

Review Article

# Designing Question Chains in Senior English Reading Instruction: An Activity-Based Learning Approach

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**Abstract** - The release of the 2022 English Curriculum Standard for Compulsory Education marks a shift towards the development of subject core competencies in China's English curriculum. The standard emphasizes the Activity-based Approach (ABA) to English learning, which is competence-focused, student-centered, and activity-driven, acting as a bridge between curriculum goals and content delivery. However, current reading instruction in many secondary schools lacks effective questioning techniques, often overlooking the logical hierarchy and depth required to foster critical thinking. This has led to shallow and fragmented learning experiences. In response, this study examines the shortcomings in English reading instruction related to questioning practices and explores the effectiveness of the "question chain" method as a solution. Additionally, the study outlines strategies for integrating the question chain method with the ABA to enhance reading instruction. This research aims to provide both theoretical insights and practical recommendations for language educators, researchers, and curriculum developers on how to effectively combine question chains with the ABA to promote deeper learning.

**Keywords** - Activity-based Approach to English learning, English reading instruction, Question chain teaching method.

## 1. Introduction

The "Double Reduction" policy and the English Curriculum Standard for Compulsory Education (2022 edition) in China have brought significant changes to English education, impacting educational philosophy, teaching content, and instructional methods. These changes highlight the importance of fostering subject core competencies, particularly through reading instruction. English reading, as one of the key skills, plays a crucial role in not only improving language literacy but also expanding students' cultural knowledge and international perspective (Wang, 2017).

Despite these advancements, many secondary school English teachers still focus heavily on explaining vocabulary, sentence structures, and grammar, neglecting the overall comprehension of discourse and the development of critical thinking skills. Specifically, this narrow approach to reading instruction in many classrooms lacks the structured questioning techniques needed to guide students through higher-order thinking processes.

Questions posed by teachers are often disconnected from one another, lacking a logical progression that fosters analytical thinking and comprehensive understanding. As a result, students are frequently engaged in shallow, fragmented learning experiences that do not challenge them to develop a deeper comprehension of the texts they read. These problems

existing in English reading instruction point to a critical need for methods that promote more structured, hierarchical questioning, which can encourage students to think more deeply and critically. One promising approach to address this issue is the question chain method, which involves a logical sequence of interrelated questions that guide students from basic understanding to higher-order thinking. By employing question chains, teachers can create a more coherent and thought-provoking learning experience that aligns with the principles of the ABA.

While both the ABA and the question chain method have been individually explored in educational research, there is a lack of studies that examine how these two approaches can be effectively integrated into English reading instruction. This study aims to fill this research gap by investigating the application of the question chain method within the framework of the ABA.

Through qualitative and quantitative analysis, this study explores the effectiveness of combining these two methods to enhance students' deep learning and critical thinking in reading classes. The study also provides practical strategies for implementing this integration, offering insights that can benefit language researchers, curriculum developers, and educational practitioners.



## 2. Literature Review

### 2.1. Key Concepts

#### 2.1.1. The Activity-based Approach to English Learning

The Activity-based Approach (ABA) to English learning, introduced in the New English Curriculum Standard for Senior High Schools in 2017, has emerged as a response to the growing need for competence-oriented education in China. This approach integrates a series of interconnected learning processes, including understanding, applying, practicing, transferring, and creating, with the goal of fostering holistic language development. The ABA focuses not only on language knowledge and skills but also on cultivating cultural awareness, critical thinking, and learning autonomy. This encourages educators to design activities that bridge learning with thinking and application, making it a central component in modern English education.

#### 2.1.2. Question Chain

The concept of “question chain” has been explored in several educational contexts, with researchers offering varying definitions.

- It is a set of questions used for discussing narrative or expository text that enables students to develop, learn, and apply a text-based concept (Barr and Johnson, 1991).
- The question chain refers to a series of teaching questions with a clear hierarchy and systematic nature, which entails the teacher’s logical interpretation of the teaching materials, with which certain teaching objectives based on the student’s prior attainment or experience can be achieved (Wang, 2011).
- Question chains are a series of questions that are hierarchical, systematic, and relatively independent but also interrelated with each other. The first question lays the foundation for the second, and the second sets the stage for the third, continuing in this manner (Pei, 2011).

As shown above, while there is limited consensus on a universally accepted definition of a question chain, it can be broadly categorized into three main interpretations: a question chain as a questioning technique, as a teaching strategy, and as an instructional method.

#### 2.1.3. Question Chain Teaching

In order to figure out the functions and designing principles of the Question Chain Teaching Method (QCTM), it is essential first to examine the key features of the teaching process that employs question chains. These features can be analyzed from three main perspectives: the form, content, and objectives of the questions (Wang, 2011). First, as far as the form is concerned, question chains in the classroom are structured as a hierarchical and systematic sequence of instructional questions. As for the content, the focuses of

various questions intertwine and integrate along the way. In addition, the objective of each question is expected to stimulate students to think in leaps and bounds.

To sum up, question chain teaching is a dynamic developmental process of question setting and question interpretation. Therefore, it appears essential for teachers to convert textbook knowledge into a structured series of questions, crafted both technically and strategically, in the hope that questions presented in the logical order could serve as powerful propellers to enhance students’ thinking quality.

### 2.2. Theoretical Basis

#### 2.2.1. Problem Continuum

Guided by the multiple intelligence theory, Maker, an expert in the study of gifted children, proposed the Discover Problem Continuum Matrix, abbreviated as Problem Continuum, in 1992. He classified problems into five categories: closed, sub-closed, semi-open, open and fully open. These questions are constructed in accordance with students’ cognitive development and problem-solving skills (Deng, 2009). Questions at the first level deal with explicit information such as time, places, events and characters that can be found effortlessly in the text. At the second level, questions focus on analyzing the relationship between events and the central theme of the passage. Third-level questions require a deeper interpretation of the text, such as analyzing the underlying themes or messages conveyed by the author, considering the broader social or historical context in which the text was written, or exploring the motivations and development of the characters. The fourth level demands that students connect the text to their personal experiences. Finally, fifth-level questions challenge students to use their creativity and imagination, encouraging original thought and synthesis.

#### 2.2.2. Bloom’s Taxonomy

Originally introduced in 1948 by psychologist Benjamin Bloom and his colleagues, Bloom’s Taxonomy was developed as a framework for classifying educational objectives. It has undergone several revisions and continues to be widely used by educators today to design, structure, and assess learning. The taxonomy organizes learning into six hierarchical categories, progressing from basic memorization to the creation of new ideas: knowledge, comprehension, application, analysis, synthesis, and evaluation.

To break it down the first stage focuses on recalling essential facts, dates, events, places, people, and concepts. The second stage invites learners to explain concepts, describe graphs, or clarify metaphors. At the third level, students are tasked with interpreting, demonstrating, and articulating what they have learned. The fourth stage challenges students to differentiate, organize, compare, contrast, and critically examine information. At the fifth level, learners are encouraged to check, argue, defend, critique, and support their

opinions. Finally, in the sixth stage, students combine their acquired knowledge, facts, and ideas to create original works or propose solutions to problems.

In summary, Bloom's Taxonomy outlines learning as a sequential process that helps educators align teaching objectives with assessment and instructional activities, promoting a structured approach to cognitive development.

### **2.3. Research on the Question Chain Teaching Method**

#### **2.3.1. Research on the Question Chain Teaching Method Abroad**

Research on the question chain method overseas has been relatively limited, with most studies focusing on the general role of questioning in fostering student engagement and learning.

Krupa and Jaquette (1985) were among the first to highlight the importance of structured questioning in science education, arguing that question chains could help students express their thoughts more clearly and engage in deeper cognitive processes. Keller (1987) introduced the ARCS model (Attention, Relevance, Confidence, Satisfaction), which provides a framework for designing motivational questioning strategies but does not explicitly deal with question chains. Barr and Johnson (1991) proposed that question chains could be a useful tool for discussing narrative and expository texts, helping students develop a more sophisticated understanding of text-based concepts. More recent research by Blything et al. (2019) has shown that when teachers use complex questions—such as “how” and “why”—students are likely to produce more linguistically complex responses.

These studies provide valuable insights into questioning strategies. However, they do not specifically examine the question chain method in the context of reading instruction, nor do they explore its integration with activity-based learning frameworks.

#### **2.3.2. Research on the “Question Chain” Teaching Method in China**

In China, the question chain method has gained more attention in recent years, particularly in the field of English language teaching. Liu (2001) introduced problem-based learning as a constructivist approach to teaching, which shares similarities with the QCTM in that both emphasize student engagement through questioning. Wang (2011) was one of the first researchers to explicitly incorporate question chains into teaching practice, outlining five key principles for designing effective question chains: clear instructional goals, logical progression, alignment with students' cognitive needs, goal-oriented teaching, and instructional value of each question. Wang's research laid the foundation for further exploration of the question chain method in various educational contexts. Pei (2011) expanded on Wang's work by applying question chains

to English reading instruction, identifying two main strategies: clarifying the main idea of the text through hierarchical questions and using mind maps to organize relevant information.

Tang (2016) emphasized the need for coherence and logic in designing question chains, suggesting that poorly constructed question chains can lead to confusion and hinder learning. Zhang (2018) offered further refinements, categorizing question chains into introductory, diagnostic, and conclusive types, each serving a different function within the lesson.

#### **2.3.3. Summary**

It is evident that question-oriented teaching has gained widespread attention and support from researchers both domestically and internationally. Many scholars acknowledge the value of focusing on problem-solving and critical thinking in educational practices. However, when it comes to studies specifically focused on the question chain teaching method, the results have been less than satisfactory.

In foreign research, scholars have largely overlooked the question chain as a distinct teaching method. There has been little exploration into how question chains can be systematically applied within the classroom, and practical strategies for their implementation are still lacking. This has left a significant gap in the literature, as the potential benefits of using question chains to enhance student engagement and cognitive development have not been fully realized.

Domestic research in China has produced a more substantial body of work concerning question chains. However, the majority of these studies focus primarily on defining what question chains are and discussing the theoretical principles behind their design. Although these contributions are valuable in establishing a conceptual foundation, they fall short of offering concrete, real-world applications.

Few studies provide detailed examples or experimental data demonstrating the effectiveness of the Question Chain Teaching Method (QCTM) in actual classroom settings. As a result, there is a notable absence of research that bridges the gap between theory and practice, particularly in terms of how question chains can be integrated into everyday teaching routines.

Therefore, this study seeks to address this issue by offering a new, practical approach to applying question chains, particularly within the framework of ABA. By combining the strengths of both methodologies, this research seeks to not only explore the theoretical compatibility between question chains and ABA but also provide concrete strategies and classroom examples that illustrate how this integration can enhance teaching effectiveness.

### 3. Research Design

#### 3.1. Participants

A total of 120 senior high school students, aged 15 to 17, from two different classes participated in the experiment. The students were randomly divided into two groups: a control group of 60 students and an experimental group of 60 students. Both groups were taught the same reading materials over 2 weeks, with each group receiving three reading lessons per week.

#### 3.2. Intervention

The intervention for the experimental group involved the implementation of the QCTM within the framework of the ABA. The experimental group’s reading lessons were structured around the hierarchical use of question chains, where the teacher posed a series of progressively more complex questions designed to guide students from basic comprehension to higher-order thinking, including analysis, evaluation, and synthesis.

In contrast, the control group received instruction through more conventional reading methods. The teacher focused primarily on text comprehension by asking factual, isolated questions with minimal emphasis on critical thinking or deep learning.

#### 3.3. Data Collection and Assessment

Both groups were assessed at the beginning and end of the 2 weeks through a set of pre- and post-intervention tests designed to measure their reading comprehension and critical thinking abilities. The tests included questions at various cognitive levels (knowledge, comprehension, application, analysis, and evaluation), as outlined in Bloom’s Taxonomy (Figure 1). The test results are evaluated based on specific grading criteria (Table 1). In addition, students were observed during lessons to measure engagement and cognitive involvement based on their responses to teacher-posed questions.

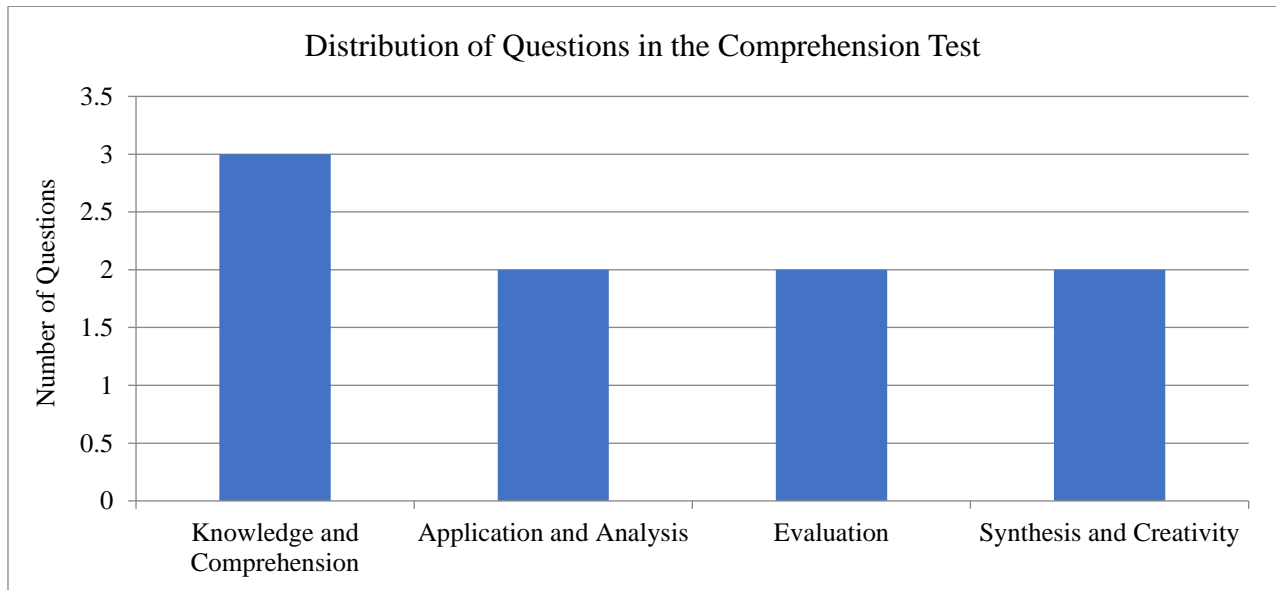


Fig. 1 Distribution of questions

Table 1. Grading criteria

Part	Grading Criteria	Score
Part 1 (Knowledge and Comprehension)	Students are expected to correctly recall and understand the factual details of the story. These questions assess basic comprehension.	30
Part 2 (Application and Analysis)	Students are required to demonstrate their ability to interpret the text and make connections between the text and its broader context.	25
Part 3 (Evaluation)	Students are asked to form judgments based on the text, supporting their arguments with evidence. These questions measure critical thinking.	20
Part 4 (Synthesis and Creativity)	Students are allowed to demonstrate creativity by proposing new ideas or strategies. They should integrate knowledge from the text to create novel solutions.	25

## 4. Findings and Discussions

### 4.1. The Problems in Senior English Reading Teaching Concerning Questioning

#### 4.1.1. The Insufficiency of Competence-Oriented Questions

Competence-oriented questions, widely recognized as the foundation of constructive dialogue, are designed to stimulate critical thinking, diversify lessons, build rapport in the classroom, and assess learning outcomes. These questions, whether planned or spontaneous, play a crucial role in fostering deeper cognitive engagement.

Notably, competence-oriented questions require careful design and precise organization to ensure that students remain cognitively active, driven by the conflicts and challenges the questions present. Unfortunately, many English teachers still view questions merely as tools for recalling or confirming content. This entrenched perception leads to the creation of questions that focus only on basic text comprehension. As a result, the lack of competence-oriented questioning reduces the flexibility and depth of classroom discussions. Over time, this limits students' ability to transition from concrete, factual thinking to more analytical and evaluative approaches, ultimately hindering their development into high-level, competence-oriented learners.

#### 4.1.2. The Illogicality Between Questions of Different Levels

Reading, like any cognitive process, develops continuously and progressively, and it is thus necessary that classroom question design should mirror this progression. To guide students from basic information extraction to deeper text evaluation, questions must be arranged in a logical sequence, increasing in complexity.

Teachers need to pose questions that advance from comprehension to application and from interpretation to judgment, gradually guiding students to develop their thinking from lower-order to higher-order skills.

In fact, classroom observations and interviews suggest that few teachers meet these standards. In many reading classes, questions are either unfocused, poorly structured, or lack scientific rigor.

Worse still, complex questions with multiple interpretations are sometimes presented without proper groundwork, which tends to create a confusing atmosphere where students are left in a passive state.

For example, in a lesson titled "Saving the Antelopes", the following questions are asked when addressing the first paragraph:

Q1: When did the story happen?

Q2: Where did the story take place?

Q3: What kind of person do you think Jiesang Suonandajie is?

At first glance, it seems the teacher has organized the content through a series of questions. However, a closer look and analysis of the three questions reveals that the abrupt shift from Q1 and Q2 (focusing on identifying the time and place of the story) to Q3 (evaluating the character) disrupts the logical flow. This lack of coherence between question levels gives rise to unwanted incongruity in the class.

### 4.2. The Advantages of the "Question Chain" Method in Reading Instruction

#### 4.2.1. The Enhancement of Deep Learning

As displayed in Table 2, the initial test results indicated minimal variation between the two groups, with the control group achieving an average score of 60% and the experimental group 62.5%. Following the intervention, the experimental group demonstrated a marked improvement, reaching an average of 75%, while the control group showed a more modest increase to 63%.

The improvement in the experimental group was most noticeable in higher-order thinking skills, such as analysis and evaluation, where their scores increased by 20% on average, compared to a 5% increase in the control group. This demonstrates that the integration of the QCTM with ABA is beneficial in guiding students towards deeper learning.

In contrast to passive, fragmented, and mechanical learning, deep learning emphasizes a thorough understanding of the underlying meaning within supporting materials. The question chain method plays a key role in facilitating this deep processing of knowledge.

When carefully designed and effectively implemented, question chains can act as scaffolding, guiding students from basic familiarity with the text to uncovering deeper facts and ultimately forming new insights that go beyond the text itself. In short, question chains are essential tools that encourage students to move from superficial thinking to deeper, more profound levels of understanding.

#### 4.2.2. Achieving Continuity in the Teaching Process

The continuity of the teaching process can be greatly enhanced by leveraging the hierarchical structure of question chains. In traditional English language teaching (ELT) classrooms, students are often bombarded with a disorganized array of isolated, unsystematic, and sometimes illogical questions, which undermines the overall coherence of the lesson.

Under the QCTM, however, teachers can align their questions with the specific goals of each instructional stage. By staging questions in a way that progressively increases in difficulty as the lesson advances, teachers can ensure smooth, natural transitions between different phases of the lesson. This method allows the teaching process to flow seamlessly, with each stage logically connected to the next.

**Table 2. Score Comparison: Pre- and Post-Intervention**

Group	Pre-Intervention Score	Post-Intervention Score
Control Group	60	63
Experimental Group	62.5	75

## 5. The Application of the Question Chain Teaching Method in Reading Instruction under the Activity-based Learning

The activity-based approach to English learning provides clear direction and guidelines for the types, sequences, and processes of teaching activities (Wang, 2019). To organize classroom activities hierarchically and logically, progressive activities that follow learning processes such as “learning and understanding”, “applying and practicing” and “transferring and creating” can be effectively integrated with the use of question chains.

### 5.1. Learning and Understanding Activities

The initial phase emphasizes “learning and understanding” with the goal of helping students extract, summarize, reorganize, and synthesize information from the text, requiring them to construct a new knowledge framework.

#### 5.1.1. Applying Introductory “Question Chains” to Explicit Knowledge in the Text

Introductory question chains can be employed to activate students’ existing knowledge structures concerning the explicit information in the text. These introductory question chains are designed to introduce the topic, provide smooth transitions between sections, lay a foundation for subsequent teaching, or stimulate students’ curiosity and motivation to learn. When designing such questions, it is effective to focus on what students already know, identify any misconceptions or challenges, and explore their past experiences.

For instance, in a lesson themed “Traveling Around”, the teacher can ask introductory questions like, “Do you like traveling?”, “When was the last time you traveled to a new place?” and “What do you enjoy doing on trips?”. After discussing these questions, the teacher can delve deeper by asking, “Would you want to revisit that place? Why or why not?”. This approach integrates students’ background knowledge with textual clues, preparing them linguistically, emotionally, and intellectually for upcoming tasks.

#### 5.1.2. Designing Questions in Authentic Contexts to Increase Students’ Reading Motivation

In learning and understanding activities, it is crucial to create authentic situations that reflect real-life contexts, providing students with frequent exposure to language use. Teachers should design questions based on authentic scenarios to spark students’ intrinsic motivation and encourage deeper, more meaningful engagement with the text.

For example, in a lesson on famous scientists, the teacher can set up the context: “As a member of the school’s Invention Association, you are going to introduce a famous Chinese scientist during a class meeting on Friday evening”. Then, the teacher could pose a series of questions: “Who is the scientist you are going to introduce?” “What contributions has he or she made?”, “Why do you choose him or her?”. Through these questions, students can establish connections with the topic in a more interactive and immersive way.

### 5.2. Applying and Practicing Activities

The second phase focuses on “applying and practicing”, where students describe, interpret, analyze, and internalize the newly acquired linguistic knowledge. This process helps students systematically internalize language knowledge while gradually consolidating their new knowledge structure.

#### 5.2.1. Applying Differential or Diagnostic “Question Chains” to Tacit Knowledge in the Text

Diagnostic questions play a key role in this phase. These chains are carefully designed around the key, difficult, or unclear aspects of the teaching content (Zhang, 2018). When asked diagnostic questions about tacit knowledge, such as text structure or rhetorical devices, students may reveal their weaknesses. By identifying and addressing these issues, students develop deeper, more insightful perspectives.

For instance, in a passage about athletes Lang Ping and Michael Jordan, the phrase “the mental strength that he showed made him unique” contains a pun. In this case, one of the critical teaching objectives is to help students grasp the rhetorical technique of puns. To this end, the following questions can be put forward:

- Q1: What has made Jordan a unique sportsman?
- Q2: Why did the author use the word “strength” in describing Jordan’s quality?
- Q3: Can we replace “strength” with “quality”? Why?
- Q4: Can you use this rhetorical device to make a new sentence?

Each question builds upon the previous one, creating a progressive hierarchy that leads students from understanding to analysis and application.

#### 5.2.2. Using Mind Maps to Demonstrate the Hierarchical Nature of Questions

Using visual aids like mind maps helps students clarify concepts, organize their thoughts, and connect theoretical

knowledge with real-world applications. Mind maps are an effective tool for applying and practicing activities, and thus, teachers are encouraged to construct these maps directly from the question chains.

In a reading class on *Wuthering Heights*, for instance, the teacher could ask, “Who are the characters?” “What social class do they belong to?” and “How are these characters connected?”. After this, the Character Map and the Social Map based on these questions can be presented, all in an effort to help students better visualize the main characters and their relationships.

### 5.3. Transferring and Creating Activities

The third phase focuses on “transferring and creating”, where students infer, justify, evaluate, and create. This phase is particularly concerned with transferring knowledge into practical skills.

#### 5.3.1. Applying Inquiry-Based “Question Chains” Beyond the Text

In terms of transferring and creating activities, inquiry-based question chains always function positively to cope with the knowledge beyond the text. As its name suggests, inquiry-based question chains need to be raised to involve students in addressing real-life challenges or tackling intricate questions that extend beyond the text, such as creating dialogues, proposing new solutions, and continuing the ending of open-ended stories.

To illustrate, in eliciting the writing purpose of an expository passage named “Singapore—A Place You Will Never Forget”, the teacher can ask inquiry questions such as “Who are the intended readers of this passage?”, “How do you know it is for Chinese people?” and “How will you develop your tourist brochure introducing China to foreign visitors?”. With these questions, students are allowed to make inferences about the author’s intention and give reasons for any conclusions drawn. But most importantly, they are allowed to create through simulations of real life outside the classroom.

#### 5.3.2. Designing Post-Reading Activities Based on the Logic of Question Chains

Creating and transferring activities should not be designed merely about a single piece of knowledge in the textbook but about the further exploration of related knowledge as well, which normally involves students’ daily lives, the latest technological developments or even other subject areas etc. When designing those activities, a worthwhile method for teachers is to adopt the logical relationship between some of the question chains already presented in the classroom.

A case in point can be found in the lesson “A False Start”, in which students are presented with the success stories of three preeminent spokesmen of success—Einstein, Van

Gogh, and Hua Luogeng, whose careers did not start well but eventually became successful after numerous trials and tests. In the second stage, the teacher designs the following questions to help students explore the reason for Hua Luogeng’s success.

Q1: What is Hua Luogeng’s false start?

Q2: Is this “start” really a false start?

Q3: How does the false start contribute to Hua Luogeng’s success?

Q4: According to Hua’s story, could you summarize what factors are necessary in one’s way to success?

The logic of these questions is first to identify the difficulties that once plagued the character in his early years and then to analyze why such difficulties enable the character to rise to wealth and fame from a state of poverty and obscurity. Such a “Failure-Success” relation, in fact, applies to the transferring and creating activities as well. During this period, the teacher could invite students to make a mini-speech about the success stories around them, which is expected to cover “the character’s false start”, “the effects of the false start on his or her success”, and “the satisfying results”. In this way, students’ possession of the learned knowledge is further consolidated, which, in turn, improves their production ability.

## 6. Conclusion

Reading counts vitally in helping students accumulate comprehensible language materials, achieve academic success, and promote self-exploration. Nevertheless, given the lack of proper questioning in classrooms, English reading teaching nowadays has been deemed as passive, fragmented and mechanical. This makes it even more urgent to provide students with high-quality English reading instruction.

Based on previous research, this study focuses on today’s English reading instruction. It examines the reasons for employing question chains in reading class, coupled with the strategies to integrate the QCTM and ABA into English learning through class observations, interviews and case analysis. The main problems found in senior English reading teaching concerning questioning involve the shortage of adequate competence-oriented questions and the illogicality between questions of different levels.

In response to these problems, the “question chain” method is introduced thanks to its contribution to deep learning and the continuity of the teaching process. Additionally, it was found that the ABA to English learning approach, which clearly points out the ways and methods for English education in China, makes perfect sense with the QCTM. Consequently, this study also probes into the application methods of the two from the perspective of the “learning and understanding” activities, “applying and practicing” activities, as well as the “transferring and creating” activities. Due to the failure to carry out observations and

interviews in a wide range, great care is needed when generalizing the findings to a larger population. Therefore, future research is expected to present more comprehensive

findings by extending its research cycle, employing various research methods and carrying out empirical studies.

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