CLOSING THE WORD GAP: MORPHOLOGICAL INSTRUCTION ACROSS MIDDLE AND HIGH SCHOOL CLASSROOMS

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Abstract
This literature review examines the effectiveness of explicit morphological instruction in improving vocabulary knowledge and reading comprehension for middle and high school students. Socioeconomic disparities in early language exposure contribute to a significant word gap, limiting students' ability to access complex academic texts. Morphological instruction—focused on teaching roots, prefixes, and suffixes—provides students with strategies to analyze unfamiliar words and build word consciousness. Research supports the use of derivational morphology to strengthen comprehension, especially for English learners and struggling readers. The review draws on two theoretical frameworks—atomistic and abstractive—to explain how students process word structure. Evidence suggests that embedding morphology within meaningful literacy tasks leads to improved outcomes. Instructional recommendations include prioritizing high-utility morphemes, integrating vocabulary across content areas, and supporting teachers through professional development. Despite time constraints and the need for foundational training, morphology-based instruction offers a high-leverage approach to addressing literacy gaps and promoting academic equity.

Keywords: morphological awareness, vocabulary instruction, reading comprehension, academic language, English learners, word study, literacy equity, derivational morphology

Morphology-Based Instruction in Secondary Grades and Impact on Student Comprehension

Students enter school with a wide variety of background knowledge. The most significant variable in language acquisition is socioeconomic status (SES). Research indicates that children from higher-SES families are exposed to significantly more child-directed speech than their lower-SES peers, contributing to disparities in vocabulary and later academic success (Ellwood-Lowe et al., 2020). This word gap stems from differences in the language environments and experiences children have from birth through age three. Conversations and reading typically expose children from higher SES backgrounds to more words, building their vocabulary and linguistic skills. In contrast, children from low-income families often experience less child-directed speech and fewer reading experiences, leaving them behind their more affluent peers even before they begin school. Consequently, students begin formal education with vastly different foundations in language and literacy, which can perpetuate achievement gaps as curricula and instruction assume certain background knowledge

(Foster & Miller, 2007). Addressing disparities in early language exposure is critical for ensuring equitable learning opportunities and preventing the accumulation of academic deficits over time.

Background and Theoretical Framework

One method to close the achievement gap is morphological analysis. Morphemes are the smallest units of meaning in a word and make up the building blocks of the English language. Morphemes originate from various languages and are essential components of vocabulary development. A research-supported scope and sequence for teaching morphological awareness begins with Anglo-Saxon morphemes in the early grades, followed by Latin roots in upper elementary, and Greek roots in middle school, aligning with the increasing complexity of academic vocabulary found in grade-level texts (Nagy et al., 2006). Explicit instruction in morphological analysis can help students deconstruct complex words and derive meanings from roots, prefixes, and suffixes. This analytical approach to word study enhances students' vocabulary development, reading comprehension, and ability to access complex texts. By systematically building morphological knowledge from early grades, educators can provide all students—regardless of their first language exposure—with critical tools for linguistic comprehension (Goodwin, 2015). Morphological instruction aligns with the recognized role of vocabulary as a key factor impacting reading outcomes and academic achievement across subject areas. When combined with other language-focused interventions, the development of linguistic awareness and word analysis skills can serve as a powerful means of narrowing achievement gaps.

While the notion of a word gap highlights the disadvantages students from low SES backgrounds may face, research shows the impediments go beyond just vocabulary size. Students who lack exposure to more complex academic language can struggle with understanding the morphological structure of words (Crosson & Moore, 2017). The ability to analyze word formations and root meanings is crucial for comprehending the dense vocabulary demands of higher-level texts. Without a strong foundation in morphological awareness, students may find themselves overwhelmed by the volume of unfamiliar academic vocabulary they encounter in academic texts, leading to frustration and disengagement (Foster & Miller, 2007). This morphological knowledge gap can have far-reaching consequences, impacting students' ability to access and engage with grade-level content across various disciplines. Moreover, limited morphological skills can hinder students' capacity to express themselves effectively in writing, as they may struggle to generate and manipulate words that convey precise meanings (Carlisle, 2008).

Moreover, morphological awareness strengthens both reading comprehension and writing skills. The ability to manipulate morphemes enables students to generate precise, content-rich vocabulary and to navigate grammatical structures more confidently in their writing. This is especially important for English learners, who often face barriers in expressing complex ideas due to limited vocabulary or unfamiliarity with academic forms. Spence (2010) argues that meaningful writing opportunities, when coupled with explicit vocabulary instruction, allow English learners to internalize and produce academic language authentically. By incorporating morphology into both reading and writing instruction, educators can support more robust language development and greater student agency in communication.

Several studies have demonstrated the effectiveness of explicit morphological instruction in improving literacy outcomes, especially for students at risk of reading difficulties. Gray (2019) found direct teaching of common root words and affixes significantly boosted students' vocabulary knowledge and comprehension on standardized tests. Correspondingly, Ahmed Badawi (2019) reported notable gains in reading comprehension for English learners after receiving morphological awareness training. These findings underscore the value of equipping all students with strategic word analysis skills. With a theoretical foundation established, it is also essential to consider how

morphological instruction supports specific learner populations, particularly English language learners.

Morphological Analysis in English Language Acquisition

While morphological awareness can develop incidentally through immersion, many struggling readers benefit from deliberate, systematic morphological instruction (Ghasemi & Vaez-Dalili, 2019). By incorporating best practices like word sorting activities and etymological study, teachers can clarify the semantic and structural intricacies of English. As students internalize common roots, affixes, and word formation rules, they gain skills for deciphering unfamiliar words independently.

Morphological instruction aligns with multilingual instructional approaches that build on students' linguistic resources. Recognizing cognates and etymological connections between languages can scaffold comprehension while honoring learners' full linguistic repertoire. Colenbrander et al. (2021) found that "highlighting cognates and etymological relationships between languages can facilitate vocabulary acquisition and reading comprehension" (p. 7). With appropriate scaffolding, morphological instruction empowers students by building on their linguistic strengths rather than penalizing their differences.

Addressing achievement gaps rooted in early language exposure requires explicit, sustained morphological instruction that equips all students with vocabulary and word analysis strategies. Morphological awareness provides disadvantaged students with tools to access complex texts and participate in academic discourse. Through a comprehensive and systematic approach to morphological instruction, educators can level the playing field and ensure that all students, regardless of their background, can succeed academically and realize their full potential.

Importance of Vocabulary in Reading Comprehension

Although decoding is the first component of reading comprehension, vocabulary knowledge is equally essential for understanding meaning. The simple view of reading models this by stating that language comprehension and decoding together produce comprehension (Gough & Tunmer, 1986). Teachers can use morphological analysis to build students' language comprehension skills. When students come across an unknown word, breaking it into its individual morphemes will help them identify the meaning of the word. This process enables students to comprehend the surrounding text and derive the word's meaning from context. Research has also shown that morphological awareness contributes significantly to reading comprehension. Fracasso et al. (2014) estimate that for every word a student learns, there is an average of one to three related words that a student can understand by utilizing morphological knowledge. Integrating morphological problem-solving into comprehension instruction resulted in greater reading comprehension gains than instruction without a morphological component (Goodwin, 2015).

Morphological Framework

Blevins et al. (2018) proposed two frameworks for constructing morphological analysis: the atomistic or constructive model and the abstractive or discriminative approach. Both frameworks represent different conceptions of morphological systems and how to analyze them. Each model recognizes that both parts and sub-word units contribute to word formation. The models provide a systematic understanding of word knowledge and word relationships. The frameworks address the importance of a speaker's knowledge of how they communicate and how they manipulate it.

The atomistic framework posits that morphemes—the smallest units of meaning—combine to form words. This approach, also known as the constructive approach, views words as constructions of smaller parts. This theory posits that morphemes are the essential building blocks

of words. Morphemes become stored in the mental dictionary or personal lexicons and allow the reader to use that knowledge when coming across an unknown word. Word meaning and form depend on the context of surrounding morphemes. For example, the word *unhappiness* could be broken into its individual units of meaning: *un* (not) *happy* (state of joy) *ness* (denoting a state of being, it changes adjectives into nouns). The manipulation of this word focuses on the individual components and the adjustments that can be made to create contextual meaning. Linguistics and generative language theory have utilized the atomistic approach. However, atomistic theory has difficulty accounting for non-compositional word formations and irregular semantic relationships between words.

One limitation of the atomistic framework lies in its difficulty accounting for non-compositional word formation—words whose meanings are not easily inferred from their individual morphemes. For instance, idiomatic or lexicalized words such as *understand,* or *butterfly* do not yield their full meanings when broken into *under* + *stand* or *butter* + *fly*. These examples highlight how word meaning is sometimes shaped more by historical usage or semantic shifts than by the sum of its parts. In these cases, the atomistic model may oversimplify how readers interpret language, particularly when they encounter irregular or context-dependent vocabulary. This gap underscores the importance of combining atomistic instruction with broader semantic and contextual analysis to support deeper comprehension and flexible word learning strategies.

In contrast, the abstract framework views words as whole units and focuses on the relationship between them. One key point of this theory is that words are the basic units of morphological analysis, as opposed to morphemes. Networks of contrasts and implications characterize the relationship of these words, revealing their meaning in the context of language. The abstract approach views affixes as abstractions of a word rather than individual components of meaning. For example, the word *unlockable* demonstrates how meaning can shift depending on contextual cues: it could mean able to be locked or not lockable. This theory views a person's knowledge of language as a set of preconstructed notions of the composition of words that create predictable patterns. Cultural and historical patterns of language are also considered. For example, the term *selfie* does not exist with the English standard lexicon, but it's common use by people has given it meaning. Together, the atomistic and abstractive frameworks offer complementary perspectives on how learners cognitively process word structure and meaning. These theoretical models provide a foundation for examining how explicit morphological instruction influences reading comprehension and vocabulary acquisition in diverse educational contexts. The following section reviews current research that builds on these frameworks to assess the impact of morphological instruction on student outcomes.

Current Research

Several studies have demonstrated the effectiveness of explicit morphological instruction on vocabulary development and reading comprehension. Goodwin (2015) found that teaching fifth-grade students specific affixes improved their ability to infer the meanings of morphologically complex words. Additionally, embedding morphological problem-solving within comprehension instruction yielded greater vocabulary gains than vocabulary instruction alone. Correspondingly, Goodwin (2015) showed that embedding morphological problem-solving in comprehension instruction led to greater vocabulary gains for fifth through sixth grade students compared to comprehension instruction alone. Ghasemi and Vaez-Dalili (2019) also found that teaching intermediate English as a Foreign Language (EFL) learners English derivational affixes through textual enhancement, metalinguistic explanation, and morpheme recognition tasks all significantly improved their reading comprehension, with metalinguistic explanation having the greatest effect.

Other studies highlighted the relationship between morphological awareness and reading skills more generally. Goodwin (2015) found morphological awareness predicted reading comprehension longitudinally for elementary students. Ahmed Badawi (2019) similarly showed morphological awareness contributed to reading comprehension, with morphological decoding and analysis supporting development. The study found a reciprocal relationship, with morphological awareness and reading mutually reinforcing each other.

Research also suggests that morphological knowledge may be particularly beneficial for English as a Foreign Language (EFL) learners. Ghasemi and Vaez-Dalili (2019) found morphological instruction was particularly helpful for Iranian students who were learning English. Using a three-method approach, scores in reading from the pre- to post-test significantly improved vocabulary knowledge. This aligns with other research showing morphological awareness can aid second language learners, likely because it allows them to make connections between words in their first and second languages. Ahmed Badawi (2019) implemented morpheme-based instruction with a group of first-year English learners in Egypt. Participants who received the morpheme-based instruction outperformed those who did not.

Instructional Implementation

The studies included in this review have several important implications for effectively teaching morphological awareness to improve students' vocabulary knowledge and reading comprehension skills. First, educators should prioritize explicit instruction in morphological principles, using techniques such as metalinguistic explanation, to directly teach students about the structure and meaning of morphemes. This explicit approach appears to be more effective for enhancing reading comprehension compared to implicit methods. Teachers should focus on teaching individual morphemes, such as affixes and roots. Students should work with these roots by engaging in guided practice with the teacher. When teachers create multiple exposures for students to manipulate morphemes, students gain opportunities to observe word relationships and vocabulary patterns (Gray, 2019). Emphasis should initially be placed on Latin roots, followed by Greek roots as students advance. Etymological study of spelling patterns, particularly when categorized by root language, can support students in developing structured approaches to decoding and encoding unfamiliar words, enhancing vocabulary acquisition (Bowers & Kirby, 2009).

Teachers should also emphasize derivational morphology, which involves teaching affixes and roots that alter a base word's meaning and grammatical category. While inflectional morphemes—which change a word's grammatical form (e.g., tense, number)—are important, derivational morphemes are more complex and occur more frequently in the academic vocabulary students encounter in school texts. By focusing on derivational morphology, teachers can equip students with tools to analyze and understand a greater breadth of words.

In addition to explicit morpheme instruction, teachers should consistently expose students to rich, meaningful texts. Words should not be taught in isolation but instead encountered within reading and writing tasks, where students can see how vocabulary functions in context. This approach supports the development of both comprehension and written expression by reinforcing the linguistic connections students are learning through morphological study.

Before instruction, teachers should identify high-utility academic words within a text. Teachers should explicitly teach these words by deconstructing them into constituent morphemes and analyzing both structural and contextual meanings. Students benefit from exploring the full range of definitions a word can hold, particularly when guided to determine which definition best fits the context of a given passage. In contrast, words that are specific to content-area knowledge but are not morphologically complex can be briefly introduced for recognition without the same level of in-depth analysis.

When selecting vocabulary for instruction, educators should prioritize high-leverage affixes and root words that appear frequently across academic domains. This aligns with Beck et al.'s (2023) robust vocabulary framework, which encourages the teaching of Tier 2 words—high-utility academic terms that support comprehension in a wide variety of texts. Because many Tier 2 words contain Latin and Greek roots, they are ideal for morphological study. Instruction should also introduce students to morphological relatives of a base word (e.g., *construct, construction, reconstruct*), enabling them to develop word families and build linguistic flexibility.

Additionally, vocabulary instruction should include attention to nuance in word meaning. Teaching students to distinguish between *denotation*—a word's literal dictionary definition—and *connotation*—the emotional or cultural associations a word carries—helps them understand how meaning can shift depending on context. For example, while *home* typically denotes a place of residence, in the familiar saying "home is wherever you are," the word takes on an emotional meaning, emphasizing connection and belonging rather than location. Understanding this distinction strengthens students' interpretive skills and deepens their comprehension of morphologically related vocabulary across varied contexts.

By applying these principles, educators can design powerful morphological interventions to help students develop a robust vocabulary and tackle challenging texts with greater confidence and skill. Morphological instruction should be a key component of a comprehensive vocabulary development program, particularly for students who struggle with reading comprehension (Gray, 2019).

Classroom Implications

Utilizing morphological analysis in the classroom has many benefits for student learning. By explicitly teaching morphemes to developing readers, instructors are helping students develop vocabulary knowledge. Providing students with the structural elements of language enables them to access a wider range of vocabulary, rather than relying on whole-word instruction. The use of affixes allows students to infer the meaning of unfamiliar words and reduces reliance on contextual guessing strategies. Morphological analysis removes some of the gaps of economic status by equipping students with the knowledge of the English language (Ahmed Badawi, 2019). Words function as conceptual tools that contribute to knowledge construction—an essential foundation for deep comprehension.

Morphological analysis supports readers of all ages in applying problem-solving strategies during reading. For struggling readers this is essential to build the resilience required to tackle a variety of texts. Using knowledge of word parts helps developing readers maintain reading stamina and engage with unfamiliar words rather than skipping them. As students progress out of middle school and into upper-level education courses, they can use morphological analysis to identify multi-syllabic content specific words. Their knowledge of the structure of English will leave them better equipped to tackle the higher-level academic text requirements.

Classrooms that anchor vocabulary instruction in morphological analysis maximize their instructional impact. Educators who teach the structures of English invite students to work through frustration rather than being dependent on the teacher. Classroom teachers can spend more time on the deeper meaning of the text as opposed to identifying unknown words and base level comprehension (Gray, 2019). Deeper level comprehension allows students to achieve mastery of the state standards and fosters deeper student engagement.

To illustrate how this instruction can work in practice, consider the following vignettes, which draw on principles supported by Goodwin (2015) and Beck et al. (2023):

Vignette 1

In a sixth-grade ELA class, students are reading an informational article about climate change. Before reading the text, the teacher introduces five key vocabulary words—*predictable*, *unpredictable*, *prediction*, *predictive*, and *predictor*. Rather than teaching the definitions outright, the teacher guides a short morphology mini-lesson. Students deconstruct the words into root (*dict*), prefix (*pre-*), and suffixes (*-able*, *-ion*, *-ive*, *-or*). Students identify common meanings and work in small groups to generate new words using these affixes (e.g., *incredible*, *dictate*). During reading, students highlight each occurrence of a *predict*-based word and annotate how its meaning shifts depending on context. Finally, they compose a short paragraph using at least three of the *predict* word family variations to explain a prediction about climate trends. This activity supports vocabulary development, reading comprehension, and sentence-level writing in an integrated, student-friendly way.

Vignette 2

In a high school chemistry class, students begin a unit on molecular structure. The lesson begins with a morphology warm-up on common Greek roots frequently found in scientific terminology: *hydro* (water), *therm* (heat), *photo* (light), and *bio* (life). Students work in pairs to match root-based vocabulary to definitions—*hydrophilic*, *hydrophobic*, *photochemical*, *biotechnology*—and identify root meanings using color-coded word parts. The teacher then connects the vocabulary to that day's lab, which explores how different substances interact with water. Through morphological analysis of terms such as *hydrophilic* and *hydrophobic*, students develop deeper conceptual understanding and strengthen decoding strategies. To conclude, the teacher presents a reflection prompt: "How did knowledge of word parts help you understand today's lab concepts?" This reinforces the value of morphology as both a literacy and content learning tool.

Morphological analysis is time-intensive and requires explicit, carefully scaffolded instruction to be effective. Many teachers are constrained by 40–50-minute class periods. Pressures to meet state standards and demonstrate growth on standardized assessments often prevent teachers from allocating time for repeated morphological practice. Many educators may also find the task daunting as their training was not based around structured literacy. Oftentimes English teachers in secondary-based schools lack the foundational knowledge of reading instruction. Effective implementation requires targeted professional development and expanded teacher knowledge in morphological instruction.

To address the challenges of time and teacher preparedness, schools can adopt professional development models that are ongoing and collaborative. Research supports the use of job-embedded coaching and professional learning communities (PLCs) as effective means of supporting instructional shifts in literacy (Bean & Ippolito, 2016). These structures allow teachers to practice and reflect on morphological instruction in real time, receive feedback, and observe peer modeling. In terms of scaffolding strategies, morphology can be integrated into existing instructional routines (e.g., bell ringers, word walls, and vocabulary journals) rather than treated as an add-on. Teachers can also begin with a small set of high-leverage affixes and roots, gradually expanding instruction as their comfort grows. This incremental approach makes the work more manageable while still benefiting students. Additionally, schools can incorporate morphology into cross-curricular vocabulary, planning to reinforce root-based learning in both ELA and other content areas. When exposing students to new texts, key vocabulary words can be identified in the lesson planning process. Directing students' attention to the morphological structure of key vocabulary supports their ability to derive meaning from complex texts (Carlisle, 2008).

While morphological analysis provides many structures for the English language, it can inhibit students from developing other strategies to tackle unknown words. Not all English words follow preconstructed patterns and students may struggle with the skill set to identify them. A focus on etymological study alongside morphology can help circumvent this challenge.

Despite these potential limitations, the research suggests that the benefits of explicit, structured morphological instruction generally outweigh the challenges. A balanced approach that teaches both morphological structures and semantic context will allow students to engage with rich and diverse texts. A well-informed administration can also develop opportunities for teachers to grow their knowledge on foundational reading skills and language structure. These instructional opportunities set the stage for a broader consideration of how morphological instruction contributes to overall literacy achievement.

Conclusion

The reviewed research provides compelling evidence for the benefits of explicit morphological instruction in enhancing students' vocabulary knowledge and reading comprehension. By teaching students to analyze the morphological structure of words, particularly derivational morphemes, educators can help them develop strategies for inferring the meaning of unfamiliar words encountered in academic texts. Studies suggest that morphemes are best taught within authentic reading contexts, enabling students to apply their knowledge to meaningful literacy tasks (Goodwin, 2015).

Additionally, the literature indicates that morphological instruction should prioritize high-utility affixes and roots, as this allows students to make connections between a taught word and its morphological relatives. Focusing on high-leverage morphemes maximizes instructional impact and fosters the development of robust, interconnected vocabulary.

While research supports the effectiveness of morphological instruction, both practitioners and scholars have identified implementation challenges, such as the time-intensive nature of the approach and the need for extensive teacher training (Carlisle, 2008; Moats & Tolman, 2019). While morphological strategies are powerful, they should be incorporated into a comprehensive vocabulary program that integrates additional evidence-based techniques. Despite these challenges, explicit, structured morphological instruction remains a critical tool for advancing students' language development, particularly in academic vocabulary. By equipping students with the skills to analyze and derive meaning from complex words, educators can help them become more strategic, independent word learners and improve their ability to comprehend challenging texts (Nagy & Townsend, 2012).

Further research is needed to refine our understanding of best practices in morphological instruction, particularly regarding the optimal sequencing and pacing of instruction, the most effective ways to integrate morphology with other language arts instruction, and the potential for differentiated approaches based on students' individual needs. Existing evidence strongly supports morphological instruction as a core component of a comprehensive vocabulary curriculum, especially for students in upper elementary and secondary grades.

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