

# Designing Question Chains in Senior High School English Reading Teaching: An Activity-based Approach

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**Abstract:** Question chains have long been utilized in English teaching to enhance student learning. However, certain issues in their design can hinder teaching effectiveness. These challenges can be addressed by constructing question chains built upon the activity-based approach. This paper combines theoretical analysis with practical application, using a specific discourse as an example. It divides questions into big questions and sub-questions to form a question chain that guides students toward achieving the intended learning objectives. Additionally, question chains are designed for each stage of the teaching process, following the activity-based approach, to help students explore thematic meaning and develop core competencies. Ultimately, this paper aims to contribute to the understanding of how activity-based question chains can improve the efficiency of English reading instruction.

**Keywords:** Activity-based Approach, English Reading Teaching, Question Chains.

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## 1. Introduction

Questioning is a traditional and effective pedagogical strategy used by teachers to stimulate students' thinking, facilitate information retrieval, and challenge their cognitive processes. It encourages students to elaborate on the author's message by activating their background knowledge (Smith, B. L., Holliday, W. G., & Austin, H. W., 2010). Question chains refer to a series of interconnected questions designed to foster students' learning. Historically, question chains have been used to guide students through complex problems, probe deeply into a text, and encourage the expression of their ideas.

However, certain issues arise in the implementation of question chains, particularly in their design. For instance, question chains may not account for students' varying language proficiency, or they may fail to balance the difficulty levels of questions. This imbalance can lead to question chains lacking logical progression and coherence. Moreover, many question chains lack a unifying thread that connects the entire questioning process (Yao, 2015; Guo, 2019; Fan & Wang, 2023).

Furthermore, the General Senior High School English Curriculum Standards (2017 version, revised in 2020) emphasize the importance of adopting the activity-based approach which advocates that students learn English through a series of integrated, relevant, and practical theme-based activities, all of which guide them through the process from learning and understanding, to applying and practicing, and finally to transferring and innovating.

Grounded in the activity-based approach, this paper integrates the activity-based approach and question chains to introduce a new designing procedure to solve the above problems. By embedding question chains within meaningful activities, teachers can create a dynamic and engaging learning environment that not only fosters comprehension but also promotes higher-order thinking and language skills. This paper explores the process of integrating the activity-based approach and question chains to address existing challenges and improve English reading instruction.

## 2. Literature Review

### 2.1. Research on the Definition and Classification of Question Chains

Scholars at home and abroad have carried out some research regarding the question chains, mainly on the definition and classification.

Regarding the definition of question chains, no universally accepted definition has emerged, with various scholars proposing different interpretations. Johnson (1992) defined question chains as a set of questions used to discuss narrative or expository texts, enabling students to develop, learn, and apply text-based concepts. From his perspective, question chains serve as a framework for thinking and engaging with texts. In contrast, Wang (2010) described question chains as a series of systematically organized questions derived from textbook knowledge, tailored to students' existing knowledge and experience, as well as addressing potential learning difficulties to achieve specific teaching objectives. This paper adopts Wang's definition, as it offers a more comprehensive and practical approach closely aligned with teaching contexts. It emphasizes the importance of considering students' knowledge, potential difficulties, and teaching objectives, all of which are key elements in this study.

In terms of classification, question chains have been categorized in various ways according to different criteria. Based on their function, Wang (2010) identified eight types of question chains, including, but not limited to, introductory question chains, exploratory question chains, and summary question chains. These different types serve distinct roles at each stage of the learning process, helping students achieve specific learning outcomes. Based on the depth and level of the questions, Ge and Yin (2020) divided question chains into "big questions" and "sub-questions." Big questions were structured and open-ended, encouraging students to engage in higher-order thinking. Sub-questions, on the other hand, focused on specific details, helping students extract and internalize information to successfully address the big questions (Ge & Yin, 2020). This paper adopts the second classification, as it emphasizes the hierarchical nature of

questioning, which aligns with the pedagogical goal of guiding students through a structured, layered learning process. Unlike the first classification, which centers on the functional aspects of question chains, this second classification places greater emphasis on the cognitive depth and interconnectedness of questions, making it particularly relevant for this study.

## 2.2. Research on Question Chains Built Upon the Activity-based Approach

With the implementation of the General Senior High School English Curriculum Standards (2017 version revised in 2020), teachers in growing numbers are beginning to design question chains with the guidance of the activity-based approach. There is both theoretical and practical research regarding the design of question chains, with one focusing on the designing principles and the other concentrating on the designing methods.

On the one hand, concerning the designing principles, Ma and Wang (2024) proposed the principle of subjectivity, the principle of directivity, the principle of integrity, and the principle of logic. The principle of logic is fundamental which means that when designing questions, teachers are expected to consider the logic between questions. The former question is the basis of the latter question and the latter question is the progress of the former question. Li (2022) also proposed the principle of appropriateness, emphasizing that the design of questions should be based on students' cognitive ability and the level of acceptance. Too easy or too difficult questions will fail to activate students' thinking, still less to say the goal of developing ability.

On the other hand, different researchers have introduced their ideas about the designing methods. To begin with, based on the designing principles, questions are designed on three levels including activities based on the discourse, activities that go deep into the discourse, and activities beyond the discourse. What's more, questions are classified in each group of activities with introducing questions for learning and understanding, progressive questions for applying and practicing, and exploratory questions together with opening questions for transferring and innovating (Wan, 2023; Ma & Wang, 2024). Moreover, Wan (2023) also said that questions built upon the activity-based approach will guide students to observe linguistic and cultural phenomena, identify and compare information, infer and analyze the relationship between different kinds of information, and conclude and summarize common characteristics and rules. Question chains, therefore, should be used to help students make judgments about values and express their opinions.

## 2.3. Summary

All of the above research has made great contributions to the application and development of question chains built upon the activity-based approach. Although achievements have been acquired, some gaps still exist. First, the design of question chains is considerably limited to the three levels of activities, including activities based on the discourse, activities that go deep into the discourse, and activities beyond the discourse. Little attention is paid to the complete teaching process which also includes material analysis and the design of teaching objectives. Second, relevant research predominantly adopts Wang's classification of questions, paying too much attention to the types and functions of questions in different stages, while the concepts of big

questions and sub-questions do not receive enough emphasis.

Unlike the previous research, to address the first issue, question chains in this paper are designed based on the analysis of teaching materials and the designed teaching objectives to highlight the importance of directivity. In addition, to solve the second issue, this paper tries to attach particular importance to big questions and the relevant sub-questions. In each stage of the learning process built upon the activity-based approach, big questions and sub-questions are used to guide students to achieve specific teaching objectives, and these questions are designed logically and systematically with the exploration of thematic meaning as a mainline stringing these question chains together.

## 3. Designing Principles of Question Chains

### 3.1. The Principle of Directivity

The principle of directivity emphasizes that question chains should directly or indirectly guide students toward the achievement of teaching objectives. Teaching objectives serve as both the starting point and the endpoint of a lesson, playing a crucial role in the teaching and learning process. Teachers design various activities aimed at helping students meet these objectives, while students engage in these activities to extract, internalize, and apply the knowledge gained in real-life situations. In other words, the structure of the entire class should be guided by the teaching objectives. Consequently, questions-whether big questions or sub-questions-should also be designed with these objectives at their core.

A long-standing issue in questioning is that teachers sometimes ask questions that are neither meaningful nor effective in promoting student thinking or advancing the lesson. Such questions can waste time and hinder the learning process. To avoid this, when designing question chains, teachers are advised to thoroughly review the text, identify its main ideas and structure, and pinpoint the key points and potential challenges. This ensures that the questions are purposeful and aligned with the teaching objectives, thus improving the overall effectiveness of the lesson (Guo, 2019).

### 3.2. The Principle of Logic

The principle of logic can be divided into two components: the logical progression between questions and the thematic exploration that serves as a guiding thread throughout the entire questioning process.

On the one hand, teachers should ask questions in a logically structured sequence to elicit meaningful responses from students (Tofade et al., 2013). This means questions should progress from simpler to more complex, from surface-level to more profound. For example, in order to help students successfully tackle challenging big questions, easier, more straightforward questions should be asked first. As students' knowledge deepens, the difficulty of the questions should gradually increase, culminating in the more complex big question. In this way, each question acts as a step or prerequisite for the next, creating a logical and cohesive flow (Li, 2022). Question chains built on a logical order will guide students toward answering the big questions and achieving the teaching objectives.

On the other hand, the principle of logic also extends to the exploration of thematic meaning, which serves as a guiding thread running through all the question chains. Exploring

thematic meaning is central to English teaching and learning. Every discourse has inherent structure and meaning, and question chains based on this guiding line will assist students in better understanding both the structural and the connotative and denotative meanings of the text. This process also helps develop their critical thinking abilities (Yang, 2017). Therefore, when designing question chains, teachers should pay particular attention to the thematic meaning, ensuring that the questions form a coherent progression that guides students through the exploration of these meanings.

### 3.3. The Principle of Appropriateness

The principle of appropriateness can be divided into two aspects. First, question chains should be designed in accordance with students' cognitive development and cognitive styles. Students at different grade levels exhibit varying stages of cognitive development. For senior high school students, who have already developed a certain level of logical and abstract thinking, it is appropriate to design questions that challenge higher-order thinking skills, thereby further advancing their cognitive abilities. In practical classroom settings, it is crucial that teachers tailor their questions to align with students' cognitive abilities (Fan & Wang, 2023).

Second, questions should be appropriately challenging—designed to push students just beyond their current level of knowledge or ability. This means that the questions should be based on students' existing knowledge while stretching into their Zone of Proximal Development. By doing so, question chains help bridge the gap between students' current and potential levels of learning, guiding them step by step to achieve higher-level language competencies and ultimately solve the big questions of the lesson (Rong, 2018).

## 4. Designing Procedures of Question Chains Built Upon the Activity-based Approach

Based on the principles for designing question chains, this section outlines the procedures for creating question chains using an activity-based approach in senior high English reading instruction. The procedures can be divided into three stages: the analysis of teaching materials, the design of teaching objectives, and the design of question chains.

### Stage 1: Analyzing the teaching materials

Discourse serves as the core material for language learning, and language teaching should revolve around it. Teachers are required to analyze the teaching material to grasp its thematic meaning, extract its cultural value, and assess its discourse characteristics and language features, along with their relationship to the thematic meaning (MOE, 2020). Discourse forms the foundation of question chains, and the content of the questions is derived from it. The analysis of discourse and the design of question chains are mutually reinforcing. A thorough analysis of the discourse will enable teachers to create high-quality, effective questions, while well-designed question chains will, in turn, enhance students' understanding and internalization of the language.

For instance, in the process of analyzing teaching materials, teachers can anticipate potential challenges that may arise during the learning process. These challenges require questions that can serve as stimuli, prompting students to address and resolve problems. Additionally, question chains, which are organized according to the thematic meaning

extracted through material analysis, can help students better understand the meanings and values embedded in the material. Therefore, before designing question chains, teachers must conduct a comprehensive analysis of the teaching materials.

To ensure a deep and thorough analysis of the materials, teachers should focus on five key aspects: theme, content, genre, language, and author. These aspects will help them understand the thematic meaning and answer three essential questions: what, why, and how (Zhang & Wang, 2019).

The “what” question involves identifying the thematic context and content of the discourse. Teachers need to understand the main subject of the text and the viewpoints or ideas that the author conveys.

The “why” question pertains to the author's purpose for writing the passage, exploring the author's intention in presenting the content and the values

The “how” question focuses on the genre, organizational structure, and language features of the discourse.

### Stage 2: Designing teaching objectives

After analyzing the teaching material, the next step is to design the teaching objectives for the lesson. Well-crafted teaching objectives provide clear guidance for both teachers and students, offering direction for the teaching and learning process. There are several important considerations when designing teaching objectives.

First and foremost, teaching objectives should be aligned with the activity-based approach. They must adhere to the three levels of this approach, reflecting the process through which students explore the thematic meaning. Additionally, the objectives should demonstrate the interconnection, integration, and coordination of the four core competencies in English education (Zhang et al., 2019).

Following this approach, the objectives in learning and understanding should aim to help students structure their knowledge, guiding them to extract relevant and key information from the discourse. In applying and practicing, the objective should involve using the acquired language knowledge to complete a pre-designed task, whether in real or simulated contexts, providing students with opportunities to internalize their learning. In transferring and innovating, the objective should enable students to use their language knowledge to express themselves and identify and solve real-life problems, transforming their knowledge into practical abilities and competencies.

Furthermore, when designing teaching objectives, teachers should focus on their logical structure and clarity. The objectives should progress from the simplest to the most challenging, ensuring they are achievable, feasible, and testable. To ensure effectiveness, the objectives should include specific, observable behaviors, using action-oriented verbs that clearly define what students should be able to do.

### Stage 3: Designing question chains

After establishing the teaching objectives, teachers move on to design the question chains. At this point, it is crucial for teachers to adopt a backward design approach. This means that question chains should be crafted based on the teaching objectives and the explored content while taking into account students' existing knowledge and experiences (Ge & Yin, 2020). Since teaching objectives serve as both the starting and ending points of the lesson, the questions must be designed to guide both teachers and students toward accomplishing these objectives.

With the new curriculum standards emphasizing the thematic meaning of learning, the teaching process based on

the activity-based approach can be divided into four key phases (Sun et al., 2019):

**Phase 1: Introducing the topic**

In this phase, teachers use question chains to introduce the theme and topic in a natural way, based on what students already know. The aim is to activate students’ prior knowledge (schema) and spark their interest in the subsequent learning activities.

**Phase 2: Extracting, combing, and integrating language**

During this phase, questions should follow the developmental logic of the discourse. They guide students in extracting information, identifying relationships, and forming structured knowledge based on the thematic meaning of the text.

**Phase 3: Consolidating and internalizing language**

At this phase, teachers help students solidify their understanding of the language knowledge within the context of the thematic meaning. The questions in this phase should

encourage students to describe, infer, and evaluate.

**Phase 4: Transferring and using language**

The final phase focuses on enabling students to apply the knowledge they have acquired in new, real-world contexts. Questions are designed to prompt students to transfer their learning and express themselves using the language in various situations.

In each phase, big questions should be designed first, and all the big questions should obey the principle of logic as well, ranging from the easy ones to deep and challenging ones, and they will be strung together through the thematic meaning of the discourse. Based on the big question, a series of sub-questions will be designed to help students extract information to answer the big ones. In this case, the teaching objectives will be achieved and the thematic meaning will be explored thoroughly. The whole design process of question chains built upon the activity-based approach is shown in Figure 1.

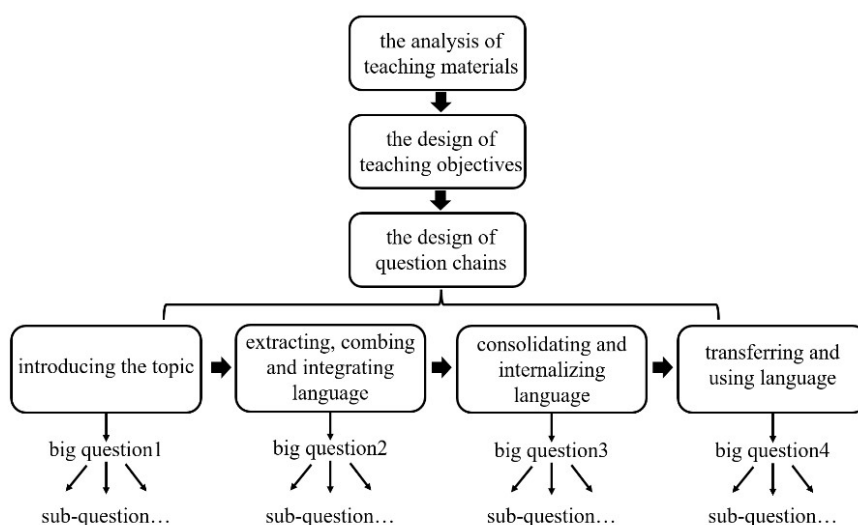


Figure 1. The designing procedures of question chains

## 5. The Application of Question Chains Built Upon the Activity-based Approach in Senior High English Reading

The following part is the application of question chains built upon the activity-based approach in a reading passage “The Well That Changed the World” from Unit 2 “Making a Difference”, Foreign Language Teaching and Research Press Book 3 for students in Senior 1. The reasons for choosing this material are as follows. First, this material is a feature, talking about a person’s help and kindness with a clear structure and logic. It can better show how to design logical and appropriate question chains for teachers. Second, this material has two thematic lines that can be integrated into the design of question chains to highlight the importance of thematic lines in teaching and learning.

### 5.1. The Analysis of Teaching Materials

Teachers are expected to make a thorough analysis of the teaching material from three aspects including “what”, “why”, and “how”. The part below is the analysis of the passage.

**[what]**

This reading passage whose thematic context is man and society talks about a six-year-old Canadian boy Ryan and his story of helping African children. Hearing from his teacher

that some African children had to walk kilometers to get water, Ryan decided to help them by building wells. Through his unswerving efforts, many wells were built in Africa benefitting over 800000 people in 16 countries. Ryan’s story has inspired more and more people to offer help.

**[why]**

This reading passage introduces Ryan’s story of helping people in need. It illustrates the process of Ryan’s help to show that we have the potential to do things within our ability to offer help. It aims to call for more people to give their hand and try their best to help those people who are in negative situations.

**[how]**

The genre of the passage is a feature mainly about Ryan’s story. It can be divided into three parts, with the first one introducing the boy Ryan and the reason for helping African children, the second part illustrating the process of Ryan’s help, and the third part concentrating on the insight of Ryan. What’s more, there are two lines interwoven with each other running through the whole passage, including the storyline of Ryan’s help and the change in the number of people involved in the process of help. Language in this passage is easy with the use of different tenses to indicate the time of different events.

## 5.2. The Design of Teaching Objectives

Considering the activity-based approach, teachers are required to design the teaching objectives of the lesson with the consideration of logic and appropriateness. Also, the design of teaching objectives should reflect the exploration process of thematic meaning. The teaching objectives of the lesson are as follows. By the end of the lesson, students will be able to:

- 1) identify Ryan's basic information and the reason for help.
- 2) sort out the process of help by using a mind map.
- 3) conclude Ryan's characteristics based on what he did.
- 4). make a plan to help people around them.

## 5.3. The Design of Question Chains

In this reading passage, four big questions are designed to help students achieve the teaching objectives with a series of sub-questions as scaffolding to extract detailed information to answer the big questions.

### 5.3.1. Introducing the Topic

In the phase of introducing the topic, teachers will guide students to watch a video about the topic of helping others and use question chains to guide students to conclude this lesson's topic and introduce the content logically and naturally. The question chain is shown in Figure 2.

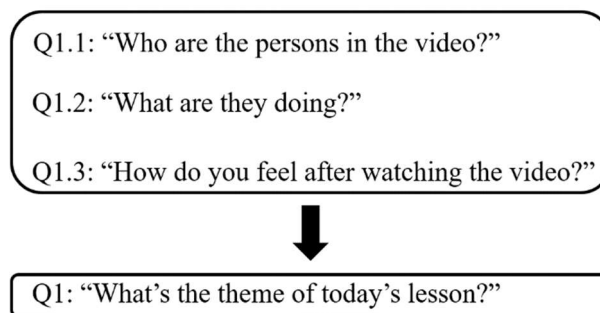


Figure 2. The question chain in the first phase

In this phase, the big question is directly pointed to the lesson's theme, a question that cannot be answered directly by most students. As a result, three sub-questions are designed to help students identify the main information in the video so that they are capable of comprehending the key information first and then reconstructing the acquired information to solve the big problem.

### 5.3.2. Extracting, Combing, and Integrating Language

In the phase of extracting, combing, and integrating language, question chains are designed to help students extract key information and find out the relationship to form structured knowledge. The question chains designed in this phase are shown in Figure 3.

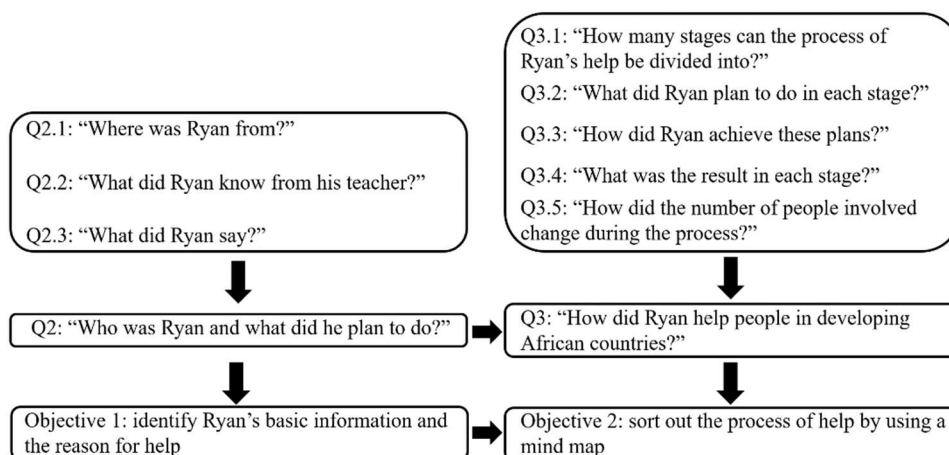


Figure 3. The question chains in the second phase

In this phase, two big questions are introduced to explore the story of Ryan. First, students will know the boy's basic information and the reason for his help, which will be solved by answering Q2. To answer Q2, students are guided to find out information about Ryan by solving three sub-questions first, all of which serve as the scaffolding for students. After knowing the basic information about Ryan, students start to explore the storyline. Q3 is posed to help students conclude the whole story, before which teachers will guide students to sort out the process of Ryan's help through a series of sub-questions. While solving these sub-questions, students will form structured knowledge about the process of Ryan's help. The two big questions together with these sub-questions will help students extract key information contained in the discourse and comprehend the hidden relationship between each part of the passage to achieve the first two teaching objectives.

### 5.3.3. Consolidating and Internalizing Language

The purpose of the phase is to help students go deep into the discourse and internalize what they have acquired in the

second phase. Based on the above idea, question chains are shown in Figure 4.

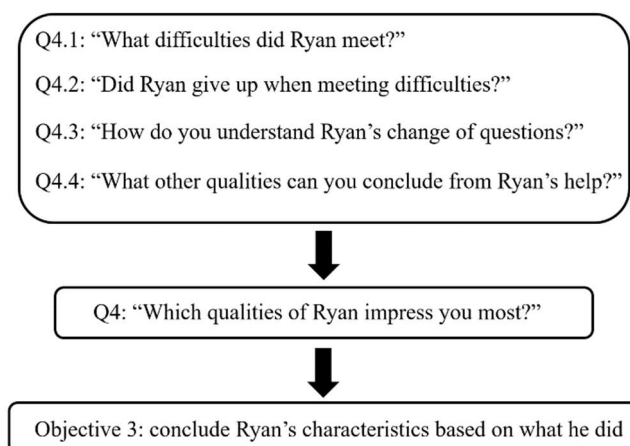


Figure 4. The question chain in the third phase

In this phase, to help students internalize the knowledge

and develop their ability to summarize, Q4 is introduced to allow them to describe Ryan’s qualities. The first three sub-questions as examples provide students with a clear direction to explore and conclude Ryan’s characteristics, and Q4.4 is an open question to allow students to express their ideas based on the acquired information. Through the above questions, students will internalize the acquired knowledge and the third teaching objective will be achieved. Furthermore, students can also better understand the thematic meaning of the unit of making a difference in other people’s lives by giving a hand.

#### 5.3.4. Transferring and Using Language

In the final phase, students will be given opportunities to use the internalized knowledge in new situations to solve new problems. Considering this, the last question chain is shown in Figure 5.

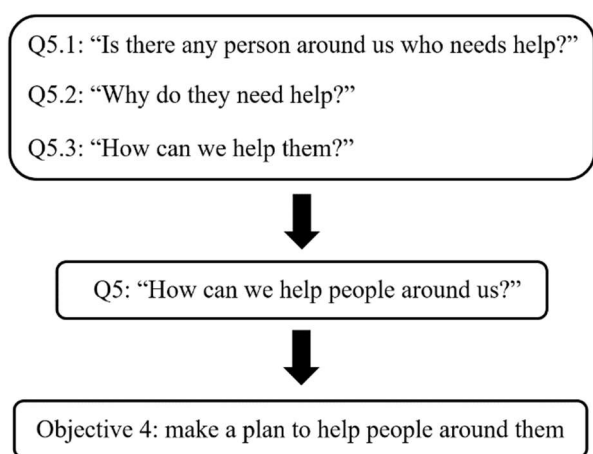


Figure 5. The question chains in the fourth phase

In this phase, questions are used to help students find persons who need help around them, allowing them to apply what they have learned in real situations. They will have a deep understanding of helping people within their ability, and the last teaching objective can be finally achieved in this phase.

## 6. Conclusion

This study contributes to the literature by proposing a structured framework for integrating question chains with the activity-based approach, thereby addressing the current gaps in relevant research in the design of question chains. During the process, teachers are required to analyze the teaching material to find out the key and difficult points and carefully design the teaching objectives that need to be achieved in the teaching process. Then teachers are required to design question chains through the four phases of learning including introducing the topic, extracting, combing and integrating language, consolidating and internalizing language, and transferring and using language, during which big questions and sub-questions are designed with the consideration of the thematic meaning. By doing so, students will develop their language knowledge and language skills with the improvement of multiple thinking skills, the cultivation of cultural awareness, and the practice of learning strategies.

## References

- [1] Fan Yihu, Wang Hongyuan. Research on the Application of Question Chains Based on Deep Learning in Senior English Reading. *International Journal of Education and Humanities*, vol. 10, no. 01, pp. 207-212, 2023.
- [2] Ge Bingfang, Yin Jiahuan. The Classroom Practice of English Reading Instruction in Light of the English Learning Activity Theory. *Curriculum, Teaching Material, and Method*, vol. 40, no. 06, pp. 102-108, 2020.
- [3] Guo Yifei. The Application of Question Chain in Junior High School English Reading Teaching. *Foreign Language Teaching in Schools*, vol. 42, no. 10, pp. 61-65, 2019.
- [4] Johnson, B. E. Concept Question Chain: A Framework for Thinking and Learning about Text. *Reading Horizons: A Journal of Literacy and Language Arts*, vol. 32, no. 04, pp. 2, 1992.
- [5] Li Liujian. The Application of Question Chain in Enhancing Students’ Ability to Explore Thematic Meaning in Discourse. *Foreign Language Teaching in Schools*, vol. 45, no. 11, pp. 15-21, 2022.
- [6] Ma Haiqing, Wang Fenfang. From Learning Based on Discourse to In-depth and Transcending Discourse Learning: The Design of Problem Chain in Junior High School English Discourse Teaching under the Guidance of the English Learning Activity View. *Teaching Monthly Middle School Edition (Foreign Language Teaching)*, no. Z2, pp. 80-85, 2024.
- [7] Ministry of Education of the People’s Republic of China. *General Senior High School English Curriculum Standards (2017 Edition, Revised in 2020)*. Beijing: People’s Education Press, 2020.
- [8] Rong Rentang. The Key Principles of Designing “Question Chains” in Reading Instruction. *Language Planning*, no. 14, pp. 23-26, 2018.
- [9] Smith, B. L., Holliday, W. G., & Austin, H. W. Students’ Comprehension of Science Textbooks Using a Question-based Reading Strategy. *Journal of Research in Science Teaching*, vol. 47, no. 04, pp. 363-379, 2010.
- [10] Sun Xiaohui, et al. Analysis of High School English Reading Teaching Design Based on the English Learning Activity View. *Foreign Language Teaching in Schools*, vol. 42, no. 04, pp. 44-48, 2019.
- [11] Tofade T, Elsner J, Haines S. T. Best Practice Strategies for Effective Use of Questions as a Teaching Tool. *American Journal of Pharmaceutical Education*, vol. 77, no. 07, pp. 155, 2013.
- [12] Wan Xian. Question Chain Design Based on the English Learning Activity View. *Jiangsu Education*, no. 40, pp. 23-27, 2023.
- [13] Wang Houxiong. The Types and Teaching Functions of Question Chains: Taking Chemistry Teaching as an Example. *Educational Science Research*, no. 05, pp. 50-54, 2010
- [14] Yang Pingping. Challenges and Strategies in the Design of “Question Chains” in English Reading Instruction. *Journal of Teaching and Management*, no. 31, pp. 60-62, 2017.
- [15] Yao Bin. Design and Reflection on the Mainline Questions in High School English Reading Teaching. *English Learning*, no. 08, pp. 44-49, 2015.
- [16] Zhang Qiuhui, Wang Qiang. Questioning Strategies for Developing Students’ Thinking Quality in Junior High School English Reading Teaching. *English Teaching & Research Notes*, no. 11, pp. 39-45, 2019.
- [17] Zhang Qiuhui, et al. Implementing the English Learning Activity View in Junior High School English Reading Teaching. *Foreign Language Teaching in Schools*, vol. 42, no. 01, pp. 1-7, 2019.