

Improving Language and Reading Outcomes With *Literacy Speaks!*®

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LITERACY SPEAKS!®

Literacy Speaks! is an orthography-based system that allows a speech-language pathologist (SLP) or other specialist to address a variety of reading needs. The system targets:

- ✓ alphabetic letter recognition,
- ✓ sound-letter correspondence,
- ✓ incorporation of target sounds into words,
- ✓ exposure to sight words (30),
- ✓ combination of target and sight words into phrases/sentences,
- ✓ target and sight words in books, and
- ✓ carryover of sound and literacy skills.

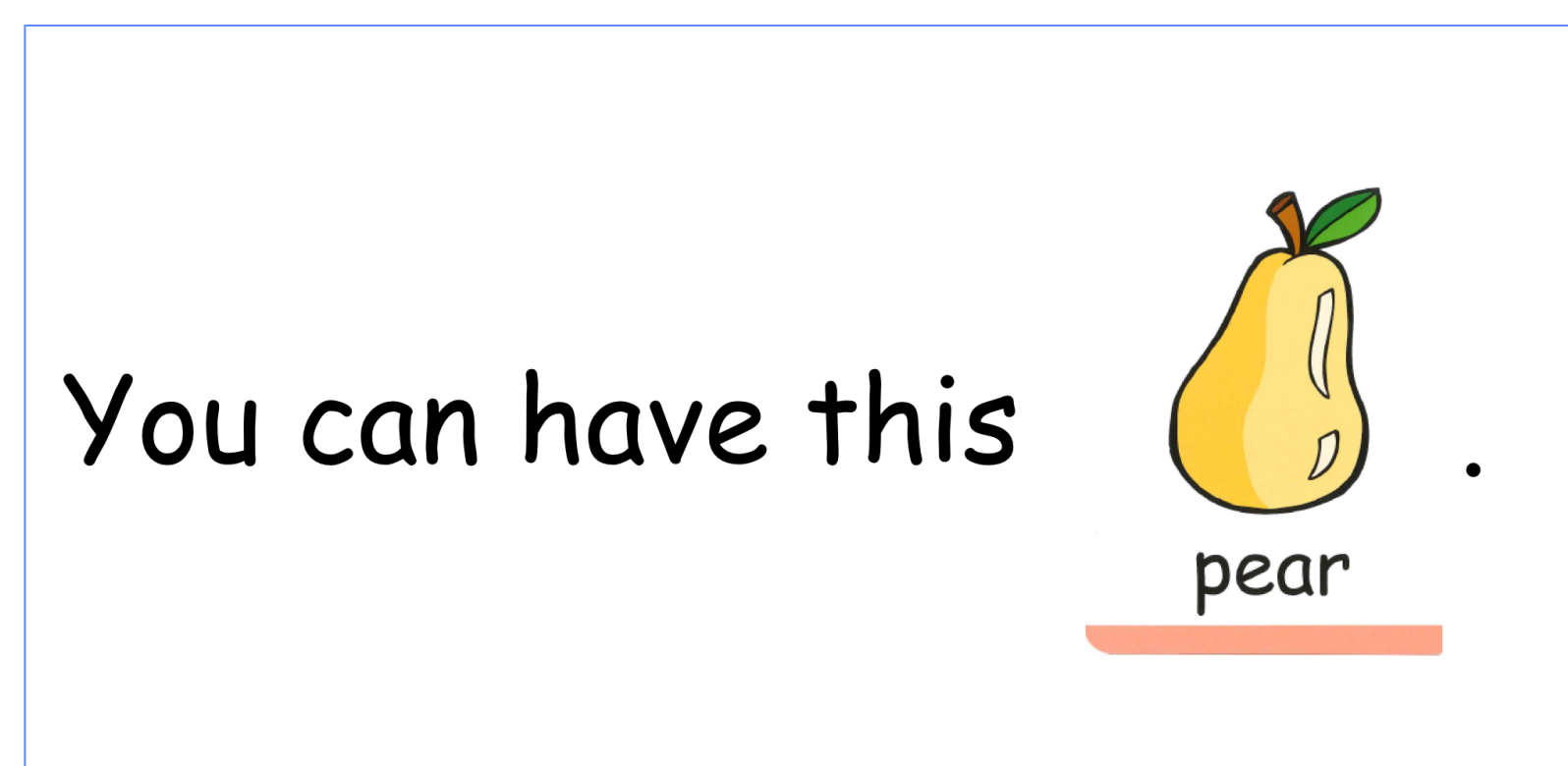


The Complete *Literacy Speaks!*® Kit

THE “NOVEL TWIST”

Research has shown that children with attention issues respond to the use of technology in learning.

Literacy Speaks!® materials were presented on an iPad running PowerPoint:



Sentence example:
Initial /p/

CHARACTERISTICS OF Z9

- ✓ 10-year-old boy
- ✓ Attention deficit hyperactivity disorder (ADHD)
- ✓ Receives services for childhood apraxia of speech (CAS) during the school year
- ✓ Reads well below grade level
- ✓ Hearing within functional limits

PRE-TESTING

Clinical Evaluation of Language Fundamentals (CELF-5) ○ “severe language disorder”
 Screening Test for Developmental Apraxia of Speech (STDAS-2) ○ “very likely”
 Comprehensive Test of Phonological Processing (CTOPP) ○
 “below average” phonological awareness
 “poor” phonological memory
 “very poor” rapid naming
 Clinical Assessment of Articulation & Phonology (CAAP-2) ○ no active processes,
 inconsistent vowels
 Gray Oral Reading Tests (GORT-4) ○ “very poor”
 Single Word Intelligibility Test ○ 84% (conversation much lower)

Testing Summary:

- ✓ Beginning reader – ability well below peers
- ✓ Cognitive effort of reading negatively affects comprehension
- ✓ Poor phonological awareness
- ✓ Impaired speech intelligibility secondary to CAS
- ✓ Receptive language skills better than expressive

INTERVENTION FOCUS

Sessions with Z9 focused on:

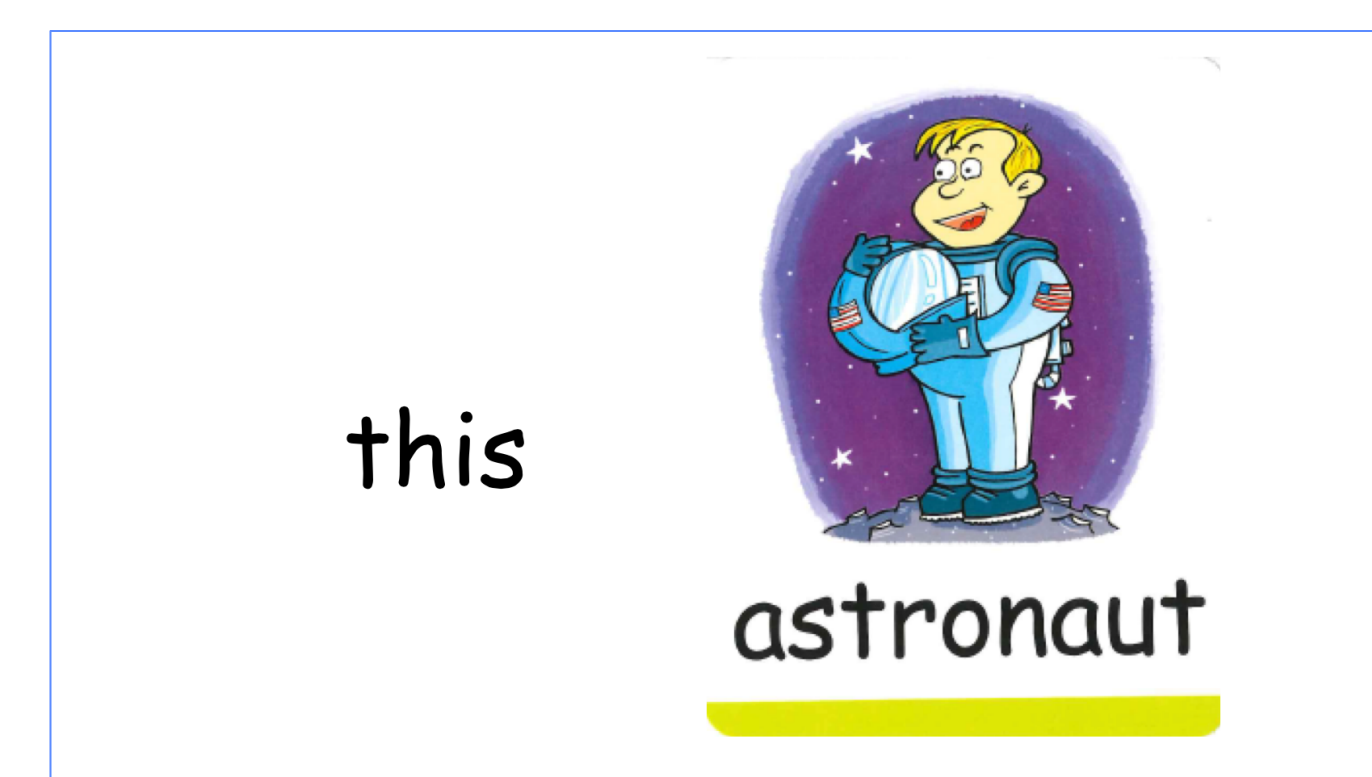
- Intelligible and accurate productions
- Increasing sight word knowledge
- Improving knowledge of letter-sound correspondence
- Decreasing impulsivity (focus on applying new knowledge)

DESCRIPTION OF SESSIONS

Intervention consisted of twelve 30-minute sessions over three weeks (4x/week). Each session picked up where the previous one left off.

Procedure for each phoneme (either word-initial or -final):

- *Sound/letter in isolation:*
 - Show printed representation of the letters: **c C k K**. Once > 50% on this (or subsequent levels) when probed, move to next level.
- *Target sounds in words:*
 - Locate target letter in text shown (**c ow**), phonological awareness skills (i.e., segmentation, blending).
 - Introduce picture that represents target word (drawing of cow) to ensure participant’s knowledge of the written word (**cow**) coincides with its phonological conception.
- *Target word in phrases:*
 - Introduce sight words (e.g., want, my, see), practice (e.g., **want + cow**).
- *Target word in sentences:*
 - Add sight words (or other words learned in different cycle) and punctuation.
- *Target word in short ebooks:*
 - Multiple readings promote fluent reading.
 - Paper versions of these books were provided to the family upon completion of the study.



POST-TESTING

Targeted informal testing of areas of need was completed using the iPad (i.e., adding visual support) found:

- ✓ **READING** – GORT-4 passages
 - ✓ Story 1 without errors.
 - ✓ Story 2 (didn’t get to this in pre-testing!) completed, required help with 3 words.
- ✓ **SINGLE WORD INTELLIGIBILITY** – 79%
 - ✓ Decrease from pre-testing BUT actually attempted to read the tokens instead of relying on pictures, which decreased production accuracy.
 - ✓ Considering the above, the team elected to see this as a positive despite the lower percentage.
- ✓ **APRAXIA TASKS** – repetition of multisyllabic words
 - ✓ Inconsistent vowels.
 - ✓ Attempted to self-correct by slowing repeated productions; resulted in more accurate but unnaturally slow utterances.
- ✓ **LANGUAGE** – CELF-5 subtests
 - ✓ Understanding relationships among items (100%)
 - ✓ Sentence assembly (100%)
 - ✓ Adding visual support would move Z9 into a less severe category of language disorder.

OUTCOMES

By the end of the experimental period, Z9 was:

- ✓ Familiar with some sight words.
- ✓ Attempting to sound out words instead of guessing.
- ✓ Self-correcting his reading at a high rate.
- ✓ Still having difficulty with similar-looking letters (i.e., p, b, d).
- ✓ Expressing positive thoughts about reading in general.

REFERENCES

Anthony, J.L., Aghara, R.G., Dunkelberger, M.J., Anthony, T.L., Williams, J.M., & Zhang, Z. (2011). What factors place children with speech sound disorders at risk for reading problems? *American Journal of Speech-Language Pathology*, 20, 146-160. doi:10.1044/1058-0360(2011/10-0053)

Bankson, N.W., Bernthal, J.E., & Flipsen, P. (2013). *Articulation and phonological disorders: Speech sound disorders in children* (7th ed.). Boston, MA: Pearson.

Brown, H.M., Oram-Carody, J., & Johnson, A. (2013). A meta-analysis of the reading comprehension skills of individuals on the autism spectrum. *Journal of Autism and Developmental Disorders*, 43, 932-955. doi:10.1007/s10803-012-1638-1

Cardoso-Martins, C. & Ribeiro da Silva, J. (2010). Cognitive and language correlates of hyperlexia: Evidence from children with autism spectrum disorders. *Reading and Writing*, 23, 129-145. doi:10.1007/s11145-008-9154-6

Lee, A., Lang, R., Davenport, K., Moore, M., Rispoli, M., Van der Meer, L., ... Chung, C. (2013). Comparison of therapist implemented and iPad-assisted interventions for children with autism. *Developmental Neurorehabilitation*, 1-7. doi:10.3109/17518423.2013.830231

Lin, C-S. (2014). Early language learning profiles of young children with autism: Hyperlexia and its subtypes. *Research in Autism Spectrum Disorders*, 8, 168-177.

McClanahan, B., Williams, K., Kennedy, E., & Tate, S. (2012). A breakthrough for Josh: How use of an iPad facilitate reading improvement. *TechTrends*, 56(3), 20-28. doi:10.1007/s11528-012-0572-6

Neely, L., Rispoli, M., Camargo, S., Davis, H., & Boles, M. (2013). The effect of instructional use of an iPad on challenging behavior and academic engagement for two students with autism. *Research in Autism Spectrum Disorders*, 7(4), 509-516. doi:10.1016/j.rasd.2012.12.004

Richmond, K. (2014a, April). *Autism spectrum disorders: Building speech and literacy skills with orthographic instruction!* Paper presented at the annual conference of the Pennsylvania Speech-Language-Hearing Association, Pittsburgh, PA.

Richmond, K. (2014b, April). *Improve speech intelligibility and establish literacy skills simultaneously!* Paper presented at the annual conference of the Pennsylvania Speech-Language-Hearing Association, Pittsburgh, PA.

Ricketts, J. (2011). Research review: Reading comprehension in developmental disorders of language and communication. *The Journal of Child Psychology and Psychiatry*, 52(11), 1111-1123. doi:10.1111/j.1469-7610.2011.02438.x

Saygin, Z.M., Norton, E.S., Osher, D.E., Beach, S.D., Cyr, A.B., Ozernov-Palchik, O., ... Gabrieli, J.D.E. (2013). Tracking the roots of reading ability: White matter volume and integrity correlate with phonological awareness in prereading and early-reading kindergarten children. *The Journal of Neuroscience*, 33(33), 13251-13258. doi:10.1523/JNEUROSCI.4383-12.2013

Spencer, H. (n.d.) *5 year old with Lowe syndrome and Literacy Speaks! program* [PowerPoint slides].

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