evaluation and other aspects, and seldom involves the research on the improvement of students' critical thinking ability by formative questioning. Based on this, this paper takes Bloom's classification theory of educational objectives as the theoretical basis to explain the essence of critical thinking ability in senior high school English reading teaching, and also combines it with formative questioning to explore the practical ways of formative questioning to improve students' critical thinking ability.

## **II. Critical thinking ability in core competence**

Critical thinking ability, also known as reflective thinking ability, is an important component and manifestation of individual learning ability and high-level thinking ability (Lv Qiuping, 2016). Critical thinking ability is the ability to interpret, analyze and evaluate the input information (oral or written), as well as the ability to reason and explain based on the information obtained indirectly or directly. (Sun Youzhong, 2019). From the perspective of core competence, critical thinking ability refers to the ability of students' thinking quality in logic, criticism and innovation. (Ministry of education, 2018) Therefore, critical thinking ability fully emphasizes students' subjective initiative and the construction of meaningful knowledge. This ability occupies an important position in Bloom's classification of educational objectives and the core competence of senior high school English subjects, and is a significant skill that should be mastered for the development of students in the new era.

### **1. Bloom's classification theory of educational objectives and critical thinking ability**

Bloom, an American educator, initially divided educational goals into six categories in the field of cognition: remember, understand, apply, analyze, evaluate and create. (Bloom, 1956) The requirements for students' cognition in these six aspects are gradually improving: in the remembering stage, students should be able to distinguish and extract the contents related to the presentation materials in long-term memory and mobilize their existing knowledge, so that the knowledge learned by students can play a positive role in positive transfer. In the understanding stage, students should complete the construction of meaning in the form of language communication through critical thinking processes such as interpretation and clarification, classification and generalization, comparison and matching. In the application stage, students should apply the learned problem-solving ways to the specified situation. In the analysis stage, students should complete the thinking process of distinction and organization, distinguish the importance of the presented materials and integrate them logically, so as to form a logical knowledge framework. In the evaluation stage, students should make their own judgments based on norms and standards. In the creation stage, students should reconstruct and process the material elements through their own thinking processes such as hypothesis, planing and framework constructing to form the new knowledge output. In Bloom's theory, the critical thinking ability is not put forward in a direct form in the whole cognitive process, but it permeates all aspects of the cognitive process and provides support for the whole cognitive process.

### **2. Core competence of English in senior high school and critical thinking ability**

The core competence of English in senior high school consists of four elements: language ability, cultural awareness, thinking quality and learning ability. (Ministry of education, 2018) Among them, thinking

quality is not only the key ability, but also the necessary character. It is the content based on knowledge but also the processing and sublimation of knowledge. Thinking quality requires students to learn to discriminate phenomena, classify and summarize, construct new concepts, analyze and infer, correctly judge, creatively express, think independently and think creatively on the basis of understanding the teaching content. It can be seen from this that the thinking quality emphasizes the students' critical thinking ability, requires students to think actively in the process of accepting knowledge input, internalize knowledge, and learn to observe and compare, analyze and infer, summarize and construct, criticize and innovate, so as to solve students' blind worship of teachers and teaching materials in the teaching process, which leads to the phenomenon of superficial understanding of discourse and not carrying out logical association and imagination.

### **3. English reading teaching in senior high school and critical thinking ability**

In English reading teaching, students are most exposed to a large number of discourses. These corpora are not only the source for students to accept language input and help students perceive language, but also the direct content to stimulate students' critical thinking and the elements to cultivate students' critical thinking . (Ge Bingfang, Hong Li, 2018) In the teaching of English reading in senior high school, teachers can fully create the context related to the theme meaning, so as to fully develop students' thinking quality, and improve students' identification and evaluation ability by reading the text and discussing their views. We can also cultivate students' logical thinking and critical thinking through the comparison of Chinese and foreign cultures, and enrich students' way of thinking.

## **III. Formative questioning and critical thinking ability in reading teaching**

### **1. Formative questioning**

Questioning is one of the important forms of classroom interaction. In the process of classroom questioning, students change from traditional passive recipients of knowledge to active explorers, and express their views through their own thinking and discussion. Therefore, questioning can not only promote the promotion of classroom teaching processes, but also make itself have a formative function. As one of the tools of formative assessment, questioning is an important means to help students obtain information, promote the formation of views, change the classroom atmosphere and promote students' knowledge output. (Wang Xuefeng, Yuan Qing, 2017) In class, teachers' effective questioning can not only help teachers reasonably control the progress of classroom teaching, but also help students form strict thinking logic, build a reasonable knowledge framework, realize the effective connection between old and new knowledge and promote the mastery of knowledge.

### **2. The feasibility of formative questioning in reading teaching**

According to Bloom's classification theory of educational objectives, students' cognitive process can be divided into six processes: remember, understand, apply, analyze, evaluate and create. Correspondingly, students' reading learning also follows the process of understanding- inquiry-speculation-output. In the process of reading teaching, because we need to make the teaching content clear and logical, we should take hierarchical questions as the guide, so that students can continuously achieve the above six objectives in the answer of different types of formative questions, promote the continuous deepening of students' thinking in this process, and make it run through the whole process of reading teaching.

In the process of reading teaching, teachers need to teach according to the content of the text. But in the text, because of the differences of teaching content, different types of questions can form synergy and complete

the tasks of text teaching together, and mobilize the students' different thinking qualities to complete the tasks in different aspects. According to Bloom and Anderson's classification theory of educational objectives, the types of formative questions can be divided into the following types (Anderson, I.w. krathwohl, D.R., airasian, P.W., etal, 2009):

Number	Type	Example
1	Knowledge questions	Students mobilize the knowledge they have learned. Example: What does this word mean?
2	Comprehensible questions	Students understand the relevant meaning. Example: What does this sentence mean?
3	Applied questions	Students use the new knowledge and skills they have learned. Example: Use skimming reading method to read articles
4	Analytical questions	Students decompose and infer concepts. Example: what is the structure of this article?
5	Evaluative questions	Students make judgments about the content. Example: what kind of person do you think the protagonist is?
6	Creative questions	Generate new knowledge and integrate it with students. Example: After reading the article, what do you think the article will enlighten your life?

According to different processes of reading teaching, teachers can take different types of formative questions, and do it in detail and properly in the teaching process to ensure the completion of teaching tasks and the realization of teaching objectives: in the class introduction , teachers can take knowledge questions to guide students to generate old knowledge and transfer new knowledge positively; In the process of knowledge explanation, teachers use comprehensible, applied, analytical and evaluative questions to help students analyze the text content; In the thinking development process, teachers use creative questions to help students broaden their thinking and effectively spread their knowledge in connection with real life.

### **3. Formative questioning in reading teaching and the improvement of critical thinking ability**

In the process of reading teaching, all the above types of formative questions can promote the improvement of students' critical thinking ability. Taking one article *The Monarch's Journey* as an example, we design and analyze the teaching questions of formative questioning in improving the ability of thinking, telling and distinguishing.

This article is an expository text about the migration and current situation of monarch butterflies. The article is structured as follows:

Passage	Part	Paragraph

The Monarch's Journey	Part 1 1-3 Paragraphs An introduction about the Monarch's migration	Paragraph 1 Reasons for migration
		Paragraph 2 Time and place of their migration
		Paragraph 3 Method of their migration
	Part 2 4-5 Paragraphs The current situation of the Monarch's migration	Paragraph 4 The Monarch's problem and the reasons
		Paragraph 5 Solutions

The content of the text is taught in a 45 minute class of senior high school English. In the process of text explanation, multi-level formative questions can be carried out to promote the development of students' critical thinking ability.

First of all, in the introduction process, teachers can start with relevant background knowledge and ask questions about knowledge : Do you know about the phenomenon that birds will regularly move from the north to the south in winter in our country? Do you know some other animals who have the similar behavior like them? These questions can not only complete the task of mobilizing students' existing knowledge, but also inspire students to carry out class thinking, mobilize students' learning enthusiasm and pave the way for subsequent teaching.

Secondly, in the content teaching process, understanding problems, application questions and analytical questions will be the focus:Please use skimming and scanning to read the passage and the answer my questions about the passage Can you find out the whole journey experience of their migration? What's the general structure of this passage and what's the relationship between the different parts? Application questions can help students develop their application skills and assist in the establishment of the content framework and the integration of the content; Comprehension questions help students grasp the key knowledge of the article, formulate the logic of the article, and develop their reasoning abilities such as inference, classification, induction and so on; In the completion of analytical questions, students need to identify and distinguish different chunks of the article, find the coherence between various parts, and fully analyze the content according to the results of their own analysis, so as to form their own understanding of the text in self cognition.

Finally, in the stage of thinking divergence, evaluative questions and creative questions take the main positions for developing students' critical thinking ability: What's your opinion about the people's behavior to the monarch? How could people get along well with the nature? In the setting of evaluative questions, teachers must pay attention to guiding students to expand their thinking based on their own content, guide students to distinguish the value elements behind the phenomenon, and make reasonable evaluation from their own point of view. Creative problems are the most open and generative in the whole formative question system. Teachers need to guide students to create and produce new content based on the content learned in the article. In the creative questions, teachers should create a relaxed and free atmosphere for students, so that students have a sense of security and know that their ideas can be tolerated. Only in this way can students dare to express their views and deepen their understanding of the theme through their own exploration.

Therefore, in the process of reading teaching, following the formative problems of students' cognitive

development can help students complete the effective learning process of content understanding, knowledge construction, evaluation and speculation and content output. Formative questioning in the process of reading teaching is not only conducive to the theme leading teaching advocated by the new curriculum standard, but also can continuously develop all aspects of students' critical thinking ability in the process of questioning and help the continuous development of students' cognition.

#### **IV. Teaching suggestions**

In senior high school English reading teaching, the effective application of formative questioning needs the careful design of teachers, so as to achieve the purpose of cultivating students' critical thinking ability. Therefore, in order to give better play to the critical thinking training function of formative questioning in the process of reading teaching, the following suggestions are put forward to teachers in the teaching process:

First, clarify the critical thinking goal and reasonably design specific formative questions. Under the requirements of the new curriculum standard, reading teaching requires teachers to guide students to grasp the specific structure, stylistic characteristics and expression of articles in different types of articles. Teachers should take a clear-cut stand in cultivating critical thinking ability in English teaching, learn language through speculation, learn speculation through language, and improve language ability and critical thinking ability simultaneously (sun Youzhong, 2017). When designing problems, teachers should grasp the characteristics of the article, dig out the problems hidden in the divergence from knowledge to self thinking, have a clear purpose in the expression of the problems, promote students' thinking, perceive cultural differences, and form correct values in speculation.

Second, the question design focuses on logical correlation. The whole process of reading teaching is a complete process based on the content of the article. We should pay attention to the logical connection in all processes of teaching, so the design of formative questioning should be more so. The design of questions should follow the process from phenomenon to essence, from part to whole, from acceptance to output, and use the spiral way to help students achieve the continuous deepening and improvement of critical thinking.

Third, the question design pays attention to openness and tolerance to protect the free development of students' thinking. The form and openness of language expression of questions can have a subtle impact on students' learning state and learning thinking. Teachers give more open questions, which is conducive to students' active thinking, help students improve learning efficiency in the process of knowledge acceptance, dare to broaden their ideas and express their views in the process of output, and promote students to take critical thinking as a regular habit of discourse learning

#### **V. Conclusion**

Reading teaching is an important teaching process to develop students' critical thinking ability. Under the requirements of the core competence of the new curriculum standard, teachers can combine the improvement of students' critical thinking ability with formative questions according to the goal setting of students in the cognitive field in Bloom's educational goal classification theory, design specific questions with clear orientation in the process of reading teaching, carry out the connection of formative problems according to the logical connection of the text, consciously expand the openness of the problem, accommodate the students' diverse views, and promote the students to improve the development of critical thinking ability and the mastery of discourse knowledge at the same time.

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