

RESEARCH EVIDENCE REPORT

Research background and evidence supporting El camino al éxito

The “El camino al éxito” curriculum (or El camino) is a research-based program designed to provide foundational literacy skills to students learning to read in Spanish. It is designed to take non-readers through the first developmental phase of reading. The program can be used as a stand-alone intervention or can be used to support acquisition of foundational skills alongside an evidence-based curriculum. El camino is intentionally designed to accelerate student progress in mastering foundational skills.

El camino uses a systematic decoding method to help early readers develop the accuracy and automaticity needed to become fluent, independent readers. The systematic scope and sequence also support students identified with dyslexia.

El camino provides a structured approach to teaching foundational skills using explicit instructional routines focused on:

- **Phonological Awareness and Phonics:**
 - Learn the name and sound of each letter
 - Identify initial sounds of words
 - Segment words into syllables
 - Segment syllables into sounds
 - Blend sounds into syllables.
- **Alphabetic Principal:**
 - Form syllables using individual letter tiles
 - Read syllables with scaffolding
 - Form two-syllable words using syllable cards
 - Read words
 - Read connected text in the form of short sentences.

The program includes everything needed to teach throughout the year:

- 124 daily lesson plans in five teacher’s guides
- Explicit and scripted instructional routines that are easy to follow

- Placement and benchmark assessments
- Comprehensive practice sheets and materials for lesson support
- Extension activities that reinforce learning and/or support independence
- Option to create learning centers
- Visual aids for instruction and student reference.

Early Support is Needed in Kindergarten

Researchers studying early literacy, both in English and in Spanish, have demonstrated the importance of early support for struggling readers. Their research indicates the following:

- Identifying at-risk students before kindergarten begins, and providing them with intervention that is highly specific will boost their achievement.
- Children who are poor readers when they leave first grade almost never catch up to their peers by the end of elementary school.

(Juel, 1988; Adams, 1990; Lesaux & Siegel, 2003).

- Research conducted specifically with Spanish readers shows the following:
 - Children who arrive in first grade lacking phonemic awareness skills are going to have a difficult time learning to read.
(Bravo-Valdivieso, 1995; Carillo, 1994).
 - Poor phonological awareness affects the ability of Spanish readers to acquire alphabetic understanding skills (Carillo, 1994; Jimenez and Ortiz, 2000).

Alignment with the RtI-MTSS Model

The Response to Intervention – Multi-tiered System of Support (RtI/MTSS) model was created in 2004 as part of the reauthorization of the Individuals with Disabilities Education Act (IDEA) as a way of early identification of students that are not responding to core curriculum

and providing them with beneficial intervention. The RtI model consists of three tiers. El camino can be adapted for use with each tier as described below.

Tier 1 – For kindergarten: Students are provided with core reading instruction that is evidence-based. El camino can be adapted for small group differentiated instruction to supplement the development of foundational literacy skills in lessons that last 20 minutes.

Tier 2 – For kindergarten: Students that are not making sufficient gains in Tier 1 instruction can be placed into intervention groups of 3 to 5 students with similar needs that meet regularly for 30 minutes.

Tier 3 – For first grade: Students who do not respond to intervention can be placed into more intensive, individualized intervention.

Essential Components of Intervention

Gersten and Dimino (2006) demonstrated that interventions are most effective when they consist of the elements described below, which are each incorporated into El camino.

Explicit Instruction. Each of the routines in El camino contain the following:

- **Teacher Explanation and Model.** The teacher quickly explains each activity and demonstrates how the activity is to be conducted.
- **Signaling.** Cues are used to signal when students are to think and when they are to respond together.
- **Choral Response.** When reading sounds, syllables, words, and connected text, the teacher provides a signal for students to respond in unison. This gives the students multiple opportunities to respond. This is crucial for developing automaticity.
- **Individual turns.** Each student is given a turn to make sure that they have learned the skills or strategies.
- **Immediate feedback.** An error-correction procedure is provided for each routine.

Systematic Scope and Sequence. The instructional scope and sequence are designed to include the building of background knowledge of students before new information is presented. This is accomplished with the provision of scaffolding to assist students to read and write syllables and words.

Homogeneous Grouping. The placement assessment helps to place students in groups with similar decoding needs and identifies instructional entry points for the group.

Assessment. Assessments are also provided at the end of each of the five volumes to assess if the students are learning the skills being taught and to evaluate if reteaching is needed.

Evidence-Based. The most effective intervention programs are based on evidence and/or data showing them to be effective.

Alignment with the Science of Reading

The elements of the El camino program are aligned with the science of reading, following the recommendations for instruction of foundational skills of the Institute of Education Sciences (2019). These recommendations include:

- Develop awareness of sounds and teach how they map onto letters.
- Teach students how to decode words, analyze word parts, and recognize and write words.
- Allow students to read connected text to begin to develop accuracy and fluency.

Support for Dyslexia

El camino provides a structured literacy approach that is essential for students with dyslexia as well as students struggling with other reading difficulties. The explicit routines and immediate feedback, multiple opportunities for practice, and multisensory instruction allow students with reading difficulties to develop the foundational skills necessary for reading independence. A discussion follows of some of the current research regarding dyslexia, with an emphasis on dyslexia in Spanish.

Dyslexia is the most common learning disability affecting students (Fletcher et al., 2019). It occurs across all languages, regardless of IQ or sociocultural conditions. Dyslexia is defined as a learning difficulty that primarily affects the skills involved in accurate and fluent word reading and spelling. (British Dyslexia Association (BDA), 2009; International Dyslexia Association, 2002). Current research suggests that there are no absolute criteria for diagnosing if an individual has dyslexia. The BDA (2009) states that the severity of the disability can only be evaluated by examining how well an individual responds to a good intervention.

Dyslexia Models

Some of the early research assessing the causes of dyslexia proposed a single-deficit model in which a deficit of phonologic awareness (PA) was the primary cause (Ramus et al., 2003). However, it was soon noticed that many students with strong PA and decoding skills still labor to read with fluency. Research by Wolf and Bowers (1999) developed a double-deficit hypothesis (DDH) as the best predictor of dyslexia in which a deficit in either PA or the naming speed of a series of familiar items (Rapid Automatized Naming (RAN)) is present in students with dyslexia. A deficit of PA appears to affect reading accuracy, whereas a deficit of RAN affects fluency. Wolf and Bowers (1999) noted that these deficits can occur together, resulting in the most severely impaired students with dyslexia.

Much of the early research into dyslexia, since the 1970s, has been conducted with English-speaking students learning to read in English. During the last 20 years more research has been conducted in other languages as well. One such study was conducted by López-Escribano (2007) with dyslexic students learning to read in Spanish, in Spain, confirming the existence of a double deficit of PA and RAN in the most severely impacted readers.

Phonological Development Before Beginning to Read

The emergence of phonological awareness, which is defined as the “ability to recognize, identify or manipulate any phonological unit within a word, be it phoneme, rime or syllable” (Ziegler & Goswami, 2005, p. 4) begins with a sensitivity to large phonological units such as syllables, and develops into an awareness of smaller phonological units, such as individual

phonemes. Syllable awareness is generally noted in Spanish between ages 3 and 4, when a child can count the number of syllables in a word. This is followed by the ability to detect individual phonemes in a word or syllable, beginning with onset-rime. “In languages like Spanish, onset-rime segmentation is equivalent to phonemic segmentation for many words (e.g., for a word like “loro,” the onset-rimes are /l/ /O/ /r/ /O/ and so are the phonemes)” (Jiménez, 2012, p. 42). Awareness of onset-rime is usually present between ages 4 and 5. Phoneme awareness only develops once children are taught to read and write, regardless of the age at which reading and writing is taught (Ziegler & Goswami, 2005). During this time, PA becomes a good predictor of successful reading. Cross-linguistic studies show this to be true in Spanish as well as across all alphabetic orthographies (Jiménez, 2012; Serrano & Defior, 2008; Vaessen et al., 2010).

Reading Acquisition in Spanish

Languages vary in the grain size of lexical representations used to map phonology onto orthography. In more transparent languages such as Spanish, children first learn the sounds of individual letters, and then learn to blend phonemes together to read a two-letter syllable such as “me.” Once students can read two-letter syllables with automaticity, they can begin to combine two syllables to read a word like “me-sa.”

Once students are reading age-appropriate words with 70 to 80 percent accuracy, their fluency begins to increase. (Altani et al., 2020; Juul et al., 2014). Children in transparent orthographies such as Spanish, Finnish, Greek, or Italian master decoding much earlier and begin to read with 90% accuracy, by the end of Grade 1 (Altani et al., 2020; Seymour et al., 2003). In contrast, English-speaking children do not generally reach 90% accuracy until age 9 or 10 (Altani et al., 2020; Ziegler & Goswami, 2005).

Components That are Helpful for Dyslexia

El camino is designed to progressively move students through the skills necessary to learn to read. The early lessons focus on being able to segment a word into syllables, followed by hearing the initial sound of a word, and progressing into segmenting a syllable into its

phonemes and blending the phonemes to read a syllable. When students can read syllables with accuracy and fluency, they begin to combine syllables to form words and to read the same words. The program culminates in reading connected text in sentences.

Multisensory instruction that is beneficial for students with dyslexia is included through:

- tracing letters with fingers
- using fingers to segment and blend phonemes in syllables
- combining letter tiles to form syllables
- combining syllable cards to form words.

About the Author

Kerry Gavett is the primary author of *El camino al éxito*. She has over 15 years' experience teaching reading interventions to small groups of kindergarten through 2nd grade students learning to read in Spanish. She holds a Master of Science degree in Education. Kerry led a team of educators in 2006/2007 at Metzger Elementary School in Oregon to create the curriculum, which provides extra support by systematically teaching foundational skills to kindergarten students who are not making good progress with their core reading program. The curriculum was so successful in moving students forward, that Karen Twain, Principal of the school (who went on to lead the Oregon Governor's Reading Initiative), declared that "El camino al éxito was one of the things that was instrumental in Metzger receiving the "Closing the Achievement Gap" award 3 times in the State of Oregon."

Data showing Effectiveness of Program

Metzger Elementary School began a Spanish literacy program in the fall of 2003 in which native Spanish speakers were taught to read in Spanish. In the Fall of 2006, the El camino intervention program was developed and most students received the 30-minute intervention in addition to their core reading program. Beginning in the fall of 2012, Metzger began a two-way dual language immersion program in which both native-Spanish and native-English speakers were taught to read in Spanish. Most of these students also received the intervention.

The test used to assess the effectiveness of El camino, was the **Indicadores dinámicos del éxito en la lectura** (IDEL) developed by the University of Oregon. The assessments are given to identify which students are at risk for poor language and reading outcomes. The measure *Fluidez en las palabras sin sentido* (FPS), or Nonsense Words, which is administered to kindergarten students in both January (winter test) and June (spring test) was examined. The scores were assessed from the following number of students collected over an 11-year period:

- 66 students who were in Spanish literacy before El camino was implemented (from fall 2003 to spring 2006)
- 106 students who were in Spanish Literacy and receiving instruction in El camino (from fall 2006 to spring 2012)
- 56 students who were in the Dual Language Immersion Program and receiving instruction in El camino (from fall 2012 to spring 2014).

Two separate assessments were made to determine the effectiveness of El camino. First, the testing results collected at the end of each year were used to compare students who were in the Spanish Literacy Program before El camino was implemented (fall 2003 to spring 2006) to students who received instruction in El camino (from fall 2006 to spring 2014). In the second assessment, the results for only students who received instruction in El camino were evaluated. For this group of students, the winter test scores were compared to the Spring test scores by calculating the “effect size,” or Cohen’s d. Cohen’s d is typically used in education, psychology, and medical studies to evaluate if an intervention or treatment has been effective.

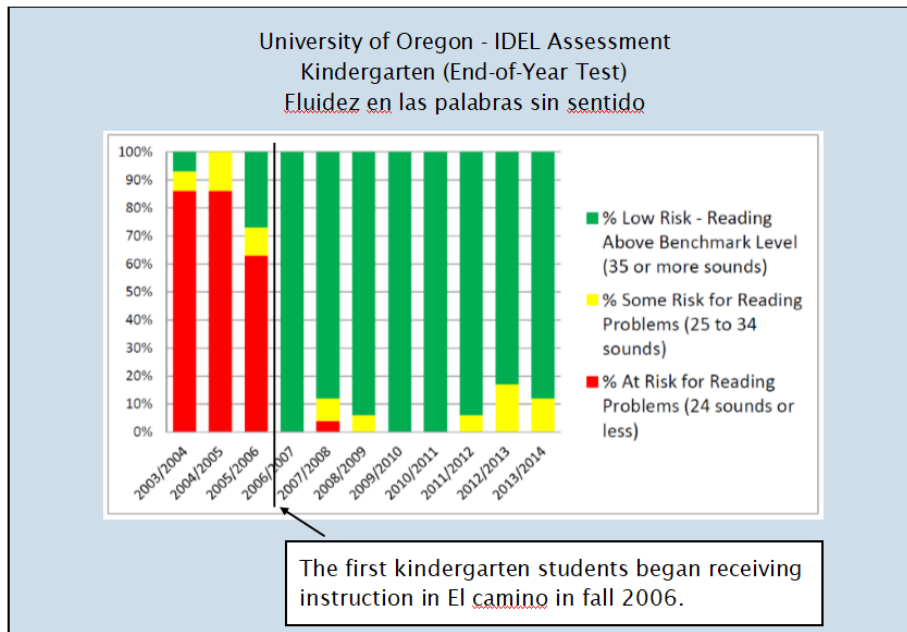
Assessment 1:

The results of the comparison of students who did not receive instruction in El camino to students who have received instruction in the intervention are shown on the graph on the next page. At the end of the year, the benchmark goal for the FPS measure is 35 sounds read correctly in a minute. The degree of risk for low performance is assigned to each student as follows:

- Students who read 35 or more sounds in a minute are considered at benchmark level and at "low risk" for developing language and reading problems in the future.
- Students who read 25 to 34 sounds correctly in a minute are below benchmark level and are considered at "some risk".

- Students who read 24 sounds or less correctly in a minute are below benchmark level and are considered “at risk.”

The graph shows the percentage of students each year who met the benchmark level (shown in green) or who are “at risk” or at “some risk” for future reading problems (shown in red or yellow). The three columns to the left show the percentages for students who never received instruction in the El camino intervention (before fall 2006) and the eight columns to the right show the percentages for students who were part of the El camino intervention (after fall 2006).



An examination of the testing data indicates that the El camino curriculum has been highly effective in helping Kindergarten students learning to read in Spanish to reach benchmark levels by the end of the year.

During the three-year period before El camino was used, 89% of the students were below the benchmark of 35 or more sounds per minute, and were considered “at risk” or at “some risk” for future language and reading problems.

During the subsequent eight-year period when students were receiving the El camino intervention, only 7% of the students were below the benchmark level, and were considered “at risk” or at “some risk” for future language and reading problems.

Assessment 2 (Cohen's d):

For the second evaluation, test results were examined only for students who received instruction with El camino. The results of the IDEL FPS scores from 158 kindergarten students from winter 2007 to spring 2014 are tabulated below. Based on the winter scores (benchmark is 20 sounds per minute), the students have been placed into three groups:

- 16 “at risk” students
- 37 “some risk” students
- 105 “low risk” students

The table shows the actual gain each group made in the number of sounds read between the winter and spring test. The average gain was about 42 sounds per minute and ranged from a gain of 39 sounds per minute for the “low risk” students, to a gain of about 50 sounds per minute for the “at risk” group. The “effect size” of each group, calculated using Cohen's d, is also shown on the table. Cohen's d is typically used in education, psychology, and medical studies to evaluate the effectiveness of an intervention or treatment. It can range from approximately -3 to +3. Generally, a Cohen's d of 0.2 is considered small, 0.5 is medium and 0.8 is large. The Cohen's d calculated from the test data were much larger than these numbers and show that the intervention was extremely effective. Cohen's d was 1.7 for all students and ranged from 1.6 for the “low risk” group to 3.0 for the “at risk” group. The results indicate that the intervention is extremely effective in helping students to reach benchmark levels for FPS by the end of the year, especially for the “at risk” group.

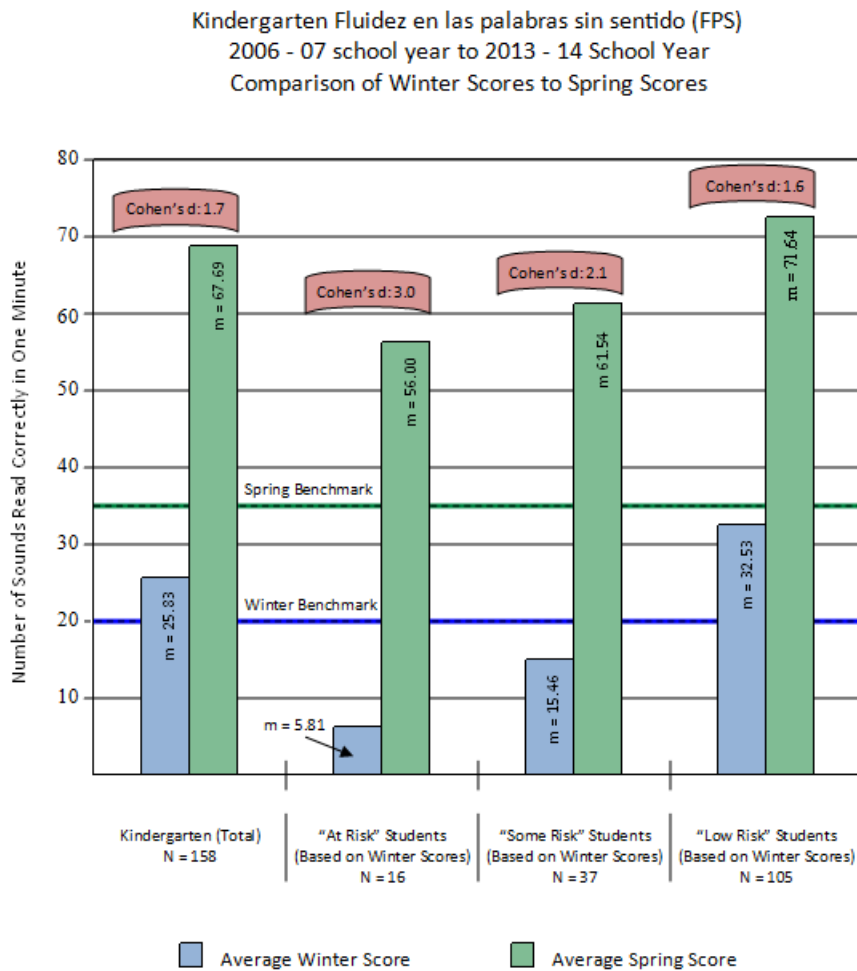
IDEL FPS Scores Winter 2007-Spring 2014

	N	Winter Score		Spring Score		Actual Gain	Cohen's d
		M	SD	M	SD		
Total Kindergarten	158	25.83	13.73	67.69	31.79	41.86	1.70
At Risk	16	5.81	3.39	56.00	23.10	50.19	3.0
Some Risk	37	15.46	2.7	61.54	31.15	46.08	2.1
Low Risk	105	32.53	11.63	71.64	32.59	39.11	1.6

N = population size, M = mean, SD = standard deviation

The graph on the following page shows the gains each group made between the winter testing and the spring testing. The blue bars on the graph show the Winter testing results. The mean score of 25.83 for all kindergarten students was above the winter benchmark score of 20 (blue line). However, the mean for both the group of 16 “at risk” students and the group of 37 “some risk” students were below the winter benchmark score.

For the spring testing, the green bars on the graph show that the mean of all students, as well as for each subgroup, were well above the spring benchmark score of 35 (green line). The “at risk” students made the greatest gains between the winter test and the spring test.



References

- Adams, M. J. (1990). *Beginning to read: Thinking and learning about print*. Cambridge, MA: MIT Press.
- Altani, A., Protopapas, A., Katopodi, K., & Georgiou, G. K. (2020). From individual word recognition to word list and text reading fluency. *Journal of Educational Psychology, 112*(1), 22-39. <https://doi.org/10.1037/edu0000359>
- Bravo-Valdivieso, L. (1995). A four-year follow-up study of low socioeconomic status, Latin American children with reading difficulties. *International Journal of Disability, Development and Education, 42*(3), 189–202. <https://doi.org/10.1080/0156655950420302>
- British Dyslexia Association. (2009). Dyslexia. Retrieved April 20, 2021, from <https://www.bdadyslexia.org.uk/dyslexia/about-dyslexia/what-is-dyslexia>
- Carrillo, M. S. (1994). Development of phonological awareness and reading acquisition. A study in Spanish language. *Reading and Writing, 6*(3), 279-298.
- Fletcher, J. M., Lyon, G. R., Fuchs, L. S., & Barnes, M. A. (2019). *Learning disabilities: From identification to intervention* (2nd ed.). The Guilford Press.
- Institute of Education Sciences. (2019). *Foundational Skills to Support Reading for Understanding in Kindergarten Through 3rd Grade*. <https://ies.ed.gov/ncee/wwc/PracticeGuide.aspx?sid=21>
- International Dyslexia Association. (2002). Dyslexiaida. Retrieved April 20, 2021, from <https://dyslexiaida.org/definition-of-dyslexia/>
- Jiménez, J. E. (2012). The role of phonological processing in dyslexia in the Spanish language. In T. Wydell (Ed.), *Dyslexia: A comprehensive and international approach* (pp. 29-46). <https://doi.org/10.5772/32152>
- Jiménez, J. E. & Ortiz, M. R. (2000). Metalinguistic awareness and reading acquisition in the Spanish language. *Span J Psychol., 3*(1), 37-46.
- Juel, C. (1988). Learning to read and write: A longitudinal study of 54 children from first through fourth grades. *Journal of Educational Psychology, 80*(4), 437–447. <https://doi.org/10.1037/0022-0663.80.4.437>

- Juul, H., Poulsen, M., & Elbro, C. (2014). Separating speed from accuracy in beginning reading development. *American Psychological Association*, *106*(4), 1096-1106.
<https://dx.doi.org/10.1037/a0037100>
- Lesaux, N. K., & Siegel, L. S. (2003). The Development of Reading in Children Who Speak English as a Second Language. *Developmental Psychology*, *39*(6), 1005–1019.
<https://doi.org/10.1037/0012-1649.39.6.1005>
- López-Escribano, C., (2007). Evaluation of the double-deficit hypothesis subtype classification of readers in Spanish. *Journal of Learning Disabilities*, *40*(4), 319-330.
- Ramus, F., Rosen, S., Dakin, S. C., Day, B. L., Castellote, J. M., White, S., & Frith, U. (2003). Theories of developmental dyslexia: Insights from a multiple case study of dyslexic adults. *Brain*, *216*, 841-865.
- Serrano, F., & Defior, S. (2008). Dyslexia speed problems in a transparent orthography. *Annals of Dyslexia*, *58*, 81-95. <https://doi.org/10.1007/s11881-008-0013-6>
- Seymour, P. H., Aro, M., & Erskine, J. M. (2003). Foundation literacy acquisition in European orthographies. *British Journal of Psychology*, *94*, 143-174.
<https://doi.org/10.1348/000712603321661859>
- Vaessen, A., Bertrand, D., Tóth, D., Csépe, V., Faísca, L., & Reis, A. (2010). Cognitive development of fluent word reading does not qualitatively differ between transparent and opaque orthographies. *Journal of Educational Psychology*, *102*(4), 827-842. Wolf, M., & Bowers, P. G. (1999). The double-deficit hypothesis for the developmental dyslexias. *Journal of Educational Psychology*, *91*(3), 415-438.
- Ziegler, J. C., & Goswami, U. (2005). Reading acquisition, developmental dyslexia, and skilled reading across languages: A psycholinguistic grain size theory. *Psychological Bulletin*, *131*(1), 3-29.