Questions and Answers for 12/14/23 Testimony to NYC Council on Science of Reading

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Q: What is meant by the Science of Reading?

A: The science of reading refers to the compelling evidence that informs (a) how children learn to read and (b) instructional practices that promote proficient reading. This compelling evidence has been known for several decades and has been summarized in consensus documents (e.g., National Reading Panel, 2000), practice guides produced by the Institute of Education Sciences (IES; Baker et al., 2014; Foorman, Beyler, et al., 2016; Gersten et al., 2007, 2008; Kamil et al., 2008; Shanahan et al., 2010), and in meta-analytic summaries of research (e.g., Berkeley, Scruggs, & Mastropieri, 2010; Ehri, Nunes, Stahl, & Willows, 2001; Ehri, Nunes, Willows, et al., 2001; National Institute for Literacy, 2008; Therrien, 2004; Wanzek et al., 2013, 2016).

Q: If the Science of Reading has been known for so long, why are we still debating it?

A: Differing truth systems (i.e., epistemologies) seem to lie at the heart of the debate. For example, Group A typically priorities deductive methods that embed hypothesis testing, precise operationalization of constructs, and efforts to decouple the researchers' beliefs from their interpretation and generalization of empirical evidence. Group B prioritizes inductive methods, such as phenomenological, ethnographic, and grounded theory approaches that embed focus on the meaning and understanding that comes through a person's lived experience, and relies on the researcher's own observations to shape meaning and principles. Group A says "Look at this mountain of evidence? How can you not believe it?", whereas Group B says "It doesn't make sense! It doesn't match up with our experiences! Why should we value your knowledge above our own?" [See Stanovich, 2003, and Petscher et al., 2020, for further elaboration.]

As the National Research Council (2002) points out: "…Advances in scientific knowledge are achieved by the self-regulating norms of the scientific community over time, not, as sometimes believed, by the mechanistic application of a particular scientific method to a static set of questions" (p. 2). Group A scientists, whose body of research comprises the science of reading, use qualitative and quantitative methods to study within and across years how teachers' instructional practices impact students' reading progress and outcomes (e.g., Conner et al., 2007; Foorman et al., 2006).

Q: What does the science of reading say about how children learn to read?

A: As members of a literate community, we read and write to express thoughts and emotions. These are *learned* activities that reside on a foundation of linguistic skills and are mutually

supportive. We decode from written letters to oral or silent language to comprehend word meaning. We encode from spoken language to letters to express meaning. Through *explicit* instruction in the decoding and encoding of words we grasp the *alphabetic principle*—that sounds in speech (phonemes) relate intentionally and conventionally to letters in written language (i.e., orthography). In English, this *orthographic mapping* extends beyond the consistent letter–sound relations of phonological decoding to include learning frequent, irregular words (e.g., *of*, *said*), morphemic elements (e.g., inflectional endings, plurals, affixes), and reliable syllable patterns (e.g., closed syllables such as *in-sect*). Mastering the depth and structure of English orthography is essential if students are to recognize words accurately and efficiently, thereby freeing cognitive resources to activate the linguistic devices and world knowledge critical for making text cohesive and, therefore, comprehensible (see Castles, Rastle, & Nation, 2018; Foorman, 2023; Rayner, Foorman, Perfetti, Pesetsky, & Seidenberg, 2001, 2002).

Additionally, we know from the Simple View of Reading (Gough & Tunmer, 1986; Reading = Word recognition X Language Comprehension) that language comprehension plays an equally important role in our ability to make sense of the text on the page. We understand words and text by applying vocabulary, syntax, semantics, and background knowledge (e.g., Foorman, 2022).

Q: If we know which reading instructional practices are based on empirical evidence, why aren't these evident-based practices used in classrooms?

A: Teacher preparation in colleges of education and professional development (PD) is largely informed by group B epistemologies and, therefore, are infrequently aligned with the science of reading. This results in teachers believing that systematic, explicit phonics instruction to ensure accurate and efficient word identification and spelling instruction to ensure fluent reading and writing are NOT important. This misinformed preparation and PD leads to encouraging bad instructional habits in K–1 classrooms, such as emphasizing pictures' meaning cues over word identification skills (i.e., the three-cueing system) and failure to form reading groups in which children can practice the letter–sounds taught in decodable text. Children need to apply phonic skills to work through a word and blend sounds together rather than guessing at meaning by using pictures or using a strategy of "first sound then guess." Reading groups should be informed by data and be flexible in composition. Teachers need to hear students read aloud and guide them to apply word identification strategies and learn to self-correct errors.

Academic diversity within classrooms makes differentiating instruction challenging. However, while teachers work with small groups other evidence-based strategies such as peer-assisted learning and meaningful center activities (e.g., Florida Center for Reading Research Student Center Activities) can be employed. Schoolwide plans for Response-to-Instruction (RtI) and Multitiered Systems of Support (MTSS) should also be in place to identify students needing additional reading support (e.g., Coyne et al., 2016; Pendharkar, 2023).

Q: Can systems-level approaches be utilized to encourage the use of evidence-based reading instruction?

A: Absolutely! Many examples exist, with the case of Mississippi being the most widely known. A private foundation (Barksdale Reading Institute) partnered with the MS legislature and the MS state board of education to bring in a superb State Superintendent of Education, Dr. Carey Wright, to implement a K–3 reading initiative. Dr. Wright worked with the IES-funded Regional Educational Laboratory Southeast to evaluate the initiative. The resulting IES report showed that gains in teacher knowledge on the procured PD modules (LETRS) were significantly associated with statewide coaches' observations of LETRS practices in the classrooms, student engagement, and students' progress on STAR reading assessments. A year later, MS was the only state in the nation to make significant reading gains on the National Assessment of Educational Progress (NAEP; Folsom et al., 2017; Foorman, 2020).

Thus, NYC Public Schools' reading mandate has the potential to realize gains in students' reading proficiency if well implemented and evaluated. Phasing in all elementary schools and secondary schools in a two-year period is overly ambitious. Replicating the Mississippi model of targeting K–3 cohorts of low-performing schools and then following those cohorts to upper elementary and middle schools is a more reasonable approach when resources are limited. The key to the success of NYC Reads is keeping the focus on improving the quality of classroom instruction with ongoing professional development (PD). One technique to aid ongoing PD is to video-record high implementing Phase 1 primary-grade teachers and use the videos in training Phase 2 teachers. Another technique is to utilize resources within the core reading program to ensure alignment of instruction, intervention, and assessment. To make pullout intervention affordable, examine cut points on universal screeners and classification indices to determine definitions of risk (Petscher, Kim, & Foorman, 2011). However, because students scoring below the 30th percentile on a norm-reference reading test are about one year behind, the best strategy to make intervention affordable is to reduce the number of struggling readers by improving classroom instruction. Dyslexia exists but not for 20% of the student population. That's the percentage of students who struggle to read because they haven't been taught well. Research suggests that dyslexia comprises about 5% of the student population and all but about 2% can be taught to read (Foorman & Al Otaiba, 2009; Foorman, Breier, & Fletcher, 2003).

References

Baker, S., Lesaux, N., Jayanthi, M., Dimino, J., Proctor, C. P., Morris, J., … Newman-Gonchar, R. (2014). *Teaching academic content and literacy to English learners in elementary and middle school* (NCEE 2014-4012). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/english_learners_pg_040114.pdf.

Berkeley, S., Scruggs, T. E., & Mastropier, M. A. (2012). Reading comprehension instruction for student with learning disabilities, 1995-2006: A meta-analysis. *Remedial and Special Education, 31,* 423-436. https://doi.org/10.1177/0741932509355988

Castles, A., Rastle, K., & Nation, K. (2018). Ending the reading wars: Reading acquisition from novice to expert: *Psychological Science in the Public Interest*, *19*(1), 5–51. https://doi.org/10.1177/1529100618772271

Connor, C. M., Morrison, F. J., Fishman, B. J., Schatschneider, C., & Underwood, P. (2007). THE EARLY YEARS: Algorithm-guided individualized reading instruction. *Science, 315*(5811), 464–465. https://doi.org/10.1126/science.1134513

Coyne, M., Oldham, A., Leonard, K., Burns, D., & Gage, N. (2016). Delving into the details: Implementing multitiered K–3 reading supports in high-priority schools. In B. Foorman (Ed.), Challenges to implementing effective reading intervention in schools. *New Directions for Child and Adolescent Development*, *154*, 67-85. http://dx.doi.org/10.1002/cad.20175

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,* 393-447. https://doi.org/10.3102/00346543071003393

Ehri, L.C., Nunes, S. R., Willows, D., M., Schuster, B. V., Yaghoub-Zadeh, Z., & Shanahan, T. (2001). Phonemic awareness instruction helps children learn to read: Evidence from the National Reading Panel's meta-analysis. *Reading Research Quarterly, 36,* 250-287. https://doi.org/10.1598/RRQ.36.3.2

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Folsom, J., Smith, K., Burk, K, & Oakley, N. (2017). Educator outcomes associated with implementation of Mississippi's K–3 early literacy professional development initiative (REL 2017-270). https://ies.ed.gov/ncee/edlabs/regions/southeast/pdf/REL_2017270.pdf

Foorman, B. (2023). Learning the code. In S. Cabell, S. Neuman, & N. Patton Terry (Eds.). *Handbook on the science of literacy* (pp. 73-82). New York, NY: Guilford Press. 000-Cabell_Book.indb (thereadingforum.com)

Foorman, B. (Fall, 2022). Improving comprehension through vocab: Effective instructional strategies in grades 4–8. *Literacy Today*, 39–41. Foorman_ILA.pdf (fcrr.org)

Foorman, B. (2020). State policy levers for improving literacy. https://compcenternetwork.org/sites/default/files/archive/StatePolicyLeversforImprovingLiteracy.pdf

Foorman, B. R., & Al Otaiba, S. (2009). Reading Remediation: State of the Art. In K. Pugh and P. McCardle (Eds.), *How children learn to read: Current issues and new directions in the integration of cognition, neurobiology and genetics of reading and dyslexia research and practice* (pp. 257-274). New York, NY: Psychology Press. https://psycnet.apa.org/record/2009-01286-013

Foorman, B., Beyler, N., Borradaile, K., Coyne, M., Denton, C., Dimino, J., …Wissel, S. (2016). *Foundational skills to support reading for understanding in kindergarten through 3rd grade* (NCEE 2016-4008). Washington, DC: National Center for Education Evaluation and Regional Assistance (NCEE), Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/wwc_foundationalreading_070516.pdf

Foorman, B., Breier, J., & Fletcher, J. (2003). Intervention aimed at improving reading success: An evidence-based approach. *Developmental Neuropsychology*, *24*(2 &3), 613-619. https://doi.org/10.1080/87565641.2003.9651913

Foorman, B.R., Schatschneider, C., Eakin, M.N., Fletcher, J.M., Moats, L.C., & Francis, D.J. (2006). The impact of instructional practices in grades 1 and 2 on reading and spelling achievement in high poverty schools. *Contemporary Educational Psychology*, *31*, 1-29. https://doi.org/10.1016/j.cedpsych.2004.11.003

Gersten, R., Baker, S.K., Shanahan, T., Linan-Thompson, S., Collins, P., & Scarcella, R. (2007). *Effective literacy and English language instruction for English learners in the elementary grades: A practice guide* (NCEE 2007-4011). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/20074011.pdf.

Gersten, R., Compton, D., Connor, C.M., Dimino, J., Santoro, L., Linan-Thompson, S., & Tilly, W.D. (2008). *Assisting students struggling with reading: Response to Intervention and multi-tier intervention for reading in the primary grades. A practice guide*. (NCEE 2009-

4045). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/rti_math_pg_042109.pdf

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. Remedial and *Special Education, 7,* 6-10. https://doi.org/10.1177/074193258600700104

Kamil, M. L., Borman, G. D., Dole, J., Kral, C. C., Salinger, T., & Torgesen, J. (2008). *Improving adolescent literacy: Effective classroom and intervention practices: A practice guide* (NCEE #2008-4027). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/adlit_pg_082608.pdf.

National Reading Panel (2000). *Teaching children to read, an evidence-based assessment of the scientific research literature on reading and its implications for reading instruction: Reports of the subgroups*. Washington, DC: National Institute of Child Health and Human Development. https://www.nichd.nih.gov/sites/default/files/publications/pubs/nrp/Documents/report.pdf

National Institute for Literacy (2008). *Developing early literacy: Report of the National Early Literacy Panel*. Retrieved at https://lincs.ed.gov/publications/pdf/NELPReport09.pdf

National Research Council (2002). *Scientific research in education*. Washington, DC: National Academy Press. Scientific Research in Education | The National Academies Press (also, ShavelsonTowne_ScientificResearchinEducation (1).pdf)

Pendharkar, E. (October 13, 2023). MTSS: What is Multi-Tiered System of Supports? *EducationWeek*. MTSS: What Is a Multi-Tiered System of Supports? (edweek.org)

Petscher, Y., Cabell, S., Catts, H., Compton, Foorman, B., Hart, S., … Wagner, R. (2020). How the science of reading informs 21st-century education. *Reading Research Quarterly*, 55(Suppl. 1), S267-S282. https://doi.org/10.1002/rrq.352

Petscher, Y., Kim, Y., Foorman, B. (2011). The importance of predictive power in early screening assessments: Implications for placement in a response to intervention framework. *Assessment for Effective Instruction*, *36*(3), 158-166. https://doi.org/10.1177/1534508410396698

Rayner, K., Foorman, B., Perfetti, C.A., Pesetsky, D., & Seidenberg, M.S. (2002). How should reading be taught? *Scientific American*, *286*(3), 84-91. (4) (PDF) How Should Reading be Taught? (researchgate.net)

Rayner, K., Foorman, B. R., Perfetti, C. A., Pesetsky, D., & Seidenberg, M. S. (2001). How psychological science informs the teaching of reading. *Psychological Science in the Public Interest, 2(2),* 31-74. http://doi.org/10.1111/1529-1006.00004

Shanahan, T., Callison, K., Carriere, C., Duke, N. K., Pearson, P. D., Schatschneider, C., & Torgesen, J. (2010). Improving reading comprehension in kindergarten through 3rd grade: A practice guide (NCEE 2010-4038). Washington, DC: National Center for Education Evaluation and Regional Assistance, Institute of Education Sciences, U.S. Department of Education. Retrieved from https://ies.ed.gov/ncee/wwc/Docs/PracticeGuide/readingcomp_pg_092810.pdf

Stanovich (2003). Understanding the styles of science in the study of reading. *Scientific Studies of Reading, 7(2)*, 105-126, http://dx.doi.org/10.1207/S1532799XSSR0702_1

Therrien, W. J. (2004). Fluency and comprehension gains as a result of repeated reading: A meta-analysis. Remedial and Special Education, 25, 253-261. https://doi.org/10.1177/07419325040250040801

Wanzek, J., Vaughn, S., Scammacca, N., Gatlin, B., Walker, M. A., & Capin, P. (2016). Meta-analyses of the effects of Tier 2 type reading interventions in grades K-3. *Educational Psychology Review, 28,* 551-576. https://doi.org/10.1007/s10648-015-9321-7

Wanzek, J., Vaughn, S., Scammacca, N. K., Metz, K., Murray, C. S., Roberts, G., & Danielson, L. (2013). Extensive reading interventions for students with reading difficulties after Grade 3. *Review of Educational Research, 83,* 163-195. https://doi.org/10.3102/0034654313477212