

Orton-Gillingham: Which Aspects are Supported by Research and Which Require Additional Research?

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“The Orton-Gillingham Approach (OG) is a direct, explicit, multisensory, structured, sequential, diagnostic, and prescriptive way to teach literacy when reading, writing, and spelling do not come easily to individuals, such as those with dyslexia” (Orton-Gillingham Academy, 2023, May 9, “What is the Orton-Gillingham Approach?”). For a detailed description of each of these aspects of the OG approach, refer to Table 1.

Despite OG’s growing popularity and use for students with dyslexia (Uhry & Clark, 2005) and inclusion in state-level literacy policy (e.g., Davis Dyslexia Association International, 2023), the effectiveness of the OG approach remains unclear with studies demonstrating mixed results. For example, Ritchey and Goeke (2006) reviewed literature examining the effects of OG and OG-based reading instructional programs, and mixed findings were noted across 12 studies. In a more recent study, Stevens and colleagues (2021) meta-analyzed studies investigating the effects of OG reading interventions for K-12 students with or at risk for

word-level reading disabilities. Findings from 24 studies indicated some positive effects of OG overall, which might be indicative of educationally meaningful growth for students with and at risk for dyslexia. However, there were no significant differences between Orton-Gillingham interventions and comparison condition instruction in foundational skill outcomes (phonological/phonemic awareness, phonics, fluency, spelling) or vocabulary and comprehension outcomes, meaning that we cannot rule out the possibility that differences in outcomes might be due to chance. See *The Reading League Journal* article by Solari et al. (2021)

Table 1

Features of the Orton-Gillingham Approach

Instructional Features	Definitions
Direct and Explicit	Makes learning crystal clear; Provides modeling, guided practice, and independent practice; Provides many opportunities for students to respond and receive feedback.
Multisensory	“Instruction simultaneously utilizes the associations of the auditory (hearing), visual (seeing), and kinesthetic (movement) neural pathways to strengthen learning.” (Orton-Gillingham Academy, 2023)
Structured and Sequential	Skills are taught in a particular scope and sequence, from simple to more complex, to ensure mastery; Includes cumulative review and spiraling of skills for retention of previously mastered skills.
Diagnostic	Continuous monitoring of student responses is used to analyze problems and progress.
Prescriptive	Lessons contain elements that focus on resolving the learner’s difficulties and building on the learner’s progress noted in the previous lesson.

for a summary of this meta-analysis. The What Works Clearinghouse also reviewed branded and unbranded OG interventions, noting little evidence supporting the effectiveness of OG-based programs or the OG approach.

Both the Ritchey and Stevens reviews noted that much of the previous research investigating the effects of OG lacks methodological rigor. For example, few studies reported information on the fidelity of implementation, meaning we do not know whether the instruction was implemented as intended. This lack of methodological rigor prohibits definitive conclusions about the efficacy of the OG approach, resulting in a need for additional high-quality research to determine the extent to which OG interventions positively impact the reading outcomes of students with or at risk for dyslexia.

There is consensus, both by policymakers and educators, that it is important for schools and teachers to use practices and programs supported by rigorous scientific research. However, in the absence of such research, such as the case for many of the studies that have looked at the effects of OG, what should educators do? Because high-quality research is lacking, it makes sense to critically analyze a program or approach to determine if the practices embedded within the program are supported by scientific research. The purpose of this article is to describe which instructional techniques included within the Orton-Gillingham approach are evidence-based and which are not. There is a strong evidence base for several important aspects of the OG approach, including direct and explicit instruction with scaffolding, structured and sequential instruction, and diagnostic and prescriptive instruction. However, less evidence supports spending instructional time implementing the multisensory aspects of the program, and further research is needed comparing the use of syllable types and syllable division rules to more flexible approaches for breaking apart and reading multisyllabic words.

Which Aspects of the Orton-Gillingham Approach are Evidence-Based?

Many of the defining features of the OG approach are supported by extensive scientific research, including direct and explicit instruction with scaffolding, structured and sequential instruction, and diagnostic and prescriptive instruction. We will describe each and explain what it looks like in practice as well as provide scientific evidence that illustrates how they are associated with improved literacy outcomes for students with word reading difficulties and disabilities.

Direct and Explicit Instruction With Scaffolding

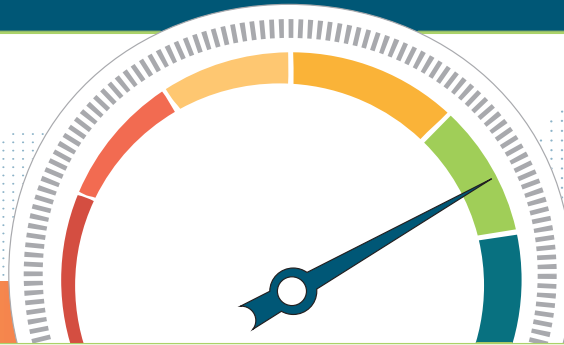
Explicit instruction teaches new skills through clear, concise teacher modeling, followed by time for students to practice with teacher feedback and additional independent practice. This gradual release of responsibility from teacher to student ensures a high rate of success for all students by providing a framework for educators to scaffold instruction to the level of support a student requires throughout a lesson. Complex skills or concepts are broken into smaller instructional units which provide an accessible pathway for students to learn new skills and concepts, integrating them with previously learned skills.

The first step of explicit instruction, teacher modeling, may feature the teacher using a think-aloud while demonstrating the new skill or concept. For example, a teacher may say, “When we hear /k/ at the end of a single syllable word with a short vowel, we use the letters *ck* to spell it. Watch me spell the word *slick*. I ask myself, ‘Is it one syllable?’ Yes. ‘Is there a short vowel?’ Yes. I will spell the word *s-l-i-ck*.” After the initial instruction and modeling, students engage in guided practice opportunities, which allow the teacher to directly support and scaffold learning as needed. Students may practice spelling words ending with *ck* together as a group while the teacher gives feedback and provides additional modeling and support for any students whose responses indicate a lack of mastery. After sufficient guided practice with teacher feedback and monitoring of student responses that indicate mastery of the skill, students move into purposeful independent practice. This could look like students writing a dictated sentence with the focus element, such as “The chick and the duck sat on the rock.”

The research on explicit instruction stems from a variety of disciplines and theoretical perspectives, and the effectiveness of explicit instruction is supported by a large volume of research conducted over several decades (Hughes et al., 2017). There have been literature reviews, syntheses, and meta-analyses published that identify the effectiveness of explicit instruction across content areas (e.g., Vaughn et al., 2000; Ehri et al., 2001). Additionally, there are publications from educational organizations, such as the practice guides from the Institute for Education Sciences, that describe the effectiveness of explicit instruction with general education students and students with and at risk for disabilities (e.g., Gersten et al., 2009).

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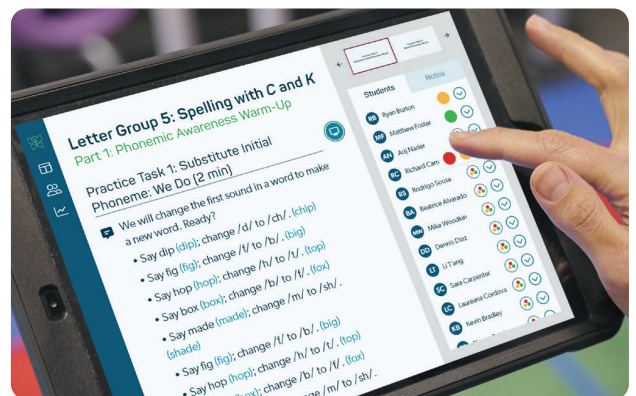
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Structured and Sequential Instruction

Structured and sequential instruction refers to the overall organization of instruction. A systematic structure will support student learning by ensuring that skills are sequenced logically so that students possess the prerequisite skills and background knowledge needed for the mastery of new learning. The structure includes predictable procedures and routines for students and teachers that build toward student independence. Lessons also progress systematically from more support to less support and allow for ongoing practice and review. Although instruction is responsive, it is not random or planned “on the fly.”

One key feature of structured sequential instruction is the inclusion of a well thought out scope and sequence that shows the range and order of skills to be taught. The scope and sequence can provide insight into content and pace and should outline how lessons will present information in a systematic order that facilitates student learning and progress, moving from simple to complex concepts. New skills are layered onto previously learned concepts allowing students to make connections between what they already know and the new concepts. Additionally, in literacy, the reciprocal relationship between reading and spelling can be evident within the scope and sequence.

An abundance of evidence suggests that students benefit from sequential reading instruction (e.g., Ehri et al., 2001). Although there is not one universally agreed upon scope and sequence, a general rule is to teach simpler skills prior to more complex skills. For example, before introducing the skill of blending four phoneme words with beginning blends, the teacher may decide to review the consonant sounds most often included in a beginning blend. This review allows for practice of a previously learned skill and helps students connect to the new skill—blending four phonemes. During letter and sound instruction, a well-designed scope and sequence will teach the most common sounds first, so students can begin to decode and encode words as quickly as possible and then move on to less frequently occurring sounds. A logical sequence provides the teacher with a roadmap outlining how the instruction builds.

Diagnostic and Prescriptive Instruction

Diagnostic instruction involves the continuous monitoring of student responses and progress to identify areas of strength and difficulty to guide instruction. Continuous monitoring is conducted for the purpose of providing prescriptive instruction that meets the full range of

a student’s needs while not spending instructional time addressing skills the student has already mastered. However, cumulative review is purposefully built into instructional routines to promote retention of previously mastered skills. In effective literacy instruction, summative assessments, or curricular assessments at the end of a level or unit of study, are used to determine whether the student is ready to progress to the following unit of study. For example, a summative assessment could determine student mastery of reading and spelling two- and three-syllable words with closed syllables and consonant blends if those were the skills targeted in that unit of study. Formative assessments are often built into each lesson through word list reading and dictated spelling of words and sentences. Student errors are analyzed to identify patterns of errors and specific areas of difficulty in order to inform instruction. For example, if a student regularly mispronounced closed syllable exception words (*-ild* as in *wild*, *-ind* as in *find*, *-old* as in *cold*, *-ost* as in *most*, and *-olt* as in *bolt*) with the short vowel sound rather than the long vowel sound, the teacher would identify this pattern of errors and would explicitly reteach the rule for reading closed syllable exception words and provide additional practice opportunities to ensure student mastery before moving on.

Historically, diagnostic and prescriptive instruction has also been referred to as diagnostic teaching, precision teaching, and data-based program modification (Filderman et al., 2018). More recently, this process of continuously monitoring student progress to guide instruction has been used to inform multi-tiered systems of support and students’ movement across instructional tiers based on their response to instruction and intervention and has been referred to as “data-based decision making” (Filderman et al., 2018) or “data-based individualization” (Danielson & Rosenquist, 2014). This type of instruction that continuously monitors student progress and uses data to guide instruction is frequently recommended as best practice for meeting the educational needs of students with persistent and retractable difficulties (e.g., National Center on Intensive Intervention [NCII], 2013; Vaughn et al., 2010). Prescriptive and diagnostic instruction has been shown to improve student outcomes for decades through extensive research (e.g., Fuchs & Fuchs, 1986; Stecker et al., 2005).

Which Aspects of the Orton-Gillingham Approach Require Additional Research?

Some features of the OG approach are less clearly supported by scientific evidence. It is

important for educators and policymakers to understand which aspects of a particular program or approach are empirically supported and likely to result in improved outcomes versus other aspects that lack research support. This knowledge can help teachers make informed decisions while implementing instruction and intervention for students with or at risk for dyslexia.

Finally, we must remember that the absence of evidence is not the same as evidence of absence. In other words, a practice might be effective for students, but there is a lack of research to definitively know one way or another. Until we know if a specific practice works, we should remain open to adjusting instructional practices to align with current research and rely on those practices rooted in evidence.

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Multisensory Instruction

According to Birsh and Carreker (2018), multisensory instruction assists students with linking input from eye, ear, voice, and hand to support memory and learning, and these strategies frequently occur in OG-based instruction. Input includes visual reinforcement (i.e., seeing the letter/s), auditory reinforcement (i.e., hearing the sound for the corresponding letter/s), kinesthetic reinforcement (i.e., articulatory muscle movement to pronounce the sound and muscle movement to form the letter during handwriting), and tactile reinforcement (i.e., tapping the sounds in words using fingers, spelling words in sand trays, writing in the air; Ritchey & Goeke, 2006). The multisensory component is often regarded as the critical ingredient in OG programs but remains controversial (Fletcher

et al., 2019). The origins of multisensory instruction date back to the 1920s with the Fernald method, a kinesthetic approach initiated by Grace Fernald (Fernald & Keller, 1921). Students who did not respond to typical visual-auditory reading instruction were assumed kinesthetic learners and thus were thought to require kinesthetic imagery to master spelling and reading words (i.e., trace the word repeatedly and say it simultaneously until it is committed to memory; Fernald & Keller, 1921). Samuel Orton adopted this approach and advocated for instruction targeting all sensory modalities to support readers in associating the visual printed form of a word with its spoken form or associating graphemes (letters and letter combinations) with phonemes (sounds; Orton, 1925).

Although multisensory instruction has been identified as the critical ingredient in OG approaches, there are several reasons to question prioritizing its status and including it in proposed and enacted legislation (e.g., Davis Dyslexia Association International, 2023). First, there is not a common understanding of what multisensory instruction includes across various OG programs or how it is applied. Second, finger tapping, skywriting, and using sand to trace letters may support engagement, but there is no empirical evidence to our knowledge that suggests the simultaneous use of one's senses significantly improves reading outcomes. Third, literacy instruction—in and of itself—includes multiple modalities: seeing the word in print (visual), reading the word aloud/hearing it pronounced (auditory), and spelling the word (tactile). We caution practitioners, clinicians, and parents from regarding multisensory instruction as the “key ingredient” in the OG approach, rather than recognizing that students with word reading difficulties and disabilities benefit from explicit, systematic, and sequential word reading and spelling instruction. This also begs the question, if multisensory instruction is not the key ingredient in OG approaches, what sets it apart from other systematic word reading instruction? That would be best answered with high-quality studies comparing OG and non-OG, explicit, word-reading interventions.

Syllable Types and Syllable Division Rules for Reading Multisyllabic Words

Reading multisyllabic words can be challenging due to the vowels, which often have ambiguous pronunciations. For example, the pronunciation of the letter *a* varies in the words *abstract*, *patient*, and *announce*. Many reading intervention programs, including OG-based in-

Table 2*Syllable Types in the English Language*

Syllable Type	Description	Examples
Closed syllable	A single vowel is followed by a consonant or consonants and the vowel is usually short.	rich hap/pen
Open syllable	The syllable ends with a single vowel and the vowel is usually long.	pro si/lo
Vowel-consonant-e syllable	A long vowel followed by a consonant and then the silent letter e.	cake home/made
Vowel team syllable	Two adjacent vowels that represent one vowel sound.	float oat/meal
R-controlled vowel syllable	A vowel is followed by the letter <i>r</i> and the vowel sound changes due to the presence of the letter <i>r</i> .	port far/mer
Diphthong syllable	Two letters represent a unique gliding vowel sound that is sometimes called a “whining” sound.	straw cow/boy
Consonant-le syllable	A consonant is followed by the letters <i>-le</i> that make up the final syllable in a multisyllabic word.	tur/tle bot/tle

terventions, explicitly teach students to identify syllable types and syllable division patterns or rules for breaking apart multisyllabic words (Gillingham & Stillman, 2014). The instructional approach of breaking apart and reading multisyllabic words using syllable types and syllable division rules is also included in the Common Core State Standards and is recommended by the International Dyslexia Association (2018).

Various programs differ in which syllable types are taught and the terminology used to refer to each syllable type; however, most programs include explicit instruction in reading and spelling (a) closed syllables, (b) open syllables, (c) vowel-consonant-e syllables, (d) vowel team syllables, (e) r-controlled vowel syllables, (f) diphthong syllables, and (g) consonant-le syllables or final stable syllables. For a description of each syllable type and examples of words that include each syllable type, refer to Table 2.

As students demonstrate mastery with each syllable type, OG-based programs and other reading intervention programs teach students rules or procedures for breaking apart multisyllabic words into smaller parts to read the word part-by-part, or syllable-by-syllable, then blending each syllable together to read the entire word. Again, various programs differ in the approach used to break apart multisyllabic words, and many programs use a combination of approaches. One approach encourages the memorization of patterns of vowels and consonants to break apart words, such as (a) the VC/CV pattern in which the word is di-

vided between the two consonants (*nap/kin*), (b) the VCV pattern in which the word is divided before the consonant (V/CV) when the first vowel is long (*ba/sic*) and after the consonant (VC/V) when the first vowel is short (*cab/in*), (c) the C+le pattern in which the word is divided before the consonant -le (*can/dle*), and (d) the VCCCCV or VCCCCCV pattern in which the word splits between consonants after leaving consonant blends (*com/plex*) and consonant digraphs (*en/shrine*) together.

A second approach does not use vowel and consonant patterns to break apart words. Rather, instruction is carefully planned and sequenced to control the syllable types included in the multisyllabic words used instructionally so students are exposed to words that include a particular syllable division pattern or patterns in the same lesson. For example, after a student has mastered reading single-syllable words with a closed syllable (*sip, cramp*), a program might introduce two-syllable words that include only closed syllables (*cat/nip, dis/rupt*), then three-syllable words with only closed syllables (*fan/tas/tic, es/tab/lish*). Next, students might be taught to read single-syllable words that include the vowel-consonant-e syllable type (*stole, chafe*), then two-syllable words with vowel-consonant-e syllables (*life/time, like/wise*), then multisyllabic words including a combination of closed syllables and vowel-consonant-e syllables (*um/pire, ad/mire*).

A third approach focuses more heavily on breaking apart multisyllabic words into syllables using prefixes and suffixes. For example,

students can be taught to identify a wide array of prefixes and suffixes, then identify the remaining vowels or vowel combinations to read a multisyllabic word part-by-part. This method recognizes that prefixes, suffixes, and roots are often meaningful units, and this instructional approach is frequently combined with teaching students the meanings of these morphological units to support vocabulary development. For example, in the word *reflection*, students would be taught to identify *re-* as a prefix, *-tion* as a suffix, and then to underline remaining vowel *e* before reading the word syllable-by-syllable (*re/flec/tion*). Additionally, a student might be explicitly taught that the prefix *re-* means again, the root word *flect* means bend, and the suffix *-tion* denotes an act or process. Knowledge of the meaning of these morphological units might help a student understand that the word *reflection* literally means the process of something bending again. This literal meaning relates to one definition of reflection—the process of sending back light, heat, or sound from a surface—because when light, heat, or sound waves reach a particular surface, the direction of the light, heat, or sound bends to be seen, felt, or heard again. The What Works Clearinghouse practice guide, *Providing Reading Interventions for Students in Grades 4-9* (Vaughn et al., 2022), provides an example of using prefixes and suffixes to read multisyllabic words, suggesting the following steps:

1. Identify and circle any prefixes and/or suffixes in the multisyllabic word.
2. Identify and underline the remaining vowels, vowel teams, vowel diphthongs, and r-controlled vowels.
3. Read the word part-by-part.
4. Say the whole word by blending each part together.

In addition to the various approaches for reading multisyllabic words, reading theory (e.g., Seidenberg, 2005), correlational evidence (e.g., Kearns & Al Ghanem, 2019), and intervention research (e.g., Austin et al., 2022) suggest that semantic (i.e., meaning) knowledge plays an important role in accurate and efficient recognition of multisyllabic words. Multisyllabic words are more likely to be orthographically and phonologically opaque or include spelling patterns that correspond with multiple phonemes. For example, in the word *endeavor*, a student must determine the correct pronunciation for the letters *ea*, which can represent a variety of sounds (long *e* as in *steam*, short *e* as in *bread*, or long *a* as in *steak*). To determine the correct pronunciation, the word must be a part of the student's oral vocabulary. If the student is unfamiliar with

the word *endeavor*, they will be unable to determine which pronunciation sounds correct. For this reason, it is essential that students decode multisyllabic words accurately and efficiently in addition to understanding the meaning of multisyllabic words encountered in complex texts. More research is needed to investigate the effects of various instructional practices for building semantic knowledge to support word reading. However, context-independent decoding that does not teach students the meaning of unfamiliar multisyllabic words is likely to result in inequitable outcomes for students with language-based difficulties in reading or English learners, who often demonstrate limited academic vocabulary knowledge.

Due to the lack of research comparing approaches for teaching students to read multisyllabic words, additional research is needed to understand for whom and under what conditions each approach to multisyllabic word instruction is impactful. For example, what syllable types and syllable division patterns need to be explicitly taught and in what order? Do students benefit from being exposed to multisyllabic words that are carefully controlled to fit specific rules and patterns, or does exposing students to words that do not fit the rules and patterns that have been explicitly taught help students acquire additional knowledge implicitly? To what extent do the various approaches for breaking apart multisyllabic words into parts, or syllables, promote effortless and efficient word recognition? Does memorizing rules and patterns tax some students' working memory, interfering with accurate and/or efficient word recognition? Do students with slow processing speed benefit from labor-intensive processes for breaking apart multisyllabic words? How consistently do the rules and patterns need to apply in the English language to warrant teaching students the rules and patterns (Kearns, 2020)? How familiar does a student need to be with the vocabulary, or what level of vocabulary knowledge (shallow vs. deep) is needed for a student to recognize the correct pronunciation of a word? Since dyslexia exists along a continuum of severity, are some approaches more advantageous for students with more mild word reading and spelling difficulties compared to students with more persistent and severe reading and spelling difficulties? Do some approaches disadvantage students with oral language and vocabulary difficulties? We encourage educators to recognize that research supports the benefit that systematic and explicit instruction in multisyllabic word reading and spelling affords

Table 3*Additional Resources for Learning*

Features of Instruction	Resources for Further Reading and Learning
Direct and Explicit Instruction With Scaffolding	<p>https://explicitinstruction.org/ Anita Archer's explicit instruction website provides a definition of explicit instruction, a link to purchase the book, <i>Explicit Instruction: Effective and Efficient Teaching</i>, and instructional videos demonstrating explicit instruction in action.</p> <p>https://intensiveintervention.org/resource/What-Every-Educator-Needs-to-Know-About-Explicit-Instruction or https://intensiveintervention.org/training/course-content/explicit-instruction The National Center on Intensive Intervention (NCII), the National Center on Leadership in Intensive Intervention (NCLII), and the CEEDAR Center developed course content focused on building educators' knowledge and skills in using explicit instruction.</p> <p>https://journals.sagepub.com/doi/abs/10.1177/0040059921994596 Hall and colleagues wrote an article in <i>Teaching Exceptional Children</i> on providing a gradual release of responsibility during reading instruction. This article guides teachers on the importance of providing independent practice opportunities to foster independence and check for understanding.</p>
Structured and Sequential Instruction	<p>https://ufl.edu/education.ufl/edu/ or https://ufl.edu/education.ufl/edu/wp-content/uploads/2022/06/UFLI-Scope2.pdf The University of Florida Literacy Institute provides professional learning opportunities and resources for teachers to use to teach reading. These resources include a suggested scope and sequence for teaching phonics, decoding, and encoding.</p>
Diagnostic and Prescriptive Instruction	<p>https://intensiveintervention.org/training/dbi-training-materials The National Center on Intensive Intervention (NCII) provides professional development and resources for implementing data-based individualization (DBI) by analyzing student data to inform instructional decisions.</p> <p>https://journals.sagepub.com/doi/pdf/10.1177/0040059917740701?casa_token=YUtOgQx8cAUAAAAA:k9440qcv5JQ1RmyA2wt5eK59hy1TuUKTO93kXYkP1kg6G_ZoKN6hYn5cbG9Q7SQR3Sl8GhdL37t2Kyyw Filderman & Toste (2018) wrote a practitioner article describing how to use data to make instructional decisions for struggling readers.</p>
Multisyllabic Word Reading Instruction	<p>https://ila.onlinelibrary.wiley.com/doi/abs/10.1002/rrq.342 Kearns (2020) wrote an article titled "Does English Have Useful Syllable Division Patterns" which demonstrates the unreliability in which syllable division rules apply to multisyllabic words.</p> <p>https://journals.sagepub.com/doi/pdf/10.1177/0040059918810010 Kearns & Whaley (2018) wrote a practitioner article titled "Helping Students With Dyslexia Read Long Words," describing how to implement flexible strategies for breaking apart and reading multisyllabic words.</p> <p>https://journals.sagepub.com/doi/pdf/10.1177/10534512211047592 Austin & Boucher (2022) wrote a practitioner article titled "Integrating Word Meaning Instruction Within Word Reading Instruction," describing how to design and implement semantic instruction to support reading multisyllabic words.</p> <p>https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/WWC-practice-guide-reading-intervention-full-text.pdf The Institute of Education Sciences Practice Guide for implementing reading interventions in Grades 4-9 describes ways to teach students a flexible approach to reading multisyllabic words.</p>

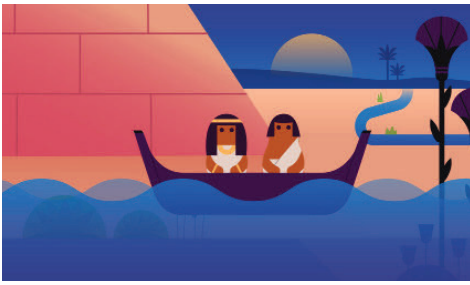
students with and at risk for dyslexia, but also encourage educators to remain open to future research that can inform the type of multisyllabic word reading instruction that is most advantageous for this population of students.

Summary

It can be challenging for teachers to consider alternatives to the OG approach after finding it useful and beneficial for students with and at risk for dyslexia. However, it is critical that educators and policymakers remain open to learning about the aspects of OG which lack support from current research and rely on instructional practices that are proven effective through extensive research. The intent of this paper has been to better describe which instructional techniques within the OG approach have an evidence base and which do not. There is a strong and robust evidence base for several important aspects of the OG approach, including direct and explicit instruction with scaffolding, structured and sequential instruction, and diagnostic and prescriptive instruction. However, there is less evidence to suggest that teachers should spend instructional time implementing the multisensory aspects of the program, and further research is needed to understand how various approaches to reading multisyllabic words compare to each other. We encourage educators and policymakers to be critical consumers of the current evidence base to better understand the advantages and disadvantages of different instructional approaches. For additional resources, Table 3 provides links for further reading and learning. ■

References

- Austin, C. R., Vaughn, S., Clemens, N. H., Pustejovsky, J. E., Boucher, A. N. (2022). The relative effects of instruction linking word reading and word meaning compared to word reading instruction alone on the accuracy, fluency, and word meaning knowledge of 4th-5th grade students with dyslexia. *Scientific Studies of Reading*, 26(3), 204–222.
- Danielson, L., & Rosenquist, C. (2014). Introduction to the TEC special issue on data-based individualization. *TEACHING Exceptional Children*, 46(4), 6–12.
- Davis Dyslexia Association International. (2023, June 5). "Dyslexia: A Legislative Information Site: New U.S. and State Laws about Dyslexia and Reading Education." <https://www.dyslexia.com/state-dyslexia-laws/>
- Ehri, L. C., Nunes, S. R., Stahl, S. A., & Willows, D. M. (2001). Systematic phonics instruction helps students learn to read: Evidence from the National Reading Panel's meta-analysis. *Review of Educational Research*, 71(3), 393–447.
- Fernald, G. & Keller, H. (1921) The effect of kinesthetic factors in the development of word recognition in the case of non-readers. *The Journal of Educational Research*, 4(5), 355–377.
- Filderman, M. J., Toste, J. R., Didion, L. A., Peng, P., & Clemens, N. H. (2018). Data-based decision making in reading interventions: A synthesis and meta-analysis of the effects for struggling readers. *The Journal of Special Education*, 52(3), 174–187.
- Fletcher, J., Lyon, G. R., Fuchs, L., & Barnes, M. (2019). *Learning disabilities: From identification to intervention*. Guilford Press.
- Fuchs, L., & Fuchs, D. (1986). Effects of systematic formative evaluation: A meta-analysis. *Exceptional Children*, 53, 199–208.
- Gersten, R. M., Compton, D., Connor, C. M., Dimino, J., Santoro, L., Linan-Thompson, S., & Tilly, W. D. (2009). *Assisting students struggling with reading: Response to intervention and multi-tier intervention for reading in the primary grades: A practice guide* (No. NCE 2009–4045).
- Hughes, C. A., Morris, J. R., Therrien, W. J., & Benson, S. K. (2017). Explicit instruction: Historical and contemporary contexts. *Learning Disabilities Research & Practice*, 32(3), 140–148.
- Kearns, D. M. (2020). Does English have useful syllable division patterns? *Reading Research Quarterly*, 55(5), 5145–5160.
- Kearns, D. M., & Al Ghanem, R. (2019). The role of semantic information in children's word reading: Does meaning affect readers' ability to say polysyllabic words aloud? *Journal of Educational Psychology*, 111(6), 933–956.
- Moats, L. C., & Foorman, B. R. (2003). Measuring teachers' content knowledge of language and reading. *Annals of Dyslexia*, 53, 23–45.
- National Center on Intensive Intervention. (2013). *Data-based individualization: A framework for intensive intervention*. Office of Special Education, U.S. Department of Education.
- Orton-Gillingham Academy (2023, May 9). "What is the Orton-Gillingham Approach?" <https://www.ortonacademy.org/resources/what-is-the-orton-gillingham-approach/>
- Orton-Gillingham Academy. (2023, May 9). "The Orton-Gillingham Academy Principles of the Orton-Gillingham Approach." <https://www.ortonacademy.org/resources/og-approach-principles-2/>
- Richey, K. D., & Goeke, J. L. (2006). Orton-Gillingham and Orton-Gillingham-based reading instruction: A review of the literature. *The Journal of Special Education*, 40(2), 171–183.
- Stevens, E. A., Austin, C. R., Moore, C., Scammacca, N. L., Boucher, A. N., Vaughn, S. (2021). Current state of the evidence: Examining the effects of Orton-Gillingham reading interventions for students with or at risk for word-level reading disabilities. *Exceptional Children*, 87(4), 397–417.
- Seidenberg, M. S. (2005). Connectionist models of word reading. *Current Directions in Psychological Science*, 14(5), 238–242.
- Stecker, P., Fuchs, L., & Fuchs, D. (2005). Using curriculum-based measurement to improve student achievement: Review of research. *Psychology in the Schools*, 42, 795–819.
- Vaughn, S., Gersten, R., & Chard, D. J. (2000). The underlying message in LD intervention research: Findings from research syntheses. *Exceptional Children*, 67(1), 99–114.
- Vaughn, S., Denton, C. A., & Fletcher, J. M. (2010). Why intensive interventions are necessary for students with severe reading difficulties. *Psychology in the Schools*, 47, 432–444.
- Vaughn, S., Mathes, P. G., Linan-Thompson, S., & Francis, D. J. (2005). Teaching English language learners to read: Putting research into practice. *Learning Disabilities Research and Practice*, 20(1), 58–67.



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Vaughn, S., Gersten, R., Dimino, J., Taylor, M. J., Newman-Gonchar, R., Krowka, S., Kieffer, M. J., McKeown, M., Reed, D., Sanchez, M., St. Martin, K., Wexler, J., Morgan, S., Yañez, A., & Jayanthi, M. (2022). Providing Reading Interventions for Students in Grades 4–9 (WWC

2022007). National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from <https://whatworks.ed.gov/>.



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