

The Science of Reading: Effective Instruction for Spanish Literacy Development



Classrooms in the United States are becoming increasingly racially and ethnically diverse (U.S. Census Bureau, 2019). Of the country's 50 million public-school students, more than 11 million speak at least one of 400 different languages other than English at home (Goldenberg & Wagner, 2015). For decades, educators, policymakers, academics, and parents have debated whether non-native English-speaking students should be taught in their native languages. More recently, as research has consistently demonstrated the benefits of bilingualism and biliteracy, support for bilingual education has increased significantly. In 37 states, districts and/or schools may choose educationally sound language-instruction programs to serve English learners, which explicitly include bilingual education (Rutherford-Quach et al., 2021).

The number of dual-language and immersion programs has grown dramatically over the last decade. There are more than 3,600 dual-language immersion programs across the country (Roberts, 2021). All fifty states and the District of Columbia have, or are working toward establishing, a Seal of Biliteracy program (Seal of Biliteracy, 2022). Programs in which Spanish is the partner language alongside English make up for about 80% of all programs (Roberts, 2021).

Successful bilingual education programs focus on developing bilingualism among both English-dominant and Spanish-dominant students

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(Cooley, 2014)

States such as California and Washington have expanded dual-language programs to more school districts, many of which are designed to serve students from Spanish-speaking families. The latter may be partially attributed to the fact that the percentage of Spanish-speaking students enrolled in public elementary and secondary schools has increased. According to the U.S. Census Bureau (2019), they make up 25% of the student population.

However, a major barrier in providing rigorous instruction in bilingual programs is the lack of high-quality resources and materials that address students' language and academic needs (Loewus, 2016). Educators agree that the instructional materials for English learners are often too simple and fail to build on students' background knowledge, which is necessary to increase vocabulary. In addition, the materials are too disconnected from grade-level goals. The dearth of adequate and appropriate learning resources contributes to the consistently widening achievement gap between Spanish-speaking students and English-speaking students in two-way dual-language programs (Cooley, 2014). The widening achievement gap is observed in students' test preparation and performance, as well as in- and out-of-class practice. For students to become academically successful and effectively cultivate literacy in both English and Spanish, it is imperative that high-quality materials are provided.

Imagine Español aligns with research-recommended practices for Spanish literacy development. The program includes instruction in foundational skills—such as phonological awareness, phonics, vocabulary, and fluency—and supports comprehension with culturally relevant, authentic texts. Students are motivated to learn to read in Spanish as they are exposed to songs, poems, and authentic passages representing Spanish-speaking cultures. The instructional design of the program, along with the adaptive sequences, ensures students have support they need to experience success with Spanish literacy.

The Science of Reading and Bilingual Education

The body of research that is referred to as the Science of Reading highlights the connection between decoding skills and language comprehension (the simple view of reading), both of which are essential for learning to read, whether in English or in Spanish (National Center on Improving Literacy, 2022). Students need to learn to accurately read words and process language (e.g., grammar and vocabulary) used in written texts to comprehend what they are reading. Therefore, effective literacy programs need to address the development of decoding skills and linguistic comprehension.

For dual language and emergent bilingual students, skills, concepts, and knowledge learned in one language can transfer to another language to facilitate learning (Goldenberg, 2008). Students’ “linguistic, literacy and cultural repertoires” (Bauer & Gort, 2012, p. 5) impact learning at school and literacy development. For literacy skills, research has shown that students use the same orthographic mapping or sound/letter correspondence skills within and across languages (Garcia et al., 2017; Van Hell & Dijkstra, 2002), meaning that the ability to map letters with sounds transfers from English literacy instruction to Spanish and vice versa.

However, when learning to read in Spanish, decoding demands are different from reading in English. Spanish is a phonetically regular language (27 letters map to 22-24 phonemes) compared to English with 26 letters and 44 possible phonemes. While students learning to read in Spanish need to learn to decode single and multi-syllable words, they may not need the same level of intensity of explicit phonemic awareness and phonics instruction as when students are learning to read in English.

To become fully biliterate, students need support for the full expression of biliteracy including oracy, decoding, linguistic comprehension, and transfer to a second language. This is accomplished when analytical and synthetic methods are used to address the needs of emergent bilingual students, and “texts, tools, and talk are authentic, identity affirming, motivating to students, and allow the application of reading skills when it matters most—in the act of reading” (Guilamo, 2021).

Phonological Awareness and The Alphabetic Principle

In terms of the developmental continuum for literacy, phonological awareness provides a foundation for learning to read and comprehend text. Phonological awareness—the ability to segment and manipulate words, syllables, and sounds—is a key component of reading

development (Denton et al., 2000). Several studies have found that Spanish-speaking students with strong phonemic awareness—a subcategory of phonological awareness that refers specifically to awareness and sensitivity to phonemes, or individual sounds—are generally successful in reading.

Spanish phonemic awareness has also been associated with mastering the alphabetic principle (Baker et al., 2014) and spelling (de Manrique & Signorini, 1994). The ability to segment a word into its phonemes is critical in the beginning stages of reading acquisition in Spanish, and correlates with word reading and comprehension ability (Carrillo, 1994; Míguez-Álvarez et al., 2021).

Reading instruction in Spanish is often based on the recognition and spelling of syllable units, as opposed to single phonemes (Freeman & Freeman, 1998, as cited in Denton et al., 2000). The Spanish language is phonically regular; therefore, the syllable is a central unit in Spanish reading. Some research has shown that syllable awareness is a more important predictor of Spanish reading success than phonemic awareness (Míguez-Álvarez et al., 2021). Training students in spelling, blending, and segmenting syllables and phonemes is important because these skills are closely related to skills used when reading and writing words. Once students learn the basic sound-symbol correspondences, they can easily decode and read most Spanish words with a high degree of accuracy.

Imagine Español supports the development of phonological awareness in Spanish through songs, rhymes, and activities covering phonemes and syllables. Traditional animated songs provide an opportunity to reinforce rhyming, while also developing cultural competence. Imagine Español also provides foundational instruction and practice for learning letters and sounds. Within the program, letters are sequenced to teach students the vowels first, then different sets of consonants. Uppercase and lowercase letters are taught side by side.

Syllabication is a foundational skill for learning to read in Spanish. In Imagine Español, students are explicitly taught that words are composed of syllables. Students hear syllables in contextualized words and are asked to segment and blend sounds to construct the syllables. They use these syllables to form and read the words they hear. Introductory syllable activities allow students to focus on all the possible syllables that can be made with each consonant. Such activities model how combining consonant sounds with vowels creates a syllable that constitutes a word or can be combined with other syllables to create longer words.

Vocabulary

To comprehend various texts, students need vocabulary knowledge. Comprehension requires accurately reading words and knowing what words mean to understand the meaning associated with the text. Additionally, supporting students in learning Spanish vocabulary helps them not only with comprehension, but with fluency. When students know specific words, they do not need to decode the words and can focus on reading for meaning.

Escamilla (1999) recommended that teachers support vocabulary by teaching students frequently used words and common compound words. Mastering common words allows students to automatically read words, which is necessary for fluency. High-frequency words should be taught in a logical sequence, and students should have multiple opportunities to practice targeted structures. Additionally, teachers can teach new vocabulary using associated words such as family, animals, and transportation words.

When students read new texts, engaging them in interactive read-alouds helps them expand their vocabularies and build comprehension skills (Ford & Palacios, 2015). During interactive readings, students engage with text both by reading and understanding words and by extracting meaning from the text. In digital environments, interactive engagement can include clicking on new vocabulary to learn new words, exploring pictures and other visuals that provide clues for meaning, and answering questions to gauge comprehension.

The Imagine Español program provides robust Spanish vocabulary instruction for students. Students learn compound words, Spanish/English cognates, and academic vocabulary within the program. Vocabulary development is supported with instructional sequences that introduce new words and concepts—both high frequency words and academic vocabulary, provide opportunity for students to practice learning what words mean, and then assess student knowledge prior to engaging with text.

In Imagine Español, vocabulary words are introduced before students read new selections. This prepares students to comprehend reading material when they engage in reading. Interacting with vocabulary during reading further advances student understanding as students see words in the context of informational and literary passages. When reading books, students can pause to select images and words to hear the narrator re-read words and identify images, and hear new vocabulary. Additionally, students also have access to online dictionaries to look up words as needed. Throughout the program, vocabulary development is supported with visual representations of meaning and with digital animations. Instructional scaffolding ensures that students have support necessary to master new vocabulary.

Fluency

Fluency refers to the ability to read correctly with appropriate expressiveness and rhythm. Reading fluently helps students understand what they are reading. When students are fluent readers, cognitive resources are devoted to extracting meaning from text rather than reading individual words (Álvarez-Cañizo et al., 2015). Practice is required for developing fluency. Students benefit from repeated readings of texts with which they are familiar (Rubin, 2016) and from reading a variety of passages (Rasinski, 2014).

Imagine Learning Español is designed to support both native and non-native Spanish speakers in becoming fluent readers. The design of reading lessons helps students read grade-level text fluently. After reading new books and passages, students are invited to read aloud to build fluency. Students read texts aloud for one minute as the program records them reading.

Students can listen to their reading and, if needed, record again to improve fluency. Recordings are sent to teachers, who can assess students' progress and provide feedback when interacting with students.

Syntax

Syntax is the grammatical structure of language. It refers to the rules related to word order and the construction of sentences. The National Early Literacy Panel (2008) identified the ability to produce and comprehend grammar as having a substantial impact on later literacy skills, and an understanding of sentence structure contributes substantially to students' ability to comprehend written text (Logan, 2017, Spear-Swerling, 2015). For emergent bilingual students, intervention approaches and instruction that combine vocabulary with syntax show positive effects on students' reading comprehension (Silverman et al., 2020).

Effective strategies for teaching syntax to elementary students include teaching linguistic structures such as parts of speech (e.g., nouns, adjectives, and verbs) (Oakhill et al., 2015), teaching word function by having students answer questions about specific words in sentences, and teaching sentence types and structures (Scott, 2009).

Imagine Español aligns with research recommendations for teaching syntax or grammar to students. Grammar instruction is integrated within reading lessons across Grades K–5 and includes teaching parts of speech, sentence structure (i.e., subjects, predicates), meaning at the sentence level, and sentence types including declarative, exclamations, and questions. Second-grade grammar lessons focus on teaching Spanish language conventions, including noun-adjective agreement, personal pronouns, reflexive verbs, and possessive nouns and adjectives, among other skills. As students advance in the program (Grade 3–5 lessons), they learn about different accent types. Specifically, they learn how to identify the stressed syllable, classify words into *agudas*, *graves*, *esdrújulas*, and *sobreesdrújulas*, and use those patterns to correctly write and place accents when spelling words.

Reading Instruction and Comprehension

In teaching students to read in Spanish, the science of reading emphasizes the integrated nature of word reading ability and language comprehension (National Center on Improving Literacy, 2022). Effective reading instruction therefore, should teach students word reading skills and address language development with instructional activities such as letter-sound and letter-name recognition, writing words and phrases, word-recognition activities, hearing and discriminating rhymes, learning grammatical structures and academic vocabulary, while exposing students to a variety of complex texts to build knowledge and vocabulary.

Meaning-oriented approaches to reading comprehension can significantly impact students' reading-comprehension ability. Approaches that develop background knowledge and vocabulary, introduce new vocabulary, and provide pre-reading previews to orient students to reading passages prepare students to understand what they will read. Additionally, posing questions throughout reading engages readers and promotes comprehension (Howard et al., 2018).

To support comprehension in Spanish, it is particularly important to give students access to texts that reflect the cultural, linguistic, and historical heritage of the Spanish-speaking community. Texts should be meaningful, culturally relevant, and engaging to students.

To become literate in Spanish, students need daily opportunities to read and write in Spanish in authentic ways

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(Escamilla, 1999).

Imagine Learning Español uses scientific approaches for teaching reading. As described, the program fully supports the acquisition of foundational reading skills, while it also showcases connected, meaningful texts that represent a wide variety of complex texts intended to captivate students' interest while providing rigorous instruction. Across grade levels, students are prepared for reading as they engage in learning vocabulary and acquiring background knowledge necessary for understanding texts. During reading, instruction is highly engaging with students turning digital pages and interacting with texts, and answering questions to demonstrate comprehension. Immediate feedback is provided for questions. If students select incorrect answers, they are referred back to the book to find the correct answer.

Additionally, authentic Spanish texts help students build sociocultural competence. Students read and listen to books about Spanish-speaking countries and territories. Each book is narrated by a native speaker from that country.

Scaffolded Support

As students learn to read in Spanish, they benefit from instructional supports or scaffolding that enable them to experience success. The term scaffolding is often used to describe instructional supports made available as needed—including prompts, questions as prompts, and modeling—to help students carry out tasks until they can do so independently (Molenaar & Roda, 2011). Digital technologies can be designed with embedded scaffolds that support literacy development. Common forms of digital scaffolding include text-to-speech features, which provide read-alouds of text, comprehension tools such as glossaries and background knowledge, interactive visual representations and animations that allow for clicking on images to learn vocabulary, and systematic, consistent design and presentation of instructional materials that ensure all students have comparable access to instruction (Proctor et al., 2007). Research also suggests that text-dependent questions—questions that require students to provide evidence from the text as part of their responses—can provide a predictable structure to help students better comprehend complex texts (Fisher & Frey, 2014). Finally, incorporating graphic organizers, charts, multimedia, and student-friendly dictionaries (with examples and non-examples) can scaffold learning (Baker et al., 2014; Howard & Christian, 2002).

Imagine Español is designed to provide students with support needed to experience success learning to read in Spanish. The instructional sequences used for grade-level instruction include research-validated strategies such as modeling new skills or information, providing students with opportunities to practice new learning necessary for mastery and developing fluency, and assessing learning to gauge whether students acquired the targeted skills.

All instructional activities in Imagine Español include various types of scaffolds, including multi-media presentations, audio, and learning supports. Videos and animations are used to illustrate new concepts, explain the meaning of text, and define words. Various types of instructional scaffolding are embedded with learning activities, such as synchronized text highlighting for passages that are read to students, text-to-speech features with read-aloud texts, and options to select buttons to repeat instructions. To support comprehension, vocabulary is taught prior to exposing students to reading selections, and students can access glossaries to look up the meanings of words. Reading selections include questions to engage students and allow them to monitor comprehension. Additionally, interactive visual representations allow students to explore vocabulary and concepts by clicking on images within instructional activities.

Culturally Authentic Materials

The goal of bilingual education is to enable students to communicate in meaningful and appropriate ways, both academically and in real-world communicative exchanges (Garcia & DeFeo, 2014). Therefore, dual-language curricula must promote sociocultural competence by reflecting and valuing students' languages and cultures (Howard et al., 2018). Effective bilingual programs incorporate culturally authentic materials as part of the curriculum. Research has shown that exposing students to culturally authentic, relevant, and engaging instructional materials in the classroom helps them develop their cultural knowledge, in addition to language skills such as listening comprehension, vocabulary, speaking, writing, reading comprehension, and fluency (Arriaza, 2016).

Imagine Español is unique in that the program not only supports Spanish literacy development, the program focuses on the cultures of Spanish-speaking countries. Native Spanish speakers narrate all instructional activities. Students gain an appreciation for Hispanic culture as they read and interact with authentic materials, including texts, songs, and artwork. Students in Grades K-2 are introduced to Spanish-speaking countries and territories in instructional units—discovering geography, culture, wildlife and peoples of the countries studied. Older students learn about the history, traditions, geography, and cultures of specific countries, with recreational activities, foods, means of transportation and unique aspects of a country's culture are highlighted.

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877-725-4257 • solutions@imaginelearning.com