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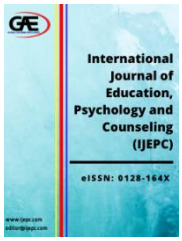

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THE MEDIATING ROLE OF ORAL READING FLUENCY AND THE SUPPORTING EFFECT OF VOCABULARY KNOWLEDGE IN THE RELATIONSHIP BETWEEN PHONOLOGICAL AWARENESS AND READING COMPREHENSION: A CONCEPTUAL STUDY

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Abstract:

The primary aim of this study is to explore how Chinese English as a Foreign Language (EFL) learners' reading comprehension (RC) proficiency can be effectively enhanced through the interrelated constructs of Phonological Awareness (PA), Oral Reading Fluency (ORF), and Vocabulary Knowledge (VK). Although previous research indicates that PA does not always exert a direct influence on reading comprehension, it remains a foundational cognitive skill that facilitates accurate decoding and phoneme manipulation. This study therefore proposes a context-sensitive conceptual framework specifically designed for the Chinese EFL context, where learners' logographic first language often constrains their sensitivity to phonological structures in English. Within this framework, PA functions as the independent variable, reading comprehension as the dependent variable, and ORF serves as a mediating construct that transforms decoding competence into fluent text processing. VK is conceptualized as a supporting or moderating path, strengthening the connection between phonological decoding and semantic comprehension. The study is conceptually based on the validated self-perception frameworks to maintain theoretical rigor and contextual relevance. The findings are expected to enrich the theoretical understanding of the mechanisms underlying EFL reading comprehension and to practice evidence-based instructional strategies that integrate phonological training, fluency practice, and vocabulary development within the Chinese educational context.

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Keywords:

Phonological Awareness, Oral Reading Fluency, Vocabulary Knowledge, Reading Comprehension, Chinese EFL

Introduction

China's growing global engagement has intensified the demand for strong English proficiency. Among the four core language skills—listening, speaking, reading, and writing—reading is particularly critical, as it enables learners to access academic knowledge, interpret complex ideas, and participate in international discourse. Yet, despite years of English education, many Chinese learners of English as a Foreign Language (EFL) continue to face challenges in reading comprehension. These difficulties highlight the need for a conceptual framework that explains how foundational linguistic skills interact to support reading development.

Phonological Awareness, the ability to identify and manipulate sound structures, provides the foundation for accurate word decoding. Oral Reading Fluency builds upon this foundation by transforming decoding into automatic, fluent text processing, thereby freeing cognitive resources for comprehension. Vocabulary Knowledge, encompassing both breadth and depth of lexical resources, strengthens semantic integration and enables learners to construct meaning beyond the sentence level. Together, these three constructs form an interdependent system that underpins reading comprehension.

Existing studies have often examined PA, ORF, and VK in isolation, limiting understanding of their combined influence. In the Chinese EFL context, this separation is particularly problematic, as the logographic nature of Chinese orthography reduces sensitivity to phoneme–grapheme correspondence, while classroom practices emphasize memorization over fluency and phonological training. A more integrated perspective is therefore required.

This study proposes a conceptual framework in which PA serves as the foundation, ORF mediates the transition from decoding to comprehension, and VK supports and amplifies semantic processing. The model highlights the pathway PA → ORF →RC, reinforced by vocabulary knowledge, and situates these constructs as interconnected rather than independent. By advancing this synergy-based perspective, the study contributes to theoretical understanding of EFL reading development and offers insights for instructional design that prioritize phonological sensitivity, fluency, and vocabulary growth.

This study also informs evidence-based instructional practices that move beyond rote memorization and reading-for-testing, toward a more integrated and communicative model of literacy instruction. By strengthening foundational linguistic skills and fostering fluency and vocabulary growth simultaneously, Chinese learners can achieve more efficient, confident, and meaningful reading comprehension, an outcome that is required to realize China's broader educational vision of cultivating globally literate citizens who are capable of thriving in a multilingual world.

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Literature Review

Separate and Integrated Research on Key Reading-Related Constructs

This section provides a structured review of the four core constructs underpinning the present study. The first concerns phonological awareness, which refers to an individual's ability to perceive and manipulate the sound structure of spoken words. The role of PA in reading development has been extensively examined in both first and second language contexts (Tong et al., 2023). Phonological Awareness has been consistently recognized as a foundational skill in reading development (Hogan, 2005). It enables accurate decoding and supports efficient word recognition, which are essential for fluent reading. Research across different contexts (e.g., Giazitzidou, 2024; Jiang, 2023) further reinforces the view that PA interacts with vocabulary knowledge and fluency, and that it can be strengthened through instruction. Conceptually, PA functions not only as a predictor of reading comprehension but also as a skill that underpins the broader framework of literacy development in EFL contexts.

Building on this foundation, phonics-based approaches further illustrate the instructional value of Phonological Awareness. Prior research has consistently emphasized that systematic phonics instruction strengthens sound–symbol correspondences and supports early literacy development (e.g., Bandala, 2024). Similarly, the use of phonetic symbols such as the International Phonetic Alphabet (IPA) has been highlighted as a pedagogical tool that enhances learners' sensitivity to phonological structures (Dumanggas, 2024). Taken together, these perspectives underscore that both phonics and phonetic-symbol instruction contribute conceptually to the development of PA, thereby facilitating oral reading fluency and supporting reading comprehension.

For Chinese EFL learners, the importance of PA is heightened by linguistic distance between Chinese and English. Unlike alphabetic languages, Chinese is logographic, and learners may lack implicit awareness of segmental features such as syllables and phonemes. In Chinese logographic writing system, each character represents a morpheme and maps directly onto meaning rather than sound. So, the orthography shows minimal cues about phonemic structure. Unlike alphabetic languages, say for English, where letters systematically reflect segmental units like phonemes, while Chinese does not require readers to analyze or manipulate sounds at the syllable or phoneme level when decoding characters. Consequently, Chinese learners often develop reading skills without building an implicit awareness of segmental features such as phonemes, onset–rime units, or even syllable boundaries.

This fundamental typological difference presents significant challenges for Chinese EFL learners. Since English relies heavily on phoneme–grapheme correspondence, learners with limited phonological segmentation skills often struggle to decode unfamiliar words, apply phonics rules, and achieve automaticity in word recognition. These difficulties slow down reading fluency, increase cognitive load, and ultimately hinder comprehension. Consequently, the absence of segmental processing demands in Chinese makes the acquisition of English phonological awareness both non-intuitive and a critical bottleneck in literacy development. Prior research (e.g., Jiang, 2023; Duyen, 2024) highlights that systematic phonological awareness or phonetic training can conceptually serve as a compensatory pathway, equipping learners with decoding skills and supporting fluency despite structural differences between the two languages. When reinforced by vocabulary knowledge, these skills further strengthen semantic integration, thereby enhancing overall reading comprehension.

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Overall, the literature converges on the view that PA forms the bedrock of reading development, with phonics instruction and phonetic-symbol training serving as effective pedagogical tools. Moreover, ORF and VK operate as crucial mechanisms that connect PA to higher-level comprehension processes. These findings provide the theoretical rationale for the present study, which seeks to investigate the mediating role of ORF and the supporting effect of VK knowledge in the relationship between PA and reading comprehension among Chinese EFL learners.

The second builds on vocabulary knowledge, a construct that is widely recognized as a fundamental component of language proficiency and plays a crucial role in learners' ability to comprehend, process, and produce language effectively. In the EFL context, vocabulary is not only a linguistic resource but also a cognitive tool that enables learners to access meaning, integrate textual information, and perform higher-order comprehension tasks. Recent research has extensively examined the relationship between VK and reading comprehension, providing both empirical evidence and theoretical explanations (Dong et al., 2020; Gu, 2017; Şen & Kuleli, 2015).

A growing body of research has consistently highlighted the predictive power of Vocabulary Knowledge in reading comprehension and broader language proficiency. Evidence from Chinese EFL contexts shows that vocabulary resources play a central role in enabling learners to interpret and integrate textual meaning, confirming VK as a strong determinant of reading performance (Dong, 2020; Gu, 2017). Beyond the Chinese context, studies in other EFL settings also emphasize the dual dimensions of vocabulary size and depth, with depth—such as collocational knowledge and semantic networks—proving especially critical for deeper comprehension (Şen & Kuleli, 2015). Extending this perspective, research has further demonstrated that vocabulary competence supports not only reading but also oral production, suggesting its transferability across language skills (Enayat & Derakhshan, 2021).

Conceptually, these strands of research converge on three complementary dimensions: vocabulary breadth as a measurable predictor of comprehension, vocabulary depth as a qualitative resource for nuanced understanding, and integrative perspectives that highlight its cross-skill relevance. Taken together, VK emerges as a multidimensional construct that substantially contributes to reading comprehension, enriching both decoding and interpretive processes, and reinforcing its indispensable role in second language development.

Another critical construct in reading development is Oral Reading Fluency, which reflects the efficiency with which learners decode, process, and integrate textual information in real time (Washburn, 2022). Effective fluency requires accuracy, speed, and prosody, enabling comprehension to occur with minimal cognitive load (Makebo, 2022). Scholars consistently emphasize ORF not only as a skill in its own right but also as a mediating construct that links lower-level decoding with higher-order comprehension processes (Bai, 2020; Hsu, 2023). Conceptually, fluency is more than a mechanical outcome of decoding practice; it is closely tied to broader cognitive resources such as working memory, rapid naming, and phonological processing, which collectively support efficient text processing. In this sense, ORF functions as a developmental bridge, facilitating the transition from word recognition to meaning construction and reinforcing the interconnectedness of linguistic and cognitive mechanisms in reading.

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Cross-linguistic perspectives further highlight the centrality of fluency in comprehension outcomes. Research in alphabetic-language contexts has shown that fluency often predicts comprehension more strongly than decoding alone, underscoring its pivotal role in reading development (Ecalle, 2021). Moreover, qualitative dimensions of fluency, particularly prosody, have been recognized as essential for constructing meaning, as expressive reading reflects and supports interpretive processes (Groen, 2019). These insights suggest that ORF encompasses both quantitative aspects—such as speed and accuracy—and qualitative features—such as prosody and expressiveness—that together scaffold comprehension.

Conceptually, studies on ORF can be organized into three strands: research emphasizing cognitive correlates of fluency, research situating fluency as a developmental mediator, and research highlighting qualitative dimensions such as prosody. The first strand underscores the role of domain-general cognitive skills in enabling automatic word recognition and efficient processing. The second positions fluency as an intermediary construct that bridges decoding and comprehension, serving as a pivotal stage in literacy acquisition. The third highlights the interpretive value of prosody, pointing to fluency as both a quantitative and qualitative dimension of reading.

Taken together, these perspectives establish ORF as a multidimensional construct that integrates cognitive efficiency, developmental progression, and expressive features. Fluency not only accelerates the decoding-to-comprehension pathway but also enriches interpretive processes, making it an indispensable component of reading proficiency in both first and second language contexts. Within a conceptual framework of EFL reading development, ORF thus emerges as a crucial mediator that transforms phonological awareness into meaningful comprehension, while interacting dynamically with vocabulary knowledge to reinforce semantic integration.

The fourth construct concerns Reading Comprehension, the ultimate goal of reading, which involves the integration of linguistic, cognitive, and contextual processes to construct meaning from text (Tindall, 2010). RC extends beyond decoding and vocabulary knowledge, encompassing higher-order skills such as inference-making, perspective-taking, and the application of prior knowledge (Butterfuss, 2020). Conceptually, RC is consistently recognized as a multidimensional construct shaped by the dynamic interaction of linguistic proficiency, cognitive mechanisms, and socio-affective factors.

From a theoretical perspective, RC can be understood as a layered process that coordinates lower-level skills—such as word recognition and syntactic parsing—with higher-level interpretive processes, including inference generation and situation model construction (Butterfuss, 2020). This framework emphasizes that deficits in foundational skills like phonological awareness and vocabulary knowledge can cascade upward, constraining comprehension outcomes. At the same time, RC extends beyond textual interpretation to include developmental and social dimensions. Reading has been shown to foster empathy, social cognition, and identity formation, positioning comprehension as both a cognitive and socio-affective competency (Mar, 2008).

In English as a Foreign Language context, RC is further influenced by learners' linguistic foundations. Evidence from Chinese learners highlights that phonological awareness and vocabulary size are critical predictors of reading ability, reinforcing the interdependent nature

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of sub lexical and lexical skills in scaffolding comprehension (Zhang & Lee, 2017). These insights align with broader second language acquisition research, which stresses the importance of integrating foundational linguistic skills with higher-order interpretive processes.

Conceptually, scholarship on RC can be organized into three strands: theoretical frameworks that conceptualize comprehension as an interactive process between lower- and higher-level skills; socio-affective perspectives that highlight reading as a developmental construct fostering personal and interpersonal growth; and EFL-focused research that underscores the role of phonological and lexical competencies in shaping comprehension outcomes. Taken together, these perspectives establish RC as a multifaceted construct that integrates linguistic proficiency, cognitive processes, and socio-affective development. Its outcomes extend beyond textual understanding to include personal and social dimensions, making RC both the central goal of reading education and a foundation for lifelong learning.

Within the broader conceptual framework, RC interacts intricately with PA, VK, and ORF. PA provides the foundation for decoding, VK enriches semantic processing, and ORF mediates the transition from word recognition to fluent comprehension. RC thus represents the culmination of these interdependent processes, illustrating how linguistic, cognitive, and socio-affective components converge to support effective reading development in EFL contexts.

Apart from assisting PA, VK is thought of as a critical resource for attaching meaning to the words for learners to decode. A broad and deep vocabulary repertoire enhances lexical access and promotes semantic integration during reading. Breadth of vocabulary, meaning knowing a large number of words, enables recognition of a variety of lexical items across different contexts, while depth, referring to knowing multiple aspects of a word's meaning, collocations, and connotations, supports nuanced understanding and inferential reasoning. Research consistently shows that readers with extensive vocabulary knowledge can comprehend texts more efficiently. As they spend less cognitive effort on decoding and more on constructing meaning. Hence, VK bridges the lower-level decoding processes and higher-level comprehension processes, reinforcing the synergy between PA and RC.

Meanwhile, the role of ORF, serving as a dynamic mediating construct, is to connect decoding accuracy and lexical access with overall comprehension. It encompasses three interrelated components: accuracy, rate, and prosody. Accuracy ensures correct word identification; rate reflects the speed and automaticity of word recognition; and prosody captures the expressive use of intonation, phrasing, and rhythm. Fluent reading allows cognitive resources to shift from word-level decoding to text-level understanding, enabling readers to focus on interpreting meaning and generating inferences. Prosodic reading further reflects comprehension itself, as appropriate expression and rhythm presuppose grasping the meaning of the text. Thus, through both cognitive and affective mechanisms, ORF not only demonstrates reading efficiency but also enhances comprehension.

Ultimately, in the domain of RC, the convergence of PA, VK, and ORF represents the culmination of linguistic, cognitive, and socio-affective processes. RC involves integrating prior knowledge, linguistic information, and contextual cues to construct coherent mental representations of text. For Chinese EFL learners, the development of PA is particularly significant. Given that Chinese is a logographic language lacking direct phoneme–grapheme correspondence, learners often face challenges in mapping English letters to sounds.

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Strengthening PA helps bridge this orthographic gap, facilitating smoother word recognition and supporting fluent English reading. At the same time, expanding VK and enhancing ORF reinforce comprehension outcomes by supporting rapid decoding, efficient meaning retrieval, and deeper engagement with textual content.

In sum, the reviewed literature collectively suggests that PA, VK, and ORF operate not in isolation but as mutually facilitating components of a multilayered framework that leads to proficient reading comprehension. Effective reading instruction for Chinese EFL learners should therefore adopt an integrative approach of cultivating phonological awareness, systematically expanding vocabulary, and providing sustained fluency practice—to nurture balanced and sustainable literacy development.

Theoretical Framework

This study is grounded in Interactive and Cognitive Models of Reading, which conceptualize RC as a multifaceted process involving the integration of decoding, linguistic knowledge, and higher-order meaning construction. The framework builds primarily upon the Reading Systems Framework (Perfetti & Stafura, 2014), which posits that efficient reading depends on the dynamic interaction between word-level decoding and text-level comprehension. Within this model, PA functions as a foundational skill that enables learners to map graphemes onto phonemes, thereby facilitating accurate word recognition. The activation of phonological representations serves as the entry point for lexical access, which in turn supports fluent reading and comprehension.

Complementing this perspective is Automaticity Theory (LaBerge & Samuels, 1974), which emphasizes that fluent reading emerges when lower-level decoding processes become automatic, freeing cognitive resources for meaning construction. In this respect, ORF is conceptualized as a mediating construct that bridges PA and RC. Fluent readers process text with speed, accuracy, and prosody, reducing cognitive load and allowing greater focus on semantic and inferential aspects of comprehension.

Additionally, VK is integrated into the framework as a supporting factor, drawing on Lexical Restructuring Theory (Metsala et al., 1998). A larger and deeper vocabulary refines phonological representations in the mental lexicon, optimizes decoding efficiency, and enriches semantic interpretation. Learners with broader lexical resources can connect phonological decoding with meaning more effectively, reinforcing the link between lower-level skills and higher-level comprehension. Taken together, these perspectives converge to support an integrated conceptual model in which PA operates as the independent variable, ORF mediates its influence, and VK strengthens the overall pathway leading to RC. This framework highlights the interdependence of linguistic sensitivity, fluency, and lexical competence, providing a robust theoretical foundation for understanding how these skills collectively shape reading development in Chinese EFL contexts.

Conceptual Framework

The conceptual framework proposed in this study (see Figure 1) to investigate the role of PA, ORF, VK, and RC in Chinese EFL learners. The framework is designed to address the research gap concerning the interplay of cognitive-linguistic skills and their combined effect on learners' reading comprehension proficiency. Specifically, this study identifies PA as the

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independent variable (IV), ORF as the mediating variable (MV), RC as the dependent variable (DV), and VK as a supporting path.

Within the proposed framework, Phonological Awareness is conceptualized as the foundational skill that enables learners to recognize and manipulate the sound structures of language, including syllables, phonemes, and rhyme. By supporting accurate decoding and word recognition, PA provides the basis for higher-level reading outcomes. Oral Reading Fluency, characterized by accuracy, rate, and prosody, is positioned as a mediating construct that bridges phonological processing and comprehension. Fluent reading allows cognitive resources to be redirected from decoding toward meaning construction, thereby reinforcing the developmental pathway from lower-level skills to higher-order understanding (Rasinski, 2012). Vocabulary Knowledge is incorporated as a supporting pathway. Although not directly framed as a mediator, VK strengthens comprehension by enabling learners to access word meanings efficiently and integrate semantic information during reading. This supporting role also reflects the reciprocal relationship in which phonological awareness facilitates vocabulary growth, which in turn enhances comprehension outcomes (Perfetti & Stafura, 2014). Taken together, PA, ORF, and VK interact dynamically to shape Reading Comprehension, illustrating how foundational linguistic skills, fluency, and lexical resources converge within a unified conceptual model.

The conceptual framework is grounded in reading theories that emphasize the interaction of lower-level decoding skills and higher-level language comprehension processes (the Simple View of Reading, Gough & Tunmer, 1986). By integrating the three together, the framework aims to provide a clearer explanation of how these constructs collectively influence reading comprehension among Chinese high school EFL learners.

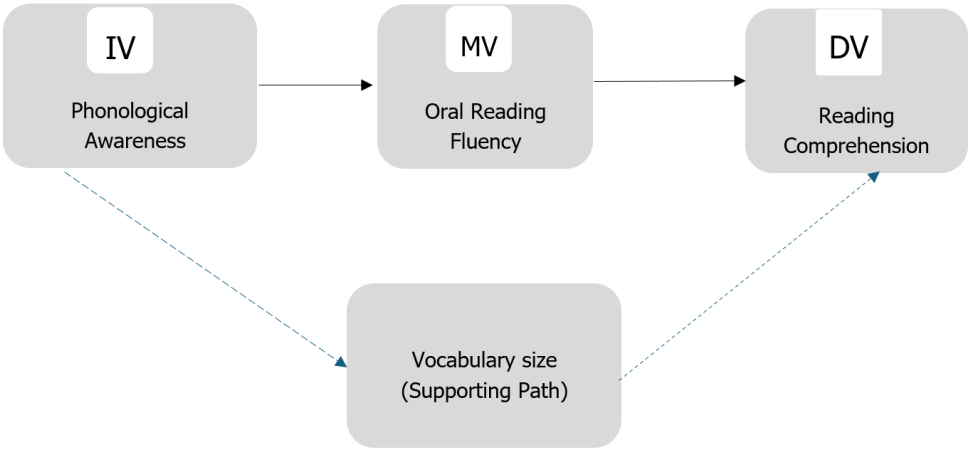

Figure 1: Conceptual Framework

Research Objective

To design and develop a theoretically grounded framework that integrates phonological awareness, vocabulary knowledge, oral reading fluency, and reading comprehension.

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Conceptual Operationalization of Constructs

Although the educational landscape has been reshaped by digital technologies, the fundamental cognitive and linguistic mechanisms underlying reading development remain theoretically stable. Constructs such as Phonological Awareness, Vocabulary Knowledge, and Oral Reading Fluency continue to explain how learners process language and construct meaning from text. Contemporary technologies, including AI-based tools and digital learning applications, function primarily as mediational resources that support learners in enacting these established processes, rather than redefining the conceptual foundations of reading. From this perspective, classical theoretical frameworks retain their explanatory power, even as the modes through which learners engage with them become increasingly diverse.

Within this conceptual framework, PA is positioned as the foundation of reading development. Many Chinese EFL learners rely heavily on rote memorization of vocabulary, often neglecting deeper skills such as phoneme segmentation, prosodic awareness, and phonics rules. By emphasizing PA at the beginning of the model, the framework highlights that without phonological sensitivity, vocabulary learning remains superficial and inefficient, ultimately hindering comprehension. ORF is introduced as a mediating construct that reinforces PA through automated decoding and fluent text processing. Repetitive practice in ORF not only consolidates existing PA skills but also enhances learners' sensitivity to phonological structures, creating a cyclical process—phonology, decoding, automation, comprehension—that strengthens language processing mechanisms.

Furthermore, VK is incorporated as a supporting pathway that enriches semantic integration and provides meaning-based reinforcement for PA and ORF. Vocabulary breadth enables recognition of diverse lexical items, while vocabulary depth supports nuanced interpretation and inferential reasoning. Together, VK interacts with PA and ORF to create a synergistic effect, allowing learners to read accurately, fluently, and meaningfully. This integrative perspective moves beyond the traditional assumption that vocabulary size alone determines reading ability, instead situating vocabulary as part of a dynamic system of interdependent skills.

Ultimately, this framework is particularly relevant for Chinese EFL learners, who often lack phonemic awareness training and study in exam-oriented environments. By focusing on skill development and emphasizing the synergy among PA, ORF, and VK, the model provides a systematic pathway toward comprehension. Reading Comprehension thus emerges as the culmination of these processes, representing the integration of linguistic, cognitive, and semantic resources. Conceptually, the framework offers a durable basis for guiding instruction and for extending theoretical discussions of literacy development in EFL contexts.

Table 1 summarizes the conceptual components of the framework. Phonological Awareness, Vocabulary Knowledge, Oral Reading Fluency, and Reading Comprehension are represented as interrelated components, each drawing on established theoretical traditions in reading research (e.g., Henk, 1995; Harter, 1982; Teevno, 2017). Conceptually, PA is defined as the ability to identify, manipulate, and apply sound–letter correspondences, forming the foundation of decoding. To ensure relevance for Chinese EFL learners, the framework emphasizes the importance of contextual adaptation, recognizing that certain phonological concepts may be unfamiliar and require explicit clarification. Vocabulary Knowledge is incorporated as a supporting construct, Oral Reading Fluency as a mediating process, and Reading

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Comprehension as the ultimate outcome. Together, these constructs provide a coherent model that integrates linguistic sensitivity, fluency, and semantic processing, offering a comprehensive conceptual pathway toward comprehension.

In VK section, it consists of ten items (VK1–VK10), adapted from Henk et al. (1995) and further refined to suit the Chinese EFL context, is conceptualized as learners perceived capacity to understand, use, and infer word meanings across contexts, as well as their awareness of strategies that support lexical development. Rather than focusing on specific tasks or items, this construct reflects both the breadth and depth of learners' lexical resources and the strategic behaviors that facilitate vocabulary growth. In ORF section, it has seven items (ORF1–ORF7), adapted from Harter (1982) and modified to align with the linguistic and educational context of Chinese EFL learners, is understood as learners' self-perceived ability to read English text aloud with accuracy, automaticity, and appropriate prosody. Conceptually, ORF represents the bridge between decoding and comprehension, capturing how efficiently readers coordinate word recognition with expressive delivery to support meaning-making.

Lastly, Reading Comprehension is conceptualized as learners perceived ability to construct meaning from written English texts by integrating linguistic, cognitive, and strategic processes. Drawing on established perspectives (e.g., Teevno, 2017), RC is defined not simply as text understanding but as a multidimensional construct that encompasses inferencing, interpretation, and engagement. It reflects how readers interact with written input, connect it with prior knowledge, and generate coherent meaning. Within the proposed framework, RC represents the culmination of the interdependent pathways established by Phonological Awareness, Vocabulary Knowledge, and Oral Reading Fluency. PA provides the foundation for decoding, ORF mediates the transition to fluent processing, and VK enriches semantic integration, all converging to support comprehension. Thus, RC is positioned as both the ultimate goal of reading and a dynamic process that integrates lower-level linguistic skills with higher-order interpretive abilities, making it central to literacy development in EFL contexts.

Table 1: Measurement Items and Source

No.	Measurement item	Source
Phonological Awareness		
PA1	I think I am good at identifying and manipulating sounds in English words.	Adapted from Henk et al. (1995)
PA2	I can quickly blend sounds to form a word.	
PA3	I can use letter–sound rules to figure out how to pronounce unfamiliar words.	
PA4	I can recognize rhymes and syllable patterns in words better than before.	
PA5	I can identify each syllable in a word.	
PA6	I can separate the first sound from the rest of a word.	
PA7	I can distinguish similar vowel sounds.	
PA8	I can identify difficult consonant sounds.	
PA9	I can use both phonetic symbols and sound–letter rules to help me read new words.	
PA10	I enjoy practicing sounds and syllables when I learn new words.	

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Vocabulary Knowledge		
VK1	I think I am good at distinguishing subtle differences in meaning between similar words.	Adapted from Henk et al. (1995)
VK2	I can understand most of the common words in textbooks and passages.	
VK3	I can use learned words appropriately in writing.	
VK4	I can use words fluently in speaking.	
VK5	I use word roots and affixes to understand new words.	
VK6	I review and repeat words regularly to memorize them.	
VK7	I can guess the meaning of unfamiliar words from context.	
VK8	I can infer word meaning from word structure (prefix, suffix, root).	
VK9	I believe I have enough vocabulary to cope with English learning.	
VK10	I am confident in my ability to expand my vocabulary.	
Oral reading fluency		
ORF1	I am good at reading English aloud at a steady speed.	Adapted from Harter (1982)
ORF2	I am doing well in reading English aloud accurately without many mistakes.	
ORF3	I can use natural pauses and rhythm when reading aloud in English as fluently as others.	
ORF4	I can figure out the meaning of the text when I read English aloud.	
ORF5	I can read aloud words and sentences with correct intonation and expression.	
ORF6	I can read longer English passages aloud fluently without getting stuck.	
ORF7	I feel confident when reading English aloud in front of others.	
Reading Comprehension		
RC1	Interest of the students in reading English text.	Adopted from Teevno et al. (2017)
RC2	Loud reading of English text by students in the classroom.	
RC3	Reading English text fluently by students in appropriate time.	
RC4	Prediction of content of the text by students.	
RC5	Understanding of writer's message from the written text.	
RC6	Guessing of meaning of unfamiliar words in a given text.	
RC7	Use of background knowledge by students for understanding text.	
RC8	Looking for specific information during reading by students.	
RC9	Reading English stories for improving reading.	
RC10	Reading of English newspapers by the students	

While existing frameworks provide robust theoretical foundations, it is important to recognize that many were originally conceptualized in pre-digital educational contexts. Future research may therefore explore how technology-enhanced and AI-supported learning environments

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interact with foundational reading-related constructs, extending current conceptual models to account for the evolving nature of literacy in digital settings (Lampropoulos & Papadakis, 2025).

Conclusion

This conceptual study set out to articulate a theoretically grounded framework that integrates four core constructs in reading research: phonological awareness, vocabulary knowledge, oral reading fluency, and reading comprehension. Drawing on established theories of reading development and cognitive processing, the framework positions reading comprehension as the outcome of interrelated linguistic and fluency-based processes rather than as an isolated skill. The primary contribution of this study lies in its theoretical integration. Whereas prior research has often examined these constructs separately, the present framework synthesizes them into a coherent model that reflects the developmental progression from decoding to fluent reading and ultimately to comprehension. By clarifying how lower-level linguistic skills interact with higher-level comprehension processes, the study advances a more holistic conceptual understanding of reading development in EFL contexts.

Beyond its theoretical contribution, the framework also offers pedagogical insights. It highlights the importance of simultaneously cultivating phonological awareness, fluency, and vocabulary knowledge as interconnected components of literacy instruction. While educational technologies and instructional practices continue to evolve, the framework underscores that the underlying cognitive mechanisms of reading remain stable, providing a durable conceptual basis for guiding instructional design.

Overall, this study contributes by bridging classic theories of reading with contemporary perspectives, offering a unified conceptual model that enriches theoretical discourse and informs pedagogical thinking, while leaving space for future empirical exploration.

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