Educational and Humanities
ISSN Print: 3104-4352
ISSN Online: 3104-4360
CD ISSN: 3104-4379
https://doi.org/10.63313/EH.9128

Research on Deep Learning in Junior High School English Reading Driven by Question Chain

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How to cite this paper: Ge, R., & An, Z. (2026). Research on deep learning in junior high school English reading driven by question chain. Educational and Humanities, 5(2), 47–51. ISSN Print: 3104-4352, ISSN Online: 3104-4360.
https://doi.org/10.63313/EH.9128
Published: 2026-11-26

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Abstract

Deep learning stresses in-depth comprehension, content integration and reflective practice to develop students' thinking. The question chain, a classroom questioning strategy, guides students toward in-depth reading. Combining the two concepts, this study explores ways to improve junior high school English reading teaching.Given the prevalence of superficial reading instruction and fragmented questioning, three research questions are raised concerning students' attitudes toward question-chain-driven reading teaching, its effects on their deep learning, and its differential influences across proficiency groups. Based on constructivism and Bloom's taxonomy, two rounds of action research were implemented among 69 Grade 8 students at Fuyang No.1 Junior High School.Findings indicate that most students respond positively to the question chain. It improves students' reading ability and deep learning in comprehension, integration, reflection and application. While beneficial for all learners, the greatest progress appears among low-proficiency students. This study offers practical insights for junior high English reading instruction and merits further research and promotion.

Keywords

Deep Learning; Question Chain; Junior High School English Reading

1. Introduction

The Compulsory Education English Curriculum Standards (2022 Edition) requires questions at different thinking levels to promote deep reading, yet junior high school reading classes often remain at surface information retrieval, with fragmented questions lacking logical and cognitive progression. A question chain, organized around the core theme and following progressive layers, may systematically connect scattered questions and lead students from shallow information to deep meaning. This study explores how question-chain-driven instruction promotes deep learning in junior high school English reading, aiming to reveal their relationship, design a feasible teaching scheme, and improve students' reading comprehension.

2. Literature Review

2.1. Theoretical Foundation

Constructivism holds that learners actively construct knowledge through interaction with the environment rather than receiving it passively; thus question-chain design should activate students' existing experience and guide them to construct meaning through exploration. Bloom's taxonomy divides the cognitive domain into memory, understanding, application, analysis, evaluation and creation, arranged from shallow to deep. A question chain should therefore cover different cognitive levels, follow the progression from "what is written" to "how and why it is written" and finally to "how I view it and what I can do", and promote metacognitive reflection.

2.2. Researches on the Application of Deep Learning at Home and Abroad

Marton and Saljo (1976) first distinguished deep from surface learning: surface learners memorize the text, while deep learners understand meaning and theme. Deep learning features critical understanding, content integration, construction and reflection, and transfer and application. In China, Li Jiahou (2005) defined it as learners' creative understanding of new knowledge and its use to solve practical problems; An Fuhai (2014) elaborated its connotation, features and approaches. Zhou Min and Sun Weiwei (2022) proposed strategies for deep learning in junior high school English reading, and Mou Yalan (2025) explored driving deeper reading through core question chains in large-unit teaching. Abroad, Biggs (1979) held that surface learners merely memorize and retell, whereas deep learning is based on understanding and encourages critical thinking and knowledge integration. Entwistle and Ramsden (1982) believed deep learning stems from intrinsic motivation and aims to explore the essence of knowledge. Beattie (1997) defined it as inspired learning for understanding and applying knowledge. Existing research provides a solid foundation, but studies on junior high school English reading remain insufficient.

3. Method

3.1. Participants

One parallel Grade 8 class of 69 students from an ordinary middle school was selected. Based on previous semester grades, the top 25% formed the high-level group (17), the middle 50% the mid-level group (35), and the bottom 25% the low-level group (17).

3.2. Measures

A self-designed 10-item questionnaire on deep learning in English reading covered

critical understanding, content integration, construction reflection, and transfer application (Cronbach's α = 0.836; KMO = 0.832, p = 0.000). Pre-test and post-test each contained four reading passages with items on detail comprehension, inference, main idea and word meaning. Semi-structured interviews were conducted with two students from each proficiency group.

Table 1. Analysis of the Reliability of the Questionnaire

Analysis of the Validity of the Questionnaire		
KMO	$\chi 2$	p
0.832	347.256	0.000

3.3. Procedure

Action research lasted 16 weeks in two rounds. The first round (weeks 1-8) included preparation (textbook study, pre-test, question-chain design) and implementation, which revealed problems: weak connections between some questions, insufficient thinking time, and low participation of low-level students. The second round (weeks 9-16) designed three levels of question chains: introduction-based chains activating existing experience through illustrations, titles and key words; exploratory chains moving from plot to character and theme; and migratory chains connecting texts to real life and encouraging critical and creative expression, with extended waiting time. A post-test, questionnaire and interviews followed.

3.4. Data Analysis

Questionnaire and interview data were collected once after the research, and test data twice. All 69 questionnaires were recovered (100%). Descriptive statistics and independent-samples t-test were used.

4. Results and Discussion

4.1. Results

Of the 69 students, 49.3% were male and 50.7% female. Regarding understanding the article, 28.99% chose "very agree", 50.72% "agree", 14.49% "neutral", 4.35% "disagree" and 1.45% "very disagree". In classroom participation, 40.6% could think actively under question-chain guidance. Altogether 85.51% preferred question-chain teaching, 1.45% disliked it, and 13.04% considered it equivalent to traditional teaching. Interviews showed that high-level students thought more deeply about authorial intention, mid-level students did not feel overwhelmed by successive questions, and low-level students gained clear thinking directions and confidence. Students suggested more reflection time and guidance.

The pre-test mean was 12.67 (SD = 5.46), and the post-test mean rose to 14.23 (SD = 4.32). An independent-samples t-test showed a significant difference ($p = 0.0003 < 0.05$). All three groups improved: the low-level group most obviously (4.35 ± 2.47 to

7.88 ± 2.06), the mid-level group steadily (13.77 ± 1.52 to 14.86 ± 1.22), and the high-level group slightly (18.71 ± 0.99 to 19.29 ± 0.75). Standard deviations decreased, indicating more concentrated scores.

Table 3. Descriptive Result of English Reading Pre-test and Post-test

Table Head	Descriptive Result of English Reading Pre-test and Post-test		
	N	M	SD
pre-test	69	12.67	5.46
post-test	69	14.23	4.32

4.2. Overall Impact Analysis of Deep Learning

Question-chain teaching significantly improved reading scores ($p < 0.05$), with positive effects in understanding, integration, reflection and application, thus effectively promoting deep learning.

4.3. Analysis of Differences Among Students of Different Levels

High-level students improved in analyzing logical relationships and reading-strategy awareness. Low-level students improved markedly in detailed extraction and gained confidence, though progress in comprehensive analysis and critical evaluation was less obvious; differences within this group narrowed. The impact thus varies with proficiency, requiring differentiated expectations and support.

5. Conclusion

5.1. Major Findings

The question chain guides students to understand texts deeply through continuous, logically progressive questions. It improves reading ability and deep learning in understanding, integration, reflection and application. It benefits students at all levels, with low-proficiency students improving most. Most students hold positive attitudes toward it.

5.2. Research Implications

Teachers should design question chains around the core theme with progressive layers, attend to differences among students, integrate question chains with scenario creation and evaluation feedback, and cultivate students' own question awareness.

5.3. Limitations and Suggestions

The study lasted only one semester, involved one class from one school, and focused only on reading. Future research should extend the research cycle, broaden samples across regions and school levels, and explore question chains in listening, speaking, writing and grammar.

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