

# A Study on the Design of "Question Chain" in Senior High School English Reading Teaching Based on the Cultivation of Thinking Quality

Qin Fan

China West Normal University Nan Chong, Sichuan Province 637000, China

## ABSTRACT

Cultivating students' thinking quality is one of the most important teaching goals in English reading teaching. The use of "question chain" in reading class is one of the crucial factors to achieve this goal. Starting from the requirements of the English Curriculum Standards for Senior High School (2017 Edition, 2020 Revision) on the cultivation of thinking quality, this paper first analyzes the existing problems in the cultivation of thinking quality of senior high students in English reading teaching and then introduces the concept, design principles and design steps of "question chain". This paper aims to provide suggestions for the design of "question chain" in order to improve the effectiveness of senior high school English reading teaching.

## KEYWORDS

Thinking quality; Senior high school English reading teaching; Question chain.

## 1. INTRODUCTION

*The English Curriculum Standards for Senior High Schools (2017 Edition, 2020 Revision)* (Ministry of Education, 2020) lists the thinking quality as one of the core competences of English, pointing out that the thinking quality refers to the ability and level of students in logic, criticality and innovation, which can reflect the mental characteristics of the core qualities of English. Based on this, cultivating students' thinking quality has not only become one of teachers' teaching goals, but also an important measure to nurture high-caliber individuals in China. Reading, as one of the four skills of listening, speaking, reading and writing, plays an indispensable role in the cultivation of students' thinking quality. Reading is a process in which readers constantly construct the meaning of the text through continuous interact with the reading text, reading process is also a process which involves students' thinking. English reading class contains rich cultural connotation and language knowledge, which plays an important role in cultivating students' core competences, especially the thinking quality. The key to improving students' reading ability is to cultivate students' thinking ability, which is an important component of reading ability. Integrating thinking training into reading teaching can facilitate the transition from surface-level reading to deep-level reading (Liu Caizi, 2019).

In the practical English reading teaching classes, the cultivation of students' thinking quality is often ignored by teachers or considered as not knowing how to "teach" (Kan Xiaopeng, 2019). Although the thinking quality is regarded as one of the goals to be achieved in teaching, however, some schools and regions still adhere to exam-oriented education. Teachers spend a lot of time to analyze and explain the words and grammar in reading texts to students, neglecting the cultivation of students' thinking quality. The reason behind this phenomenon is that the questions posed by teachers in reading teaching are chaotic and disorganized, deviating from the textual topics and students' real

life, besides, there is a lack of cohesion and coherence among the questions. (Yang Pingping, 2017). Questioning plays an important role in the development of students' thinking in the process of education. It is not only a means for students to acquire knowledge, but also an effective tool to promote students' in-depth thinking ability, cultivating their thinking quality and problem-solving ability. "Question chain" consists of a series of interlinked questions, which is helpful to activate students' learning interest and stimulate students' desire for knowledge. It affects the cultivation and development of students' thinking ability (Han Lijuan, 2023). Therefore, it is necessary to explore the design of "question chain" in reading teaching.

## **2. THE DEFINITION OF "QUESTION CHAIN"**

Classroom questioning is a teaching method commonly used by teachers in reading classes, and the emergence of "question chain" has a deep connection with classroom questioning. However, there is no clear definition of "question chain" so far and different researchers have different views on the term "question chain" according to their own understanding. Johnson (1992) proposed that question chain is a set of questions used in narrative or expository texts, so that students' discovery, learning and application of the text can build a coherent framework for their thinking and learning of the text. He also pointed out that the "question chain" consists of three levels of questions, namely, the literal question, the explanatory question and the applied question. All questions are designed to help students to discover the concepts of the text and then apply them, each question is similar to a piece of a jigsaw when presented. By the end of the questioning, students will be able to understand and apply the concept.

Huang Guangrong was the first scholar in China to put forward "question chain". Huang Guangrong (2003) believes that "question chain" is a mathematical thinking mode that takes problems as the core and to find, solve and rediscovers problems. Subsequently, Wang Houxiong (2010) pointed out that "question chain" refers to the way that teachers transform textbook knowledge into a series of systematic teaching problems based on students' existing knowledge and experience in order to achieve certain teaching goals and to solve students' confusion in the learning process. These questions are like a chain, linked to the teaching objectives, in which the questions are both independent and interrelated. It is not a simple question asked by the teacher or a question answered by the students but an active exploration and learning process finished by the teacher and students. Under the guidance of "question chain", teachers help students to recall and construct knowledge independently and cultivate students' ability of independent and creative thinking.

Until the end of 2011, domestic research on the "question chain" basically focused on mathematics, chemistry, physics and other subjects, and there was no research on the use of "question chain" in English. Peisong was the first scholar to put forward the application of "question chain" to English teaching. According to Peisong (2011), "question chain" means that teachers transform text knowledge into a series of systematic, hierarchical, relatively independent and interrelated questions based on teaching goals and students' existing knowledge or experience. The first question is the premise of the second question, and the second question is the foundation and ladder of the third question. After reading relevant literature, it can be found that the "question chain" does not only refer to the number of questions posed by teachers but also the correlation between the questions and students' learning situation, teachers' teaching goals and other factors.

To sum up, even though there is no clear definition of "question chain" at present, drawing on the views of Wang Houxiong and Pei Song, "question chain" is a set of questions with intrinsic logic and hierarchy designed by teachers based on teaching content and teaching objectives, students' current language level and life experience. The use of "question chain" in the teaching of reading class can not only help teachers to change the situation of reading teaching which only focus on acquiring surface information of texts, but also stimulates students' enthusiasm of learning and promotes the

development of thinking from the level of memorization and understanding to the level of evaluation and innovation.

### 3. THE DESIGN PRINCIPLES OF "QUESTION CHAIN"

A good "question chain" must follow certain design principles, and the "question chain" should have clear directivity; There should be intrinsic connection between the questions; The "question chain" should be closely related to classroom teaching. (Rong Rentang, 2018). Combining the views of various scholars and the classroom teaching practice, this paper puts forward three design principles that should be followed in the teaching of "question chain": the principle of hierarchy, the principle of appropriateness and the principle of openness.

#### (1) Hierarchy

In English reading teaching, the design of "question chain" should follow the order from easy to difficult and the design of questions should meet the requirements of the activity-based approach so that students can develop their logic thinking and critical thinking through a series of activities that integrate language, culture and thinking through learning and understanding, application and practice, transfer and innovation (Feng Shanhu, 2021). According to Bloom's taxonomy for educational objectives, the questions should be designed in accordance with the increase in cognitive complexity, and from lower to higher order, specifically, the questions can be divided into six categories: memory, understanding, application, analysis, synthesis and evaluation (Bloom, 1956). These questions are presented in order, accordingly, students' thinking level develops from low-order to higher-order. Taking the reading text "White Lies" as an example, this article is selected from the Foreign Language Teaching and Research Press (FLTRP) high school English compulsory coursebook, Volume Three. According to the content of this passage, we can design "question chain" from this following sequence:

Question1: Read the passage and find out what is the meaning of "White Lies"

Question2: Did you tell white lies? Why did you do that?

Question3: Why do people tell white lies?

Question4: How would you feel if you were told a white lie?

Question5: What would you do in the situations described in the passage? Will you be honest or tell white lies?

The above five questions are all about the core word of the text "white lies", including three levels of thinking training: learning and understanding, application and practice, transfer and innovation. The first question just requiring students to understand the meaning of "white lies", the third question needs students to analyze the causes of telling lies while the fourth and the last question require students to evaluate and imagine. The difficulty of the questions is increasing step by step, which can also help develop students' critical and innovative thinking.

#### (2) Appropriateness

The appropriateness of the "question chain" means that the design of the question should adapt to the grade, cognitive and thinking level of students, so as to ensure that the questions proposed are not only a little challenging for students but also stimulate their thinking and learning interest.

In order to achieve the principle of appropriateness, teachers should meet the following requirements: Firstly, they should make clear of the cognitive level and thinking characteristics of students. If the questions proposed are too difficult, they should be re-broken down into smaller questions that are more understandable to students, then these questions can reduce the cognitive load of students (Han Qin, 2018). Taking FLTRP High School English Compulsory Course Book Three Unit Two: Making

a Difference! What kind of person do you think Ryan is? as an example, this question falls into the category of evaluative, some students may find it difficult to answer, in this case, the teacher can break down the question and then guide students to think with the following questions: What did Ryan do? Why did he change his mind? Why did he do that? By breaking the question into three small questions, students can summarize Ryan's personality from these aspects of what Ryan did and why did he do that? Secondly, the design of "question chain" should be closely related to the theme or topic of the reading text. Questions should revolve around specific topics to guide students to understand and apply what they have learned so that they can form an organic whole and be interlinked. Thirdly, students' interests and learning needs should be fully considered when designing the "question chain" and the questions closed to students' life should be designed as far as possible, it will be helpful to stimulate students' motivation to learn and makes the "question chain" more attractive. Take FLTRP high school English compulsory coursebook, Volume Two Unit Three On the Move as an example, it talks about football sport and tells readers the reasons why it has become one of the most popular sport in the world. This text is close to students' life, however, students may not be able to answer the reasons why football is popular, so teachers need to guide students to read through the questions to find the answers. In the lead in part, teachers can ask the following questions:

Question1: What are the sports in these pictures?

Question2: What sport do you like best? And why?

Question3: What do you think is the most popular sport in the world?

Question4: Why is football the most popular sport in the world?

The above four questions are close to students' life, they can not only stimulate students' interest and encourage them to think positively, but also bring some challenges to students, so that students can form cognitive conflicts and search for answers through continuous thinking.

### (3) Openness

Reading is a dynamic process of constructing meaning between the reader and the text, this process is not predetermined but characterized by significant subjectivity and openness. The principle of openness is crucial in the design of "question chain", which refers to the questions raised by teachers have no right answer, those questions require students to think freely, explore and discuss with classmates. Open questions stimulate students' creative thinking and encourage them to come up with independent insights. "Question chain" teaching advocates giving students "thinking time" and "opportunities for full expression" in classroom teaching (Tang Hengjun, 2020). Therefore, it can be seen that teachers should consider multiple viewpoints and answers when designing questions, and encourage students to think from different perspectives. This helps develop students' comprehensive thinking ability and encourages them to understand the problem more comprehensively. In the process of reading teaching, the post-reading section provides a platform for students to develop their critical and innovative thinking. Let's celebrate! Understanding ideas part of FLTRP's Senior high School English Compulsory Course Two is taken as an example to analyze the reading text. The text talks about the way to celebrate the Spring Festival: to have a New Year's Eve dinner at home or have it in restaurants? Focusing on the theme of the text, teachers can design the following "question chain" in the post-reading activities to develop students' thinking quality.

Question1: How does your family celebrate the Spring Festival?

Question2: Do you like this way to celebrate the Spring Festival?

Question3: Can you talk about what has changed and what hasn't changed about celebrating the Spring Festival?

By asking students how to celebrate the Spring Festival, they can think about "What has changed" and "What has not changed" about celebrating the Spring Festival, students need to combine their own experience with what they have learned in previous reading class, then they should give their

own answers. There is no standard answer to this question, which aims to guide students to produce language and cultivate their thinking quality.

#### 4. THE DESIGN STEPS OF "QUESTION CHAIN"

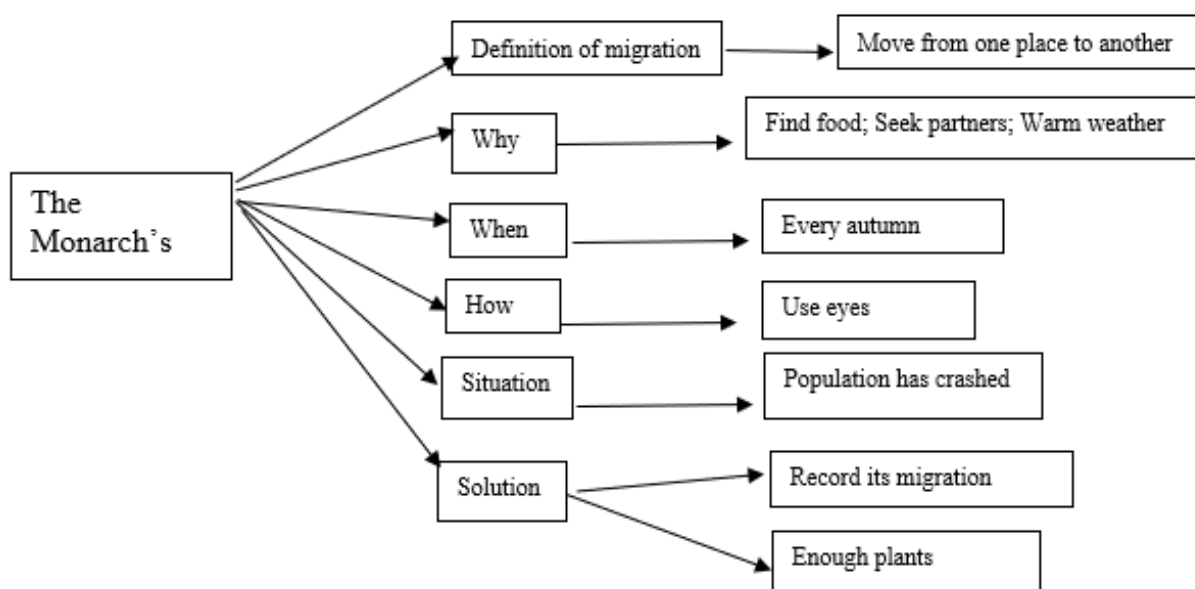
The design of “Question chain” in reading teaching mainly includes three steps: The first step is sorting out the content of the text, the second step is drawing the concept map of the article, the last step is about designing the “question chain”.

(1) Sorting out the content of texts.

Sorting out the content of texts will help the teacher gain insight into the nature of the questions. By extracting the key information in texts and organizing it into a structured form, the designer can grasp the core elements of the question more clearly, design sub-questions according to the core questions of articles and gradually deepen and interlink to form a “question chain” with internal logic. In addition, teachers should design the “question chain” of reading class according to the genre of the text (Lu Fangqing, 2022). For example, when teachers analyze a narrative, the “question chain” designed should contains six elements: When, Where, Who, Why, How, What; When teachers analyze the novel, they need to design the three major elements: Character, Plot and Setting.

(2) Draw the concept map of the article

A concept map is a graphical representation used to present concepts, relationships, and structures about a particular topic or issue. It is a graphical tool that helps students understand and organize information for analysis and reasoning. A concept map is a spatial network map that connects basic concepts, enabling integration between concepts and promoting meaningful learning (Novak,1993). A concept map usually includes nodes (representing concepts) and connecting lines (representing relationships between concepts). This graphical representation helps us to see the connections between concepts in an intuitive way, making it easier to organize and remember information. This paper takes FLTRP high school compulsory Course One Unit5 The Monarch's Journey as an example to draw the concept map as in Fig.1.



**Fig.1** The concept map of The Monarch's Journey

(3) Design the “question chain”

The design of “question chain” can be carried out after sorting out the contents of texts and drawing the concept map. The design of “question chain” should base on the core question of the article and

be connected by a series of sub-question groups. Take *The Monarch's Journey* as an example. This article is an expository, the core question of it is the migration of monarch butterflies. First of all, six elements of the expository should be found out when reading the text and then teachers should sort out the content of the article. Secondly, draw the concept map according to the content of the article (as shown in the above picture). Finally, teachers design the "question chain" as shown below.

Question1: What is migration?

Question2: Why do Monarch butterflies migrate?

Question3: How do these beautiful butterflies migrate?

Question4: What is the impact of human activity on Monarch butterflies?

Question5: How can we change this situation?

## 5. CONCLUSION

High school students' thinking is in a period of rapid development, which requires teachers not only activate students' learning enthusiasm but also develop students' thinking quality by putting forward challenging questions and designing various classroom activities. "Question chain" teaching takes questions as the core of reading classes, activates students' thinking and guides them to think through multi-level questions (Zong Xuilian, 2023). It plays a key role in English teaching, especially in reading teaching. However, teachers need to be aware that in the actual teaching process, the value of "question chain" in cultivating students' thinking quality cannot be fully brought into play in the reading class due to various factors. Therefore, teachers need to conduct more in-depth and comprehensive exploration on the design and implementation of "question chain" teaching in the reading teaching so as to realize the all-round development of students' logical, critical and innovative thinking, achieving the goal of cultivating students' core competences.

## REFERENCES

- [1] Bloom, B. S. (1956). *Taxonomy of educational objectives: The classification of educational goals*. Book 1, Cognitive domain. New York, longman.
- [2] Johnson, B. E. (1992). Concept question chain: A framework for thinking and learning about text. *Reading Horizons: A Journal of Literacy and Language Arts*, 32(4), 2.
- [3] Novak, Joseph D. (1993). Human constructivism: A unification of psychological and epistemological phenomena in meaning making. *International Journal of Personal Construct Psychology*, 6(2), 167–193.
- [4] Feng Shanhu&Fan shudan.(2021).Research on "question chain" design in activity-based approach to English learning. *Foreign Language Teaching Research in Basic Education* (8), 5-10.
- [5] Huang Guangrong.(2003).Question chain method and mathematical thinking. *Journal of Mathematics Education* (02),35-37.
- [6] Han Lijuan.(2023).Use "question chain" to create efficient reading classroom. *Language and Mathematics Learning* (08),61-62.
- [7] Han qin.(2018). Classroom Questioning Strategies Guided by the Theory of Thinking-based Teaching. *Educator* (48),20-21.
- [8] Kan Xiaopeng. (2019). Deep Reading" - Implementing the Cultivation of Students' Thinking Quality. *Basic Education Curriculum* (12),48-52.
- [9] Liu Caizi (2019). A Study on Thought-Provoking Classroom Questioning in High School English Reading. *Foreign Language Teaching in Schools (Middle Schools)* (03),33-37.
- [10] Lu Fangqing. (2022). A Research on the Design of "Question Chains" in English Discourse Teaching for Elementary School Students. *Journal of Teaching and Management* (05),56-59
- [11] Pei Song. (2011). The Application of "Question Chains" in High School English Reading Teaching. *Journal of Basic English Education* (06),75-79.

- [12] Rong Rentang.(2018). The Key Principles of Designing 'Question Chains' in Reading Instruction. *Language Planning* (14),23-26.
- [13] Tang hengjun,Zhang Weizhong,Chen Bifen.(2020). Teaching with “Question Chains” Based on Deep Understanding. *Research in Educational Development* (04),53-
- [14] Wang Houxiong. (2010). Types and Teaching Functions of “Question Chains”—Taking Chemistry Teaching as an Example. *Educational Science Research* (05),50-54.
- [15] Yang Pingping.(2017). Challenges and Strategies in the Design of “Question Chains” in English Reading Instruction. *Journal of Teaching and Management* (31),60-62.
- [16] Ministry of Education of the People's Republic of China. (2020). *General Senior High School English Curriculum Standard: 2017 Edition, Revised in 2020*. People's Education Press.
- [17] Zong Xuelian. (2023). The Application of Question Chain Teaching Model in Junior High School English Instruction. *Education Circle* (21),47-49.