

BrainScience Works Impact Report



BrainScience Works
Neuroscience Driven Education

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Summary

BrainScience Works is a multi-sensory and multi-modal program that includes digital, tangible, and experiential components to help striving readers learn the foundational skills of literacy. It focuses on strengthening core skills like letter recognition, formation, and word understanding.

Letter recognition and writing letters correctly are important foundational skills for reading. According to the shared knowledge perspective (Graham, 2020), they draw on the same knowledge and cognitive systems, including general knowledge around generating and understanding text, meta-knowledge about written language systems (such as text structure/print knowledge), procedural knowledge about how to interact with text, and pragmatic knowledge about text attributes (ability to encode/decode text, use syntax etc).

How it Works

BrainScience Works helps students learn to read by having them say, build, see, and write letters and words, so they can practice encoding across verbal, visual, and motor systems (Solichah & Ferdana, 2024). Research with striving readers shows that multi-sensory instruction is especially effective since it helps them link sounds, symbols, and motor actions, strengthening the underlying connections required for reading (Birsch, 2011).

Say

Build

See

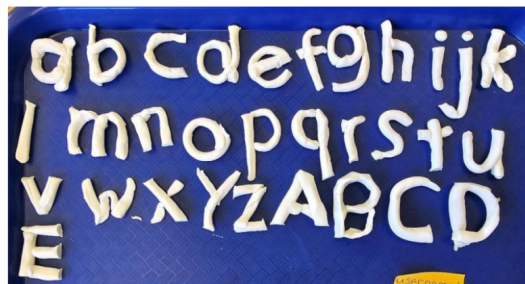
Write

Research Highlight

PreK– Grade 3 students who used Learning Letters showed significant improvement in skills such as letter recognition, letter writing, and alphabetic sequence knowledge as well as growth on standardized literacy assessments.

Study 1: PreK-Grade 3, ESSA III Study

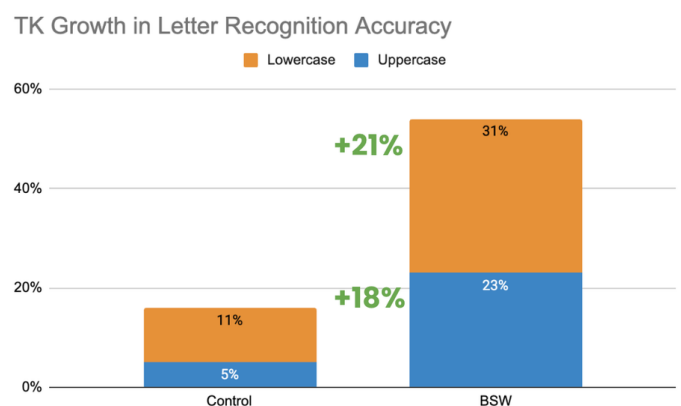
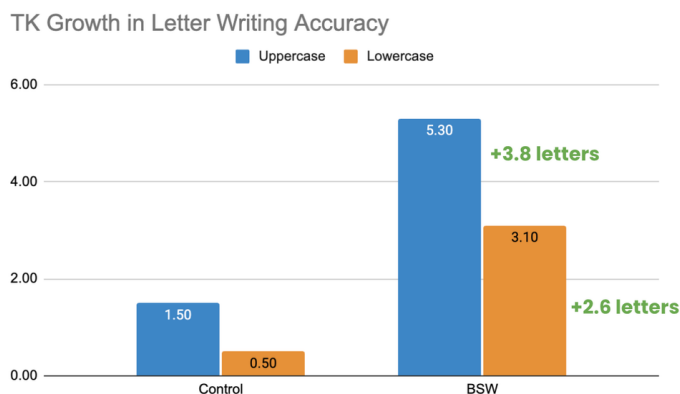
💡 Across two schools, *students who spent more time using BrainScience Works tended to demonstrate stronger letter recognition* outcomes, $r = 0.46$, $p = .02$.



This is an example of a student's clay model after completing the lowercase letters module. Looking at the formation of the letters, this shows successful mastery.

Study 2: Transitional Kindergarten (TK), CA

💡 In a small-scale RCT study with 12 TK students, ***students who used Learning Letters showed greater improvements in lowercase and uppercase letter recognition as well as letter writing*** compared to controls.



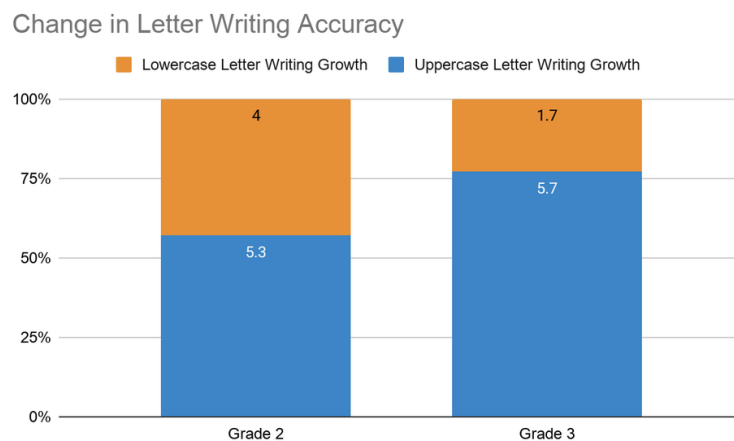
💡 ***K-2 students in the same school who used Learning Letters showed meaningful improvements in letter recognition (in alphabetical order and random) as well as letter writing.***



- Kindergarten:
 -  Students recognized **an additional 7.7 letters** when presented alphabetically, and an additional 5.8 letters when presented randomly.
 -  Students wrote **an additional 0.7 letters** correctly
- First Grade:
 -  Students recognized **an additional 4 letters** when presented alphabetically, and an additional 2.4 letters when presented randomly.
 -  Students wrote **an additional 3 letters** correctly
- Second Grade:
 -  Students **recognized an additional 1.55 letters** when presented alphabetically, and an additional 1.4 letters when presented randomly.
 -  Students wrote **an additional 1 letter** correctly

Study 3: Grades 2-3, CA

💡 A sample of 10 students in grades 2-3 also showed *improvements in letter writing accuracy after using Learning Letters*.



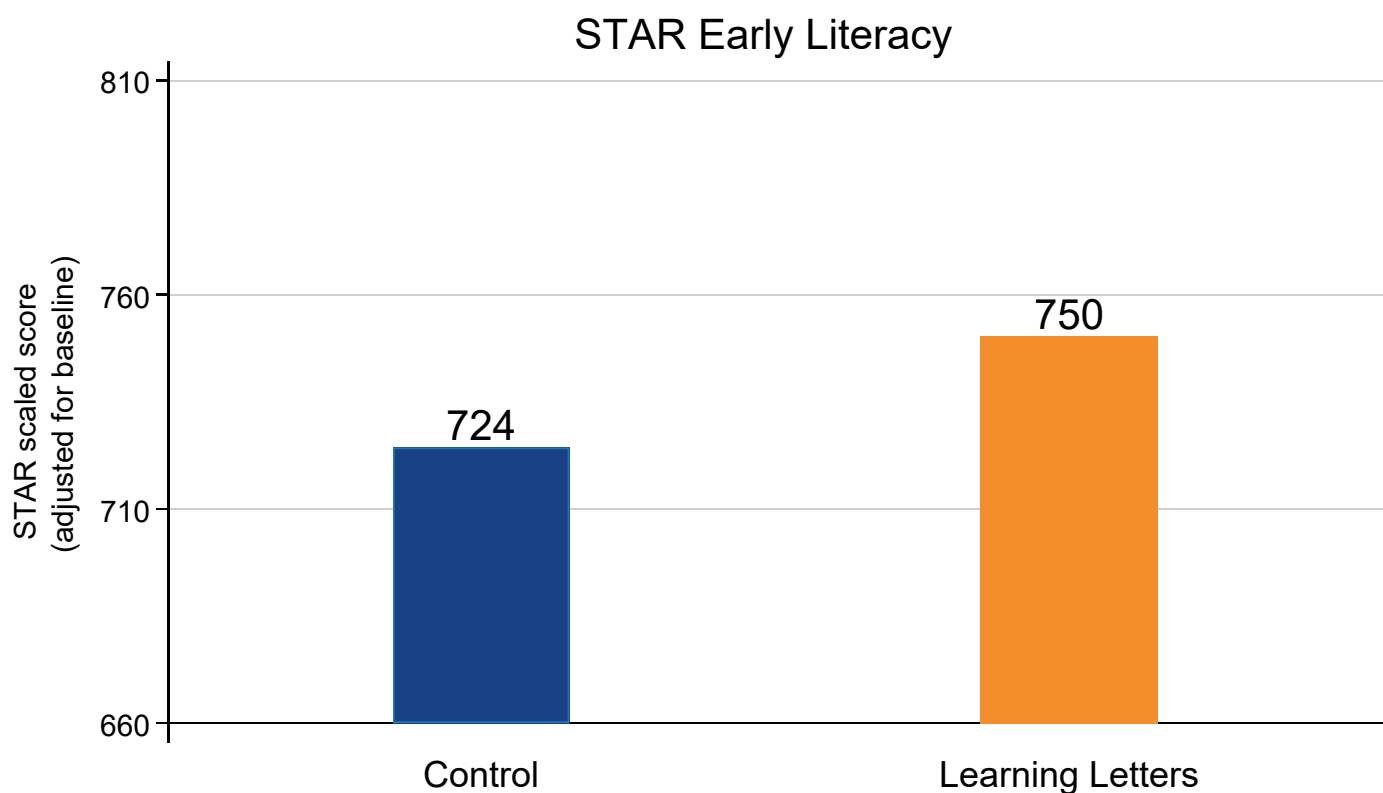
After using Brain Science Works, *students wrote up to 5-6 more letters correctly*, representing gains of over 500%.

The improvements seen in letter writing are particularly interesting to note. Students with reading challenges often struggle with correct letter orientation (confusing b/d or p/q). Research suggests that learning to read requires students to not only coordinate visual and phonological information, but also to learn to distinguish letters as symbols rather than objects (Lachmann & Geyer, 2003). Since the brain naturally treats mirrored shapes as equivalent (Orton, 1925), students, especially those with challenges, may struggle even more with letter orientation and formation (comprehending that 'p' is not 'q' even though they are mirrored shapes). Learning Letters allows students to build and work with letters, helping enforce accurate letter representations and strengthen the connections needed for reading.

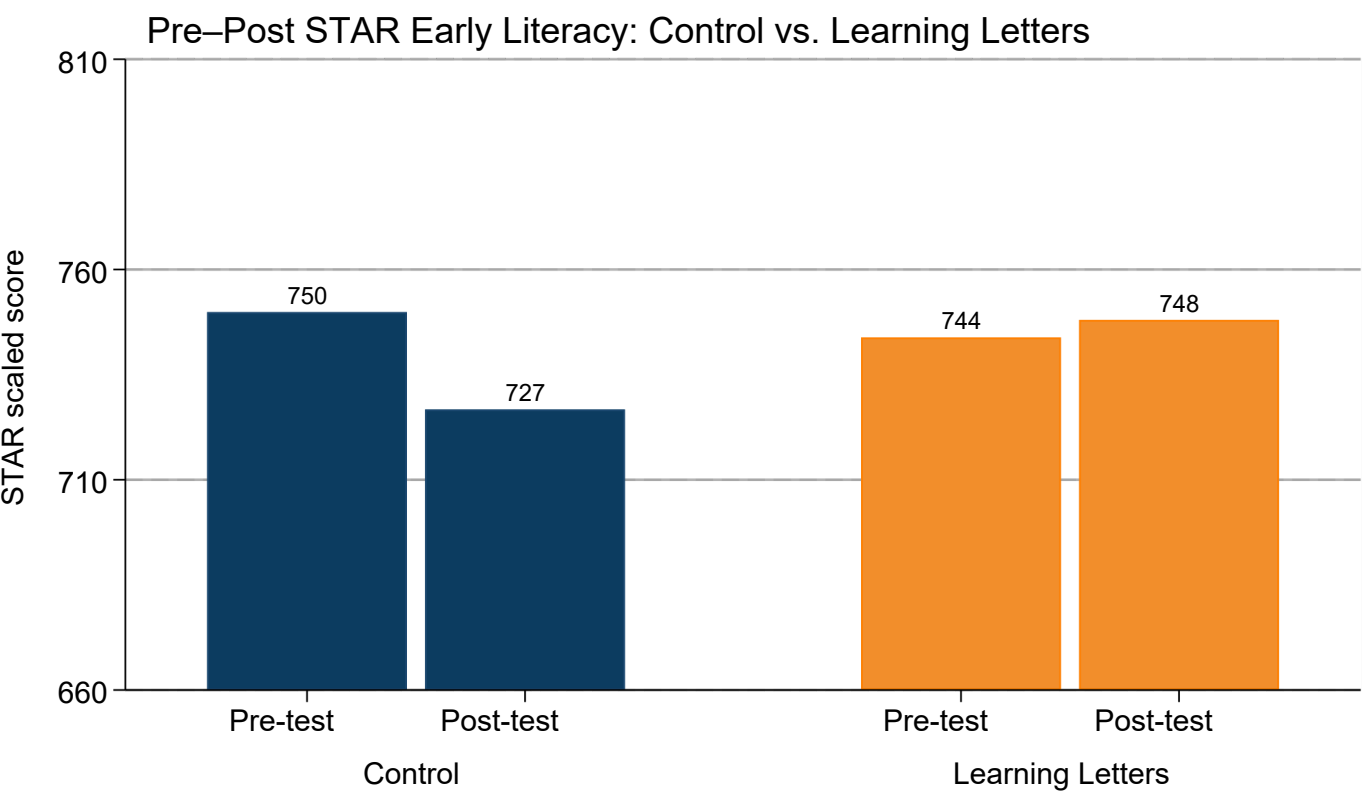


Study 4: Transitional Kindergarten (TK), CA

💡 A sample of 14 transitional kindergartners participated in the study, with Learning Letters users showing stronger results on the **STAR Early Literacy scaled score**. After accounting for students' starting scores, Learning Letters users scored 26 points higher than non-users on this measure. Since STAR™ is an independent standardized assessment, these findings suggest that students' gains extended beyond improvement in program-specific skills to broader measures of literacy achievement, an indication of high external validity.



Across the **STAR Early Literacy scaled score** and every subscore examined in the study, the same pattern emerged: students who did not use Learning Letters generally showed declining scores, whereas students who used Learning Letters showed improvements. This consistency provides additional support for the overall direction of the findings.



Conclusion

The above research shows that BrainScience Works’ Learning Letters program is an effective tool for striving readers to practice core foundational literacy skills. The multi-sensory nature

of the program engages the visual, motor, and verbal pathways at the same time, helping students develop a deeper, more durable understanding of how letters look and work.



References

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