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Research on High School English Reading Teaching Based on Deep Learning

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Abstract: The 2017 Edition of the General High School English Curriculum Standards (revised in 2020) has designated "the core competencies of the English discipline" as the overarching objective of classroom instruction. As a foundational pillar of English language education, reading instruction serves as the primary medium through which these core competencies are translated into daily teaching practice. Nevertheless, contemporary high school English reading pedagogy is plagued by pervasive problems of teacher-centered "spoon-feeding" delivery and fragmented surface-level learning, which severely hinders the cultivation of students' higher-order cognitive skills and the improvement of their integrated language application capabilities. Deep learning, which centers on fostering learners' higher-order thinking development, cross-context knowledge transfer, and complex problem-solving abilities, demonstrates strong alignment with the core competency cultivation requirements. It has thus emerged as a crucial theoretical underpinning for driving the in-depth reform of high school English reading instruction. Adopting a systematic literature review methodology, this study comprehensively sorts out and clarifies the core conceptual connotations of both deep learning and English reading teaching, and conducts a comparative analysis of relevant research advancements across theoretical, methodological, and practical dimensions from both domestic and international perspectives. This study employs a literature review method to systematically sort out the core concepts of deep learning and English reading instruction, and compares and analyzes the theoretical, methodological, and practical research progress of deep learning both domestically and internationally, as well as the current state of research on the integration of deep learning and English reading instruction. The study finds that relevant research has formed a relatively systematic theoretical framework, but still faces issues such as insufficient targeting of localized teaching models, disconnection between evaluation systems and teaching practices, and weak interdisciplinary integration research. This study aims to clarify the research context and development trends in this field, providing references for subsequent explorations and theoretical research on high school English reading instruction oriented towards deep learning, and helping to truly implement the core competencies of the English subject in classroom teaching.

Keywords: Deep Learning; English Reading Instruction; Review

1. Introduction

With the continuous deepening of curriculum reform in basic education in China, the "General High School English Curriculum Standards (2017 Edition, 2020 Revision)" clearly states that the core competencies of the English subject include four dimensions: language ability, cultural awareness, thinking quality, and learning ability, marking a fundamental shift in English teaching from a "knowledge-based" to a "competency-based" approach [1]. Reading, as a core means of language input, is not only an important way for students to acquire language knowledge and develop language skills, but also a key vehicle for them to engage with diverse cultures, cultivate critical thinking, and form correct values, occupying an irreplaceable position in the cultivation of core competencies in the English subject. Despite the new curriculum reform being implemented for many years, the practical dilemmas of high school English reading instruction have not been fundamentally resolved. Most classrooms still rely on the traditional teaching model of "teacher explaining vocabulary and

grammar—students translating sentence by sentence—completing after-class exercises," resulting in a clear "fragmented" characteristic in the teaching process: teachers overly focus on isolated explanations of language points, neglecting the overall structure and thematic significance of the text; students passively receive knowledge, remaining at a superficial understanding of the literal meaning of the text, lacking exploration and critical thinking of the deeper connotations; and teaching evaluation primarily relies on summative exams, focusing on the assessment of knowledge retention, which fails to reflect students' cognitive development and comprehensive ability enhancement. This shallow learning model leads to a "disconnection between learning and application," making it impossible for students to transfer the knowledge they have learned to real-life situations to solve problems, which is far from the cultivation goals of core competencies. Against this broader educational context, deep learning as a core educational theory delivers novel perspectives and practical directions for the reform of senior high school English reading teaching. Marton and Saljo first introduced the notion of deep learning back in 1976 [2]; since then, scholars at home and abroad have continuously enriched and perfected this theory, eventually forming a holistic theoretical system covering learning processes, learning outcomes, and learning objectives. Compared to shallow learning, deep learning emphasizes learners' active participation and meaning construction, focusing on the integrative and relational aspects of knowledge, with the ultimate goal of developing critical thinking, achieving knowledge transfer, and creatively solving problems. Under the guidance of core competencies, deep learning is no longer merely a learning method, but a philosophy of education, with its core being to engage students wholeheartedly in learning through meaningful teaching activities, while mastering core knowledge of the subject, developing higher-order thinking abilities, and forming positive emotional attitudes and correct values. Over the past few years, researchers across the globe have carried out in-depth investigations into the integration between deep learning and English reading pedagogy, yielding abundant findings in the domains of teaching strategies, instructional models and assessment frameworks. However, overall, existing research still has some shortcomings: first, some studies do not deeply understand the connotation of deep learning, mistakenly equating "deep learning" with "increased teaching difficulty"; second, localized teaching practice research is relatively weak, with most teaching models and strategies lacking specific designs for different stages and genres of high school English; third, an integrated evaluation system for teaching, learning, and assessment has not yet been fully established, making it difficult to comprehensively and effectively monitor and provide feedback on students' deep learning processes. Based on this, this study systematically reviews relevant literature both domestically and internationally, first defining the core concepts of deep learning and English reading instruction, clarifying their connotations and characteristics in the context of core competencies; secondly, sorting out the research status of deep learning from three dimensions: theoretical research, methodological research, and practical research, and focusing on analyzing the research progress of the integration of deep learning and English reading instruction; finally, summarizing the achievements and shortcomings of existing research and looking forward to future research directions. This study aims to provide theoretical references and practical insights for high school English teachers to carry out deep reading instruction, promoting the transformation of English reading instruction from "shallow learning" to "deep learning," and truly realizing the educational value of the English subject.

2. Definition of Concepts

2.1 Deep Learning

First introduced in the seminal work *The Nature of Learning Differences* [2], the construct of deep learning was originally conceptualized as a learning paradigm that prioritizes profound comprehension and practical knowledge transfer. He and Li were the first to systematically introduce the concept of Deep Learning into the field of educational research in China [3]. As the authors emphasized in their seminal study [3], deep learning represents an educational paradigm in which learners, grounded in comprehensive understanding, can critically scrutinize novel knowledge and perspectives, merge them into their pre-existing cognitive frameworks, forge intrinsic links among diverse

concepts, and eventually apply the acquired knowledge to unfamiliar contexts to address practical problems and make rational decisions. From the perspective of learning objectives, Zhang and Wu describe Deep Learning as a learning paradigm based on mastering unstructured deep knowledge, with critical thinking, active knowledge construction, and effective transfer application as pathways, ultimately aiming to solve practical problems and develop higher-order abilities [4]. From the perspective of learning outcomes, an emphasizes that the fundamental result of Deep Learning is the learner's ability to effectively transfer integrated knowledge to new contexts and transform it into the ability to solve complex problems [5]. In the context of core competencies, Guo points out that Deep Learning is meaningful learning in which students are fully engaged and develop during the teaching process [6]. This process is guided by competency goals, centered around challenging learning themes, and involves active experiential activities that enable students to deeply understand and critically engage with the learned content, grasp the core ideas of the subject, and ultimately achieve the goals of creatively solving problems, cultivating positive social emotions, and forming correct values. The aforementioned scholars have defined the connotation of Deep Learning from different perspectives, but there are also commonalities. It can be seen that Deep Learning is a developing and evolving concept. Since this study is conducted in the context of core competencies, focusing on a survey of high school English reading instruction aimed at Deep Learning, it is more inclined to combine the concept of Deep Learning proposed by Guo, understanding Deep Learning from both the learning process and outcomes. Therefore, this study defines Deep Learning as meaningful learning in which learners, guided by competency-oriented goals, focus on unit themes, actively participate in learning activities, understand integrative and relational learning content, develop critical thinking, transfer new knowledge, and creatively solve problems.

2.2 English Reading Instruction

Reading is the basic way of language input and an irreplaceable means of comprehensible input [7]. Nuttall mentioned that "reading is the process by which people obtain the information they need from texts, including facts, the author's viewpoints, emotions, and so on" [8]. The importance of reading in the field of education is self-evident. In English teaching, reading is also an important part of the five components: listening, speaking, reading, writing, and translation. Regarding English reading instruction, many viewpoints have been presented by predecessors, such as Zhang who proposed that the essence of reading instruction is the process of extracting and processing information from reading materials, and that reading instruction can have a certain impact on the non-intellectual factors of readers [9]. In Wang's theoretical perspective [10], the essence of reading lies in a multi-directional communicative process, which encompasses teacher-student interactions, peer-to-peer exchanges, and the dynamic engagement between learners and written texts. Reading instruction should help students develop the ability to acquire, process, and evaluate information. The "General High School English Curriculum Standards (2017 Edition, revised in 2020)" points out that reading instruction plays a crucial role in cultivating the core competencies of English among middle school students [1]. It is not only the main way to acquire language knowledge but also a key carrier that integrates language, culture, thinking, and development. The Chinese government and society at large pay great attention to developing children's and adolescents' reading abilities, as well as cultivating their interest in and habits of reading. In summary, the significance and form of English reading instruction are continuously deepening and developing, providing ideas and a framework for this research. Under the core competencies of the English subject, reading instruction is no longer an isolated language skill training in the traditional sense, but a comprehensive platform that integrates language, culture, thinking, and learning abilities. This study defines reading instruction as the interaction and communication that occurs between teachers and students, among students, and between teachers and text authors through a series of activities and teaching implementations based on articles of various topics and genres, guided and assisted by teachers. The goal is not only to master language knowledge but also to develop higher-order thinking, promote cultural understanding, and construct values through in-depth text interpretation.

3. Relevant Research on Deep Reading at Home and Abroad

3.1 The Current State of Foreign Research on Deep Learning

Research on deep learning abroad started relatively early, with abundant and in-depth studies mainly focusing on three aspects: the connotation and characteristics of deep learning, teaching strategies that promote deep learning, and assessment methods for deep learning.

3.1.1 The connotation of deep learning

International academics have explored and defined the core connotations of deep learning through diverse theoretical lenses. In the initial phase of scholarly inquiry, the majority of researchers conceptualized deep learning as a distinct learning approach that stands in contrast to surface learning. Marton and Saljo proposed through a series of experimental studies that when researching the learning process of college students reading academic papers, they found fundamental differences in how students processed learning materials: some students adopted "shallow learning," focusing on the literal meaning of the text and factual recall; while others adopted "deep learning," striving to understand the author's intent and the inherent structure of the text [2]. This distinction resonates theoretically with Bloom's taxonomy of cognitive objectives [11]. Shallow learning mainly corresponds to the two lower levels of cognitive skills: "remembering and understanding"; while deep learning corresponds to the four higher levels of cognitive skills: "applying, analyzing, evaluating, and creating," emphasizing learners' deep understanding of knowledge, critical thinking, and practical application abilities, rather than mere rote memorization. As research on deep learning has deepened, scholars have shifted their perspective on the definition of deep learning from learning approaches to learning processes, pointing out that deep learning is the process by which students, based on a true understanding of the learning content, can transfer and apply new knowledge to solve problems in new contexts [12]. Chen et al. proposed that deep learning is the process by which learners integrate new knowledge into their existing knowledge structures and construct new cognitive structures from the perspective of knowledge association and construction [13]. As research progresses, more researchers believe that deep learning is a learning outcome, indicating that deep learning points to transfer based on deep understanding. Bransford et al. recognize that deep learning refers to teachers enabling students to form long-term memories through a deep understanding of course content, on the basis of which students can solve new problems in different contexts [12]. Hewlett Foundation defines deep learning as the competencies that students must possess for success in 21st-century work and civic life [14]. These competencies enable students to flexibly master and understand disciplinary knowledge and apply this knowledge to solve problems in the classroom and future work. They mainly include six fundamental dimensions: mastery of core subject knowledge, critical thinking and complex problem solving, teamwork, effective communication, learning how to learn, and learning perseverance [14]. This definition has had a significant impact and has been widely cited in the United States and even globally. Joanne and Matthew (2018) believe that deep learning refers to the development of learners' human feedback abilities, which is the capacity to use what they have learned to contribute to others and the world. This stage of deep learning has already broken through traditional cognitive boundaries, integrating elements of the era and responding to social needs by incorporating interpersonal and self domains into the goals of deep learning.

3.1.2 Promoting teaching strategies for deep learning

deep learning does not occur naturally; it relies on teachers' conscious instructional design, supportive learning environments, meaningful learning tasks, active teacher-student interactions, and ongoing formative feedback. Biggs put forward the 3P model of the learning process (Presage–Process–Product), which underscores that students' academic learning outcomes are shaped by both personal individual factors (such as intellectual ability and learning motivation) and environmental contextual factors (such as instructional methods and evaluation strategies) [15]. Teachers should optimize instruction by removing factors that lead to surface learning and creating conditions that encourage deep learning. Since the 21st century, research perspectives have become more macro and systematic. In teaching, teachers can promote students' deep learning by establishing new partnerships with them.

Additionally, compared to traditional teaching models, holistic teaching models are more conducive to students' deep learning [16,17]. The "Deep Learning Roadmap" (DELC) proposed by Jensen and Nickelsen provides teachers with a clear and actionable instructional process framework, from designing goals and assessing student conditions to creating an atmosphere and implementing teaching and evaluation, marking the maturity of research on the conditions for deep learning instruction in practical guidance [18]. International research has gradually shifted from focusing on individual learning processes since the 1970s to the systematic design of teaching environments and strategies, emphasizing the joint effects of various conditions such as teacher-student relationships, task design, technology integration, and assessment feedback to effectively promote deep learning.

3.1.3 Evaluation of deep learning

With the deepening of relevant academic exploration, the evaluation system for deep learning has experienced a gradual paradigm shift, evolving from a simplistic single-dimensional assessment approach to a systematic, multi-dimensional comprehensive evaluation direction. Early studies mainly focused on qualitative evaluations of the learning process and outcomes. Based on Biggs' (1987) 3P learning process theory model, a deep learning process measurement scale was established to assess whether students are in a deep learning state from the dimensions of motivation and strategy. Subsequently, the SOLO learning outcome classification theory proposed by Biggs and Collis divides students' thinking levels into five levels from pre-structural to abstract extended structures, providing a framework for evaluating the "quality" and "quantity" of learning, focusing on deep understanding and transferability [19]. The compatibility framework is a deep learning capability framework proposed by the American Educational Research Association based on related research from the Hewlett Foundation and NRC (2012). This framework emphasizes evaluating deep learning from the perspective of learning outcomes, categorizing the evaluation of deep learning into three domains: cognitive, interpersonal, and personal, along with six competencies. The evaluation system aimed at the deep learning process mainly revolves around the cognitive and emotional dimensions of the deep learning process. Entering the 21st century, evaluation research has placed greater emphasis on formative assessment and feedback mechanisms. In 2015, Fredricks proposed a comprehensive measurement of behavioral, emotional, and cognitive engagement through student self-assessment, teacher ratings, and classroom observation methods to reveal the deep learning process [20]. Grover and Pea used exams, PFL tests, and experiential surveys in MOOC blended learning to assess knowledge transfer and problem-solving abilities in new contexts [21]. Overall, deep learning evaluation research has evolved from early process tools to a more integrated approach, emphasizing formative feedback, multidimensional competencies, and real-world applications to comprehensively support the development of students' core competencies.

3.2 Domestic Research Status of Deep Learning

Research on deep learning in China started relatively late. In 2005, He and Li first proposed the concept of deep learning [3]. However, in recent years, research related to deep learning in the field of education has become increasingly rich, mainly involving three aspects: theoretical research, methodological research, and practical research.

3.2.1 Theoretical research on deep learning

The theoretical research on deep learning includes conceptual studies and review studies of deep learning. First, at the level of conceptual interpretation of deep learning, Li expanded the definition of deep learning [3]. They believe that deep learning is the process by which students critically absorb and accept new things based on their own knowledge and experience. In this process, students not only need to connect new knowledge with existing knowledge but also integrate it into their cognitive structure, thereby constructing a completely new knowledge system. In their research, Zhang et al. hold that deep learning represents not only an active and critical learning method but also an effective mechanism to achieve meaningful learning, which plays a crucial role in promoting the development of students' higher-order thinking capabilities [4]. With the advancement of core competency education reform, research on deep learning has rapidly increased, becoming an important direction for teaching reform. Guo published an article titled "Deep Learning and

Its Significance," which systematically elaborated on the connotation and significance of deep learning, providing an important theoretical framework for this field [6]. He believes that deep learning emphasizes not only individual participation in construction but also social participation in construction. Wang defined deep learning as achieving new understanding and in-depth thinking through learning, thereby cultivating the ability to solve problems in real society, and emphasized the close connection between the content of textbooks and learners' actual experiences [22]. Duan contends that higher-order thinking serves as the central objective of deep learning in its broad sense, and that adopting an optimally integrated approach to deep learning can foster the cultivation of students' higher-order thinking in a more holistic and systematic manner [23]. Second, at the level of review studies on deep learning. Fan et al. used content analysis to study the literature related to deep learning from 2005 to 2014, finding that our country should strengthen theoretical research and evaluation studies on deep learning, and should also provide corresponding technical support [24]. Zhang et al. pointed out the importance of deep learning technology in the field of machine learning and provided a review of its technical research, fundamentally understanding the model architecture of deep learning and its optimization techniques [25].

3.2.2 Research on deep learning methods

The research on deep learning methods includes studies on teaching strategies for deep learning, research on teaching models, and so on. First, at the level of research on its teaching strategies. Duan proposed an interactive hierarchical model of deep learning, based on which targeted teaching strategy designs for students at different learning stages were introduced, along with specific case designs for future reference [26]. Zhang et al. proposed that educators should focus on students' emotional experiences while also emphasizing the development of students' moral education, continuously enhancing their learning abilities, and ultimately achieving students' "circular learning" [27]. In the same year, An in the article "Research on Deep Teaching and Its Path" proposed that deep learning should achieve the unity of educating and enlightening, and presents a consistent teaching strategy before, during, and after class: before class, it focuses on stimulating students' interest in learning; during class, it is based on symbolic teaching, with an emphasis on developing students' thinking quality to construct the meaning of knowledge; after class, it emphasizes the cultivation of the ability to transfer and apply thinking skills [28]. Li et al. analyzed the relationship between learning context design, interaction frequency, and classroom reflection with deep learning under the flipped classroom teaching model, emphasizing the important role of these factors in promoting deep learning [29]. Chen investigated the influence of teaching strategy selection on deep learning from the standpoint of classroom teaching practice, which has offered a fresh analytical perspective for educational practice [30]. Luo believed that constructing high school English classrooms under deep learning should focus on genuine communication between teachers and students, implement the goal of education in the classroom, integrate language perception and cognition, and connect language learning with life [31]. Yu proposed a high school English deep reading teaching framework centered on cultivating students' core competencies in the English subject [32]. This framework stimulates students' interest and thinking by creating challenging situations, guides students to think deeply and innovate through a chain of questions, and constructs a diversified evaluation system that integrates language ability, cultural awareness, and thinking quality, promoting comprehensive student development through precise feedback. The aim is to drive the reform of English reading teaching, ultimately achieving the educational value of the subject and cultivating a new generation with a Chinese sentiment, international perspective, and cross-cultural communication skills.

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