**Science of Reading Policies:
International Impacts and Impressions**

education policy analysis archives

A peer-reviewed, independent,
open access, multilingual journal

epaa aape

Arizona State University

Volume 33 Number 82 November 18, 2025 ISSN 1068-2341

A View from Within: A Critique of North Carolina Science of Reading Policy for Teacher Professional Development

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Citation: Rowe, M. W., & Thrailkill, L. D. (2025). A view from within: A critique of North Carolina science of reading policy for teacher professional development. *Education Policy Analysis Archives, 33*(82). https://doi.org/10.14507/epaa.33.8621 This article is part of the special issue *Science of Reading Policies: International Impacts and Impressions*, guest edited by Danielle Dennis and Rachael Gabriel.

Abstract: North Carolina presents a compelling case of Science of Reading (SOR) legislation and policy. Few large states have embraced SOR as comprehensively and as rapidly (e.g., Schwartz, 2022). This conceptual article provides a rich description and critique of the centerpiece of SOR policy implementation in North Carolina: Language Essentials for Teachers of Reading and Spelling (LETRS) training (Moats & Tolman, 2019a, 2019b). LETRS was required for all K-5 teachers and offered to University of North Carolina System faculty as a result of SOR legislation (Excellent Public Schools Act of 2021). This two-year training cost at least $114 million to implement (Hui, 2023) despite limited evidence regarding improved student reading outcomes (Garet et al., 2008; Kuchle et al., 2018). Through reflection on our experiences in LETRS, including the teacher manuals, online modules, and synchronous trainings (Moats & Tolman,

Journal website: http://epaa.asu.edu/ojs/
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Manuscript received: 30/9/2024
Revisions received: 7/6/2025
Accepted: 7/31/2025

2019a, 2019b), we identified concerns for the quality of training design and the validity of content. We raise important questions about a program that presents itself as comprehensive, scientifically grounded, and pedagogically neutral, but in reality, it advances narrow, inaccurate, and deficit-oriented views of literacy and learners.
Keywords: Science of Reading; reading policy; professional development; LETRS; teacher educators

Una mirada desde dentro: Una crítica a la política de ciencia de la lectura en Carolina del Norte para el desarrollo profesional docente

Resumen: Carolina del Norte presenta un caso convincente de legislación y política sobre la Ciencia de la Lectura (*Science of Reading*). Pocos estados grandes han adoptado la CdL de manera tan integral y rápida (e.g., Schwartz, 2022). Este artículo conceptual ofrece una descripción detallada y una crítica al eje central de la implementación de la política de CdL en Carolina del Norte: la capacitación *Language Essentials for Teachers of Reading and Spelling* (LETRS) (Moats & Tolman, 2019a, 2019b). La formación LETRS fue obligatoria para todos los docentes de K-5 y ofrecida al profesorado del Sistema de la Universidad de Carolina del Norte como resultado de la legislación sobre CdL (*Excellent Public Schools Act de 2021*). Esta capacitación de dos años ha costado al menos 114 millones de dólares (Hui, 2023), a pesar de la limitada evidencia sobre la mejora en los resultados de lectura de los estudiantes (Garet et al., 2008; Kuchle et al., 2018). A partir de la reflexión sobre nuestras experiencias en LETRS—incluidos los manuales docentes, los módulos en línea y las formaciones sincrónicas (Moats & Tolman, 2019a, 2019b)—identificamos preocupaciones sobre la calidad del diseño de la formación y la validez del contenido. Planteamos preguntas importantes sobre un programa que se presenta como integral, científicamente fundamentado y pedagógicamente neutral, pero que en realidad promueve visiones restringidas, inexactas y deficitarias de la alfabetización y de los estudiantes.
Palabras-clave: Ciencia de la Lectura; política de lectura; desarrollo profesional; LETRS; formadores de docentes

Um olhar de dentro: Uma crítica à política de ciência da leitura na Carolina do Norte para o desenvolvimento profissional docente

Resumo: A Carolina do Norte apresenta um caso relevante de legislação e política sobre a Ciência da Leitura (*Science of Reading*). Poucos estados grandes adotaram a CdL de forma tão abrangente e rápida (e.g., Schwartz, 2022). Este artigo conceitual oferece uma descrição detalhada e uma crítica ao eixo central da implementação da política de CdL na Carolina do Norte: a formação *Language Essentials for Teachers of Reading and Spelling* (LETRS) (Moats & Tolman, 2019a, 2019b). A formação LETRS foi obrigatória para todos os professores de K-5 e oferecida ao corpo docente do Sistema da Universidade da Carolina do Norte como resultado da legislação sobre CdL (*Excellent Public Schools Act de 2021*). Essa formação de dois anos custou pelo menos 114 milhões de dólares (Hui, 2023), apesar das evidências limitadas sobre a melhoria nos resultados de leitura dos estudantes (Garet et al., 2008; Kuchle et al., 2018). A partir da reflexão sobre nossas experiências no LETRS—incluindo os manuais dos professores, os módulos online e as formações síncronas (Moats & Tolman, 2019a, 2019b)—identificamos preocupações quanto à qualidade do desenho da formação e à validade do conteúdo. Levantamos questões importantes sobre um programa que se apresenta como abrangente, cientificamente fundamentado e pedagogicamente neutro, mas que na realidade promove visões restritas, imprecisas e deficitárias da alfabetização e dos aprendizes.

Palavras-chave: Ciência da Leitura; política de leitura; desenvolvimento profissional; LETRS; formadores de professores

A View from Within: A Critique of North Carolina Science of Reading Policy for Teacher Professional Development

Language Essentials for Teachers of Reading and Spelling (LETRS; Moats & Tolman, 2019a, 2019b) is an in-depth, long-term professional development (PD) program in literacy instruction associated with the current Science of Reading (SOR) political and policy movement in the United States. LETRS is used in many states and school districts across the United States, exerting influence on the professional learning opportunities afforded elementary teachers and their knowledge and implementation of literacy assessment and instructional practices. Despite widespread use, little research has been conducted on LETRS (Lexia LETRS, 2023). The research that does exist offers limited evidence of positive impacts on teacher knowledge or student reading outcomes.

North Carolina (NC) was one of the first U.S. states to require LETRS training for all elementary teachers as part of SOR legislation (Excellent Public Schools Act of 2021). As of June 2024, approximately 44,000 NC educators have completed the training (Rhyne, 2024), including us. Along with several colleagues, we completed LETRS 2021-2023 as part of a University of North Carolina (UNC) System faculty cohort. In this conceptual piece, we provide a critique of LETRS from our perspectives as teacher educators, literacy researchers, and former classroom teachers.

First, we provide an account of the NC SOR legislation and policy context that led to mandated LETRS training, followed by a review of the literature on research involving LETRS and, more broadly, teacher knowledge. Then, we provide an overview of LETRS training materials and describe our personal experiences within LETRS training. We argue that LETRS promotes narrow, sometimes inaccurate, and deficit-oriented understandings of literacy and literacy instruction. Although LETRS claims to align with the SOR, framed as the gold-standard of scientific knowledge about how reading develops (Lexia Learning, 2025), we demonstrate that key information provided to teachers in LETRS is misaligned with research.

Our reflective critique focuses on salient examples from our training. It is infused with our firsthand experiences during LETRS training, particularly as Dr. Tolman was our Year 2 trainer. We specifically mention Dr. Tolman solely because, as a co-author of LETRS, our year of training with her provides the clearest window into the instructional intentions of the materials. Our goal is to provide a nuanced perspective on a widely implemented, supposedly comprehensive, PD program that may misinform teachers and shape their instructional decision-making in ways that reinforce inaccurate and deficit-oriented understandings of learning to read.

Context of NC Legislation & Policy Implementation

We focus on LETRS because it serves as the backbone of many states' SOR policy initiatives. However, it is important to understand that LETRS training in NC for all K-5 teachers and select UNC System faculty members took place within a larger context of state-level SOR legislative and policy actions enacted over the last several years. Two parallel efforts to reform reading education occurred in NC: one within teacher education via the UNC Board of Governors and the UNC System Office, while the other took place within PreK-12 public education, via the North Carolina General Assembly and North Carolina Department of Public Instruction (NCDPI).

At best, these two streams of reform efforts only partially intersected, and ultimately, the PreK-12 education reforms came to dominate and direct efforts in higher education.

UNC System Reforms

In 2020, the UNC Board of Governors passed a Resolution on Teacher Preparation, (B.O.G. Res. [N.C., 2020]) requiring the UNC system to develop a Comprehensive UNC System Literacy Framework that would be adopted by all 15 educator preparation programs (EPPs) for elementary and special education-general curriculum teacher candidates. A UNC faculty task force developed the literacy framework during the Fall 2020 semester. EPP faculty across the system provided feedback and a final version was completed in February 2021. The UNC Literacy Framework established educator preparation standards for eight competency areas accompanied by implementation guidance and suggested strategies for instruction and assessment in university classrooms and field placements (NCDPI, 2024).

In 2021, each EPP conducted a three-phase self-study to assess and revise elementary and special education programs. The Resolution on Teacher Preparation included developing in-service teacher PD aligned with the literacy framework, leveraging UNC faculty expertise. The UNC System Office was to pilot a PD model by Summer 2021, but funding was not allocated, and NC General Assembly legislation redirected plans for in-service teacher PD.

NC General Assembly Reforms

While EPPs were engaged in mandated programmatic revisions, the state legislature passed the Excellent Public Schools Act of 2021. Responsibility for in-service teacher PD shifted to an external, for-profit vendor, LETRS. NC DPI divided all school districts into three cohorts for staggered starts to LETRS training (NCDPI, 2024). The PD took place between August 2021 and June 2024 and involved 115 school districts and 44,000 educators (mostly K-5 classroom teachers) (Rhyne, 2024). The financial cost of requiring LETRS training for all K-5 teachers is significant and continues to grow. Initially $12 million was appropriated for LETRS training in 2021 but the expenditures quickly swelled to $90 million (Fofaria, 2023), and later to $114 million (Hui, 2023). The full cost is unknown and has not yet been reported, as in addition to enrolling teachers in LETRS, many districts offered kick-off parties, stipends, and substitute pay (Doss Helms, 2021; Fofaria, 2022). At least one school district paid a per unit stipend that doubled in value if teachers earned "mastery" level certificates by scoring 80% or higher on LETRS unit assessments (Murphy, 2022).

In July 2021, the UNC System invited its EPPs to select a limited number of reading/literacy faculty to participate in LETRS PD. Several faculty members from our university volunteered to better understand what our current and future students would be expected to know and do to successfully support public school students. Though the experiences of UNC System faculty differed in some meaningful ways from the average classroom teacher, (e.g., our lack of a classroom of elementary-aged students with which to apply the skills we were taught) we experienced the same core LETRS content and delivery systems as every classroom teacher. This experience led us to dig deeper into the research behind and efficacy of LETRS.

Review of Research on LETRS and Teacher Knowledge

Before sharing our perspective on LETRS, we assess its effectiveness in improving teacher knowledge related to early literacy development and instruction and, more importantly, student outcomes. We draw primarily from "Product Evidence Base: Lexia LETRS Efficacy Research"

(Lexia LETRS, 2023), a report described as the LETRS evidence base. A total of 18 studies are summarized in the report and are categorized by the authors as: peer-reviewed publications (2), third-party program evaluations (4), and doctoral dissertations (12). Upon review, one of the doctoral dissertations is a master's thesis, one is an education specialist dissertation, and one is a capstone project. Other important characteristics of the research summarized include the outcomes being studied, the grade levels for students and/or teachers, the number of educator participants, targeted demographics, the specific LETRS program studied (including the edition), and the ESSA Tiers of Evidence. The report contains limited citation of high-quality, peer-reviewed research and limited empirical findings to support the efficacy of LETRS.

Limited Citation of High-Quality Research

Every Student Succeeds Act (ESSA) replaced No Child Left Behind in 2015 and encouraged schools/districts to select rigorously studied interventions demonstrated to improve student learning. The ESSA Tiers of Evidence can determine "which programs, practices, strategies, and interventions work in which contexts and for which students" (REL Midwest, 2019, p. 1). While not specifically designed to evaluate teacher PD, use of this standard makes good sense. The ESSA Tiers are used to denote Strong (Tier 1), Moderate (Tier 2), and Promising (Tier 3) evidence. A fourth tier, Rationale (Tier 4), is for well-designed studies not yet showing positive effects on a relevant outcome, with ongoing efforts to study the effects of the intervention.

Of the 18 studies, none are designated as Tier 1; one is designated as Tier 2, Moderate; none are designated as Tier 3; and 17 are designated as Tier 4, Rationale. According to ESSA guidelines, "Tier 4 encourages innovation and new research on promising practices" (REL Midwest, 2019, p. 2). While this designation offers some reason for optimism, LETRS PD has existed, in various iterations, since the 1990s (Moats, 2023). Hundreds of thousands of teachers have learned the content, and many millions of public dollars have been spent, yet to the best of our knowledge there are no studies that can point to its effectiveness for improving reading outcomes in general education. Only seven of the 18 studies had outcome measures related to teacher knowledge and practice, and all of these were designated as Tier 4 for effectiveness. The studies reviewed cover three LETRS editions—1st edition (3), 2nd edition (5), and 3rd edition (9), the version used in NC. According to Moats (2023), "... the evolution of course content and pedagogy (which continues to this day) has involved slowing down the pace, giving tons of varied practice, and increasing the frequency with which concrete activities are linked with theory and research," (p. 6). This kind of refinement across time is commendable, but this ongoing refinement complicates assessing its impact, with some content even differing between cohorts within online content and e-text versions provided during the three years of NC implementation.

Limited Empirical Findings to Support the Efficacy of LETRS

A full review of research on LETRS is beyond the scope of this paper, but below we highlight three relevant studies. These studies were selected because of their effectiveness or similarity to the situation in NC. The first, by Kuchle et al. (2018), is the only Tier 2 study. According to What Works Clearinghouse, this external evaluation targeted kindergarten and first grade students with disabilities comparing the Pennsylvania Dyslexia Screening and Early Literacy Intervention Pilot Program to a control group. The program provided designated interventionists and focused PD for teachers on LETRS Units 1-3, with 2,736 K-1 students participating. Using DIBELS as the outcome measure, two of six planned contrasts were statistically significant: kindergarten intervention students outperformed the control group in Letter Naming Fluency and Nonsense Words Fluency. Other comparisons, including Phonemic Segmentation and Oral Reading

Fluency, were not significant. The multiple components of the intervention make it difficult to isolate the specific impact of LETRS.

Next, Garet et al. (2008) was selected because of its similarity to ongoing efforts in NC. This study evaluated two PD interventions aimed at improving teacher knowledge and student reading achievement in high-poverty schools. The study used a modified LETRS 1st Edition to provide 48 hours of PD for Grade 2 teachers. Training for coaches was provided by the Consortium for Reading Excellence. Coaches attended all LETRS institutes and seminars with their assigned schools, a three-day coaching institute, and participated in four on-site visits. Grade 2 teachers in the coaching condition were expected to receive 60 hours of coaching during the school year, in addition to the LETRS PD. Grade 2 teachers in the institute and seminar condition received only the LETRS PD. All teachers completed a pre- and post-intervention survey and were observed three times during reading instruction. Teachers in both conditions outperformed comparison teachers on the overall teacher knowledge total score and on a word-level subscale. There were no differences between groups for a meaning-level subscale. Also, teachers in both conditions employed more explicit instruction than comparison teachers, but they did not differ in their use of independent student activities or differentiated instruction. The overall impact of coaching on teaching practices was not statistically significant. Most importantly, improved teacher knowledge and a greater use of explicit instruction did not result in improved student reading achievement. While improved outcomes for students is not a claim made by Lexia's efficacy report (2023), it does state, "Teachers who completed LETRS training demonstrated higher levels of knowledge and improved instructional practice across a variety of objective and self-rated measures" (p. 2).

"Educator Outcomes Associated with Implementation of Mississippi's K-3 Early Literacy Professional Development Initiative" (Folsom et al., 2017) was selected for its relevance to the motivation for the NC SOR initiative. This study examined the "Mississippi Miracle" and the changes in teacher knowledge and practice for over 7000 teachers who participated in the PD initiative. One important finding was a small statistically significant increase in teacher knowledge of early literacy skills associated with progress in the PD program. Over the study, teacher knowledge scores improved from the 48th percentile (answering 16-17/31 items correctly) to the 59th percentile (answering 18-19/31 items correctly). While statistically significant, is there any educational significance in this change? Would getting one or two more answers correct on a teacher knowledge survey make a difference in student outcomes? Possibly, depending on the nature of the questions, but no specifics on which questions showed the greatest improvements are included.

As Folsom et al. (2017) note, previous studies (Binks-Cantrell et al., 2012; Bos et al., 2001) have also obtained low teacher knowledge scores when using similar measures. These studies, however, were looking at teacher knowledge at a single point in time and were not measuring growth in teacher knowledge because of PD. Given the limited evidence of effectiveness for LETRS PD, the statement, "Educators who complete LETRS gain the deep knowledge needed to be literacy and language experts in the science of reading" (Lexia LETRS, 2023, p. 1) in the introduction to the report seems to be unsubstantiated, as one might reasonably expect "experts in the science of reading" to be more effective at teaching children to read than teachers with more limited expertise.

It is unsurprising that few peer-reviewed studies show strong evidence of LETRS PD effectiveness. Reading instruction is complex, and many factors influence student outcomes. For example, in NC, LETRS PD began alongside the reinstatement of DIBELS as a state-mandated assessment for K-3, affecting teacher accountability. Teachers may have adopted new practices to improve DIBELS scores, regardless of LETRS participation. Many districts also revamped their K-3 reading programs to align with SOR priorities and DIBELS, making it hard to attribute

improvements to LETRS alone. Both changes were also implemented in the immediate wake of the 2020 COVID-19 pandemic, which also likely impacted instruction.

Connecting teacher knowledge, practice, and student outcomes is complex and studies on PD programs often lack controls for variables affecting instruction and achievement. However, Carlisle et al. (2009) found limited evidence that teacher knowledge significantly impacts student reading achievement and McCutchen et al. (2002) noted that deeper teacher knowledge is related to improved student learning. Regardless, there is no direct evidence that two years of LETRS PD is necessary for all teachers or that it will improve reading outcomes for students over other professional development programs.

Insider View of LETRS

During the two-year LETRS PD we participated in a study team that met regularly outside of prescribed PD activities to document reflections on the training content, online modules, and synchronous sessions. After each synchronous training, we held debriefing sessions to discuss our experiences and the corresponding unit. We collected group chats, video recordings of debriefings, and notes on session design and content. As literacy experts and educators, we examined LETRS materials and training, raising concerns about the program's design, content, and implementation. We first describe the LETRS materials and then reflect critically on our experiences in the faculty cohort.

LETRS Materials

LETRS is designed as a two-year, multifaceted training program that proposes to equip educators with comprehensive reading instructional skills that align with the SOR (Lexia Learning, 2025). PD materials form part of the broader learning infrastructure by acting as a scaffold that facilitates educators' engagement with, and acquisition of, the developing knowledge of the field (Woulfin & Gabriel, 2020). LETRS includes self-paced online modules, printed manuals, classroom application activities, and synchronous trainings. This approximately 168 hours-long training is intended to support teachers as they navigate the complexities of reading instruction.

The manual can be accessed as a two-volume printed text or as an e-text through the LETRS online portal. Each volume contained four units, each unit was divided into six to eight sessions, and readings were expected to take between 1140 minutes (19 hours) and 1670 minutes (27.8 hours) (Lexia LETRS, 2022). Notably, as we explored these materials, we noticed differences between the printed text and the e-text. Other than a changed version number in fine print on the copyright page, there was no notification to alert participants of changes and no indication of what was different or why. It was difficult to fully identify how much changed while we participated in the training, as each manual is more than 300 pages long. However, most prominent of these changes involved what LETRS recommends regarding instruction in phonemic awareness and is discussed later in further detail.

Complementing each unit are online modules that include recorded explanations of the material in the manuals, information in the form of paragraphs or diagrams with narration, interactive quizzes, videos of classroom instruction, and activities for practical application (termed "Bridge to Practice"). Finally, the PD includes eight synchronous training sessions. These six-hour sessions are designed for educators to review the unit materials guided by a LETRS trainer. Some teachers have opportunities to participate in synchronous trainings with an in-person trainer. However, during the COVID-19 pandemic, the period during which most NC school districts began

LETRS training, facilitation was typically delivered remotely by trainers through video conferencing, even as teachers were gathered in common physical spaces.

Table 1

Overview of LETRS Units

	Unit	Unit Name	Unit Description
Year 1	1	The Challenge of Learning to Read	Introduces the scientific foundations of reading instruction, with an emphasis on explicit, systematic teaching.
	2	The Speech Sounds of English	Highlights the connections between understanding speech sounds and reading/spelling proficiency.
	3	Teaching Beginning Phonics, Word Recognition, and Spelling	Explores the patterns and structures of English orthography and how they should be taught.
	4	Advanced Decoding, Spelling, and Word Recognition	Describes advanced word recognition skills (e.g., morphology) and how to teach and assess spelling.
Year 2	5	The Mighty Word: Oral Language and Vocabulary	Examines the role of oral language development, primarily vocabulary, as a foundation for reading.
	6	Digging for Meaning: Understanding Reading Comprehension	Overview of factors impacting reading comprehension (e.g., language, cognitive skills, prior knowledge, text structures)
	7	Text-Driven Comprehension Instruction	Explanation of how to plan comprehension instruction.
	8	The Reading-Writing Connection	Focuses on writing as a tool to support reading development.

LETRS Trainers

We participated in LETRS training in a UNC cohort comprised of approximately 35 faculty teaching literacy or reading courses from 10 UNC EPPs (the remaining five EPPs were placed in a separate cohort). Faculty members across the cohort had expertise in teacher education, including reading/literacy education, special education, and curriculum and instruction. All synchronous trainings were conducted via video conferencing to support faculty located across the state. During 2021-2022, our cohort's virtual sessions were facilitated by three different LETRS trainers across Units 1-4. These live sessions were not tailored to the needs and interests of teacher educators. We received essentially the same Year 1 synchronous trainings that would be provided to K-5 teachers taking LETRS. Each Year 1 trainer deployed a standard set of LETRS training slides, poll questions, break-out sessions, and whole group activities. Surprisingly, during both an initial kick-off session for all UNC EPP faculty and our cohort's Unit 1 training, teacher educators were explicitly identified as a major cause for children's difficulties with learning to read. We were told we probably weren't exposed to any of the information provided in LETRS in our teacher preparation programs.

While the program's standard structure and materials were intended to provide a comprehensive approach to reading instruction, we encountered inaccuracies (e.g., suggested

teaching and assessment practices, views on cultural and linguistic diversity, use of research). These elements highlighted broader concerns regarding the training quality and content validity. In the following section, we focus on the design of LETRS professional development.

LETRS Professional Development Design

The LETRS training includes design features that can support robust teacher learning. The training is multimodal (Bouchey et al., 2021), takes place over a long period of time (Clarke & Hollingsworth, 2002; Darling-Hammond et al., 2017), and applies to classroom practice (Darling-Hammond et al., 2017; Main & Pendergast, 2017) through "Bridge to Practice" activities in each unit. However, the potential power for teacher learning is counteracted by several elements that undercut teacher engagement, agency, and autonomy. There is a widespread focus on the development of low-level skills and discrete knowledge. PD content is taught and assessed in the online modules through drills, simple tasks like matching and sorting vocabulary, and short quizzes about videos in which questions are sometimes worded in a leading manner. Furthermore, if teachers come to the synchronous sessions having read the textbook and completed the unit online modules (which is the expectation), they encounter significant repetition of material and activities. Though spiraling back to previously encountered concepts and skills facilitates deeper learning (Bruner, 1960), the execution of this approach frequently involved verbatim repetition. Cyclical learning is only the first step: each spiral should increase in depth and complexity. In most respects, the LETRS learning experience is a circle, rather than a true spiral.

We are skeptical about the depth of teachers' learning from LETRS, particularly the assessment of learning in online modules. Participants must complete readings, videos, quizzes, open response tasks, and a 10-question unit assessment, but the validity of the assessment performance is questionable. Given the time constraints teachers face, it is easy to imagine scenarios where answers are shared among colleagues, or found through online searches, and anecdotal evidence suggests that both occur. We ourselves discovered shortcuts, such as playing multiple videos simultaneously and answering quiz questions based on leading prompts or choosing the right answer after initially choosing the answer LETRS considers to be wrong with no penalty. Finally, for the 10-question culminating unit assessments, we noticed that most could be answered solely by completing the online modules; on average only one to three items required reading the teacher manuals.

Synchronous trainings, though offering interactive tools like polls, chats, and breakout rooms, also fell short in promoting meaningful engagement. While these tools were available, they were often used superficially. Responses in the chat were sometimes ignored or insufficiently addressed. Engagement activities, such as polls and worksheets, had one correct answer rather than being a way to integrate participants' ideas. A productive toolkit was present, but it is how the interactive tools were used and the overall balance of time allocated to such activities that was lacking.

During synchronous trainings, it was unclear to us why we spent considerable time on low-level activities (e.g., sorting pictures of foods). At other points, we found ourselves lost in lengthy, confusing word recognition activities devoid of context, leading us to wonder what the purpose was and how participating was meant to translate to helping teachers better teach children to read. Sadly, on these occasions we felt how we imagine students who find learning to read and write difficult might feel when their learning experiences are incoherent and lack curricular transparency.

Synchronous session trainers strongly influenced the experience, and their facilitation skills varied considerably. For example, trainers' tolerance for open discourse, including critique. Our trainer for Units 1 and 3 mostly lectured and afforded little space for open discussion of LETRS

topics. We had no opportunities in Unit 1 to engage in open discussion of the theoretical models of reading presented. Our trainer stated that the Simple View of Reading (SVR; Gough & Tunmer, 1986), which posits that reading comprehension is the product of one's decoding skills and language comprehension, "always holds up" in research, despite the existence of more recent and complex models of reading. Two special issues of *Reading Research Quarterly* in 2020-2021 were devoted to the SOR conversation, including several articles that discussed how SVR does not fully capture the complexity and multidimensionality of reading, including sociocultural aspects of the development and use of literacy and language (e.g., Aukerman & Chambers Schuldt, 2021; Compton-Lilly et al., 2020; Duke & Cartwright, 2021). Furthermore, multiple scholars have proposed more complex models of reading (e.g., Cromley & Azevedo, 2007; Duke & Cartwright, 2021; Kim, 2017) that refine and extend upon the SVR by specifying subcomponents of decoding and language comprehension and illuminating the interactional overlap between these two broad capacities (Tierney & Pearson, 2024). Yet, LETRS revisits the SVR repeatedly across the two-year training, framing it as the essential foundation for understanding the reading process and the core explanation for students' reading difficulties, without addressing important refinements and interactive components captured in other models.

In contrast, the two trainers assigned to our cohort for Units 2 and 4 were more tolerant of questions and discussion. Consequently, the group dynamic was livelier and more talkative. Our Unit 2 trainer tried to answer all questions and made space for discussions that at times challenged the LETRS content she was sharing. Perhaps as a result, multiple faculty members initiated making connections between LETRS content and our roles as teacher educators. In our Unit 4 training, after our trainer discovered we were teacher educators, she deliberately helped make connections to LETRS content, repeatedly asking us to consider what specific materials and topics would mean for pre-service and in-service teachers (e.g., "How would you ask your teachers about what to review with their scholars?").

Our Year 2 trainer frequently referenced research to engage with us as scholars, even providing additional articles. However, her interpretation of research and its application to classroom instruction sometimes conflicted with common understandings. For example, in Unit 5 during an activity on sorting vocabulary terms, she strongly disagreed with our classifications. We were tasked with sorting literacy terms from the LETRS manual into Tier 1, 2, and 3 categories (Beck et al., 2013). As a cohort, we quickly reached consensus on nearly all words, but our trainer repeatedly requested that we change our placement of several Tier 3 words. Although puzzled at the time, we now relate this episode to LETRS' treatment of the concept of tiered vocabulary, which conflicts with our understanding of Beck et al.'s (2013) body of work on vocabulary instruction. Based on our training experience, LETRS appeared to present word tiers as definitive and fixed. This approach contrasts with a more flexible method whereby teachers consider student knowledge and context of terms to categorize them, thereby making informed instructional decisions about what to teach and when.

The NCDPI Office of Early Learning asserted a chief benefit of implementing a single PD program to be stable, uniform learning experiences, "For this initiative, Lexia, the vendor who offers the LETRS training, is being utilized to create consistency across schools and educator preparation programs" (NCDPI, 2024, p. 51). However, if our cohort serves as any indication, teachers across the state likely experienced a diverse range of training conditions and learning opportunities within LETRS due, in part, to the varied facilitation skills and literacy expertise of LETRS trainers. Inconsistent facilitation can reduce the infrastructural benefits of widespread sustained PD (Woulfin & Gabriel, 2020).

LETRS Content

LETRS positions itself as a comprehensive resource for literacy instruction (Lexia LETRS, n.d.), like a superstore for reading education—promising to provide everything teachers need for reading instruction. In practice, they are more like a produce stand; they excel in providing a few specialized products but lack the variety necessary to address every need. LETRS specializes in a narrow, though essential, set of instructional skills focused on phonemic awareness, phonics and spelling instruction. This narrow focus may lead teachers to underemphasize other important skills and strategies (e.g., reading connected text, developing comprehension skills, writing skills, and analysis skills, etc.) while also neglecting to acknowledge the multi-dimensional needs of individual teachers for their own learning (Korthagen, 2017).

The quality of the content in LETRS, in our view, deteriorated over time. The materials in the first volume (Units 1-4), though open for discussion and debate, are thoroughly explored and supported. In the second volume, materials are superficially examined, and support is more limited. Vocabulary, comprehension, and writing are topics with as much complexity and nuance as phonemic awareness, spelling, and word recognition. An argument could be made that since phonemic awareness, spelling, and word recognition represent the core focus of the SOR movement, it makes sense that this PD would focus more in-depth attention on them. However, as noted earlier, LETRS promotes itself as a comprehensive PD (Lexia LETRS, n.d.). Below we discuss several salient examples of questionable content: quantitative vs. qualitative methods, decontextualized vs. contextualized reading, transfer of discrete skills to more open-ended literacy tasks, phonemic awareness instruction, and deficit views of non-dominant communities.

Quantitative vs. Qualitative Methods

LETRS asserts that educational decisions should be rooted in scientific research—a point with which we largely agree. Our concern lies in the methodology that underpins the research base for LETRS. It represents a narrow slice of the broader landscape of reading instruction research. Of the 791 citations in the two LETRS manuals (Moats & Tolman, 2019a, 2019b), approximately 41% come from peer-reviewed journal articles (see Table 2), and the majority of those exclusively employ quantitative methods (see Table 3). Notably, a substantial proportion of the articles cited do not report original research (57 of 192 articles), but rather represent other types of manuscripts, such as practitioner-oriented articles and theoretical/conceptual discussions.

One of the few qualitative studies cited, Leander & Rowe (2006), was not acknowledged for its insights but was instead used to showcase text judged as difficult to comprehend (Moats & Tolman, 2019a). This narrow focus is not unique to LETRS. For example, the National Reading Panel excluded qualitative research from their analysis. However, that exclusion was made alongside an acknowledgement that qualitative work can be rigorous and evidence-based and that it should be considered when trying to understand the complexities of delivering instruction in real world contexts (NICHD, 2000).

Different types of research address different questions, so relying heavily on quantitative studies means LETRS largely omits the knowledge gained from qualitative research. While experimental designs, especially randomized controlled trials (RCTs), are regarded as the gold standard in many fields, their credibility in authentic educational contexts is often questioned (Proctor & Chang-Bacon, 2020). Quantitative research relies on statistical tests and assumptions to validate its claims, but those findings come with limitations that must be considered when interpreting results. Jones et al. (2012)—a source cited in LETRS—succinctly capture this: "An RCT can provide important evidence and new understandings about a given research 'problem,' but it cannot provide evidence which translates directly into classroom practice or policy" (p. 1257).

Interestingly, even though Jones et al.'s study includes qualitative insights, LETRS solely focuses on its quantitative results to substantiate its arguments.

Table 2

References in LETRS manuals by text type

Text Type	%
Journal Articles	41.44%
Books	22.92%
Teacher Resources	15.74%
Book Chapters	6.71%
Other	4.86%
Reports	4.40%
Children's Books	3.94%

Table 3

Journal articles cited in LETRS manuals by research type

Study Type	Method		Count of Articles
Quantitative	Correlational		64
	Intervention	Randomized Control Trial	13
		Quasi-Experimental	4
	Descriptive		16
	Quasi-Experimental		6
	Meta Analysis		4
	Efficacy Results		1
	Unclear		2
	Subtotal (Quantitative)		*110*
Not a Study*			57
Literature Review			12
Qualitative	Observation		5
	Observation & Interviews		1
	Intervention		1
	Subtotal (Qualitative)		*7*
Content Analysis			5
Program Impact Study			1
Total			192

Note: *Includes practitioner-oriented articles, theoretical or conceptual discussions, and other article types not reporting original empirical research.

Decontextualized vs. Contextualized Reading

LETRS' stance on independent reading of connected text seems contrary to the larger field's view (Allington & McGill-Franzen, 2021; Vaughn & Fletcher, 2023). It is surprising that LETRS provides limited information on how to support students' reading of connected text, particularly in the primary grades. During our training, the longest texts we saw students reading in videos across Units 1-4 were single sentences. We learned that LETRS discourages K-1 students from reading books independently. During a discussion when a cohort member tried to clarify LETRS' position on providing young readers with opportunities to read authentic texts, our trainer stated it was not until the consolidated phase of word reading (Ehri, 2014; Miles & Ehri, 2019) that students' minds become pattern-seeking detectors and that only then should students engage in wide reading. This statement aligned with the LETRS manual, which states, "Most students do not complete the transition to consolidated, accurate, fluent reading until second or third grade" (Moats & Tolman, 2019a, p. 38).

When students read connected text, they practice decoding in a real-world context, build vocabulary, background knowledge, and the ability to understand and infer meaning—skills and knowledge that are essential for comprehension (Allington, 2013). Furthermore, continuous text provides opportunities for students to engage with narrative (e.g., character development, thematic elements) and informative features/structures (e.g., diagrams, text organization), fostering a deeper connection to reading and text engagement. By not advocating more strongly for the integration of connected text in early literacy instruction, LETRS may inadvertently contribute to a more fragmented approach to reading that overlooks the importance of comprehension and the joy of reading as a holistic, immersive experience. In addition, this take on when children should be reading independently ignores the variability of student needs. Some children will be ready to spend extended periods of time reading connected text independently, while others will need more support before gradual release to independent reading (O'Connor, 2014).

Understanding, creating, and critiquing texts require students to go beyond deciphering words on a page; they must engage with the content, analyze it, and form their own interpretations (Castles et al., 2018). These skills are crucial for students to become literate in a way that empowers them to navigate complex texts, express themselves creatively, and critically evaluate the information they encounter.

Transfer of Discrete Skills to Reading and Writing Connected Text

LETRS frames the literacy education of typically developing children in general education classrooms from a worldview that privileges explicit instruction, without regard to the degree of alignment with the cognitive demands and bounds of the task or domain. Explicit instruction is clearly important for the development of constrained skills (Paris, 2005). However, in our view, there is an over-emphasis on the explicit instruction of constrained skills in isolation, such as the development of phonological analysis and word recognition. Opportunities for the all-important transfer of discrete skills to reading and/or writing text in cohesive, integrated lessons were rarely observed in the videos of classroom instruction we were shown in Volume 1. Additionally, the complex cognitive and cultural processes underlying the unconstrained skills of language development, reading comprehension, and composing are quite different than those underlying word and sub-word level skills. Although LETRS devotes the second year of the training to the development of language and comprehension processes, the same emphasis on explicit instruction seen in Volume 1 (Units 1-4) is applied to Volume 2 (Units 5-8), creating an even greater mismatch in the types of teaching-learning interactions and application opportunities necessary to develop inferential and critical thinking.

Phonemic Awareness Instruction

As we progressed through our first year in LETRS we encountered contradictory guidance, both internal (that is, inconsistent within and across LETRS materials) and external (in opposition to established research findings), about how best to assess and instruct phonemic awareness. Starting with assessment, the core instrument provided is the Phonological Awareness Screening Test (PAST; Kilpatrick, 2015). Although current guidelines from the International Dyslexia Association (2022) and International Literacy Association (2020) suggest that it is appropriate for most children to begin with phoneme level tasks in kindergarten, it remains traditional for assessments of phonological processing to begin with syllable level tasks, followed by onset-rime level tasks, and conclude with phoneme level tasks, which is what we found in LETRS.

Phoneme blending and segmenting are the two essential phonemic tasks for learning to read and write as they map directly to decoding and encoding print (Brady, 2020; International Dyslexia Association, 2022; NICHD, 2000). However, the phoneme level of the PAST begins with challenging deletion and substitution tasks, passing over the customary initial steps of blending and segmenting phonemes. Nowhere in LETRS or the PAST explains why assessing blending and segmenting phonemes is omitted. When one of our colleagues questioned this omission during our Unit 2 synchronous training, our trainer stated that Kilpatrick's research showed what the most important skills are to teach, and we would expect students to have some of these "basic" skills from their oral language. Our experience, however, was that many children do not pick up these "basic" skills from their oral language, as these oral manipulations do not occur in natural speech, and instead need some explicit instruction followed by guided practice opportunities with application to print.

Contradictorily, LETRS draws on Ehri's phases of word reading (Ehri, 2014; Miles & Ehri, 2019) and advises teachers to assess blending and segmenting 2-3 phoneme words for students in the Partial/Early Alphabetic phases (Moats & Tolman, 2019a, p. 61). Furthermore, phoneme blending and segmenting are included within the "Hourglass", a figure developed to depict the optimal order of instruction (Moats & Tolman, 2019a, p. 103). In the top half of the hourglass figure, labeled Phonological Awareness, there are three levels: early (syllables, alliteration, onset-rime), basic (phoneme blending and segmenting), and advanced (phoneme deletion, substitution, and reversal). The bottom half of the hourglass, labeled Orthography, lists multiple sub-word level units (e.g., graphemes, digraphs, blends, vowel teams). At the center where the top and bottom halves meet is the ratio "1:1" and the phrase, "connect letters and sounds." The Hourglass figure misrepresents and obscures the reciprocal relationship between hearing, decoding, and encoding sounds in words by implying that students must have extensive control over phonemic manipulations before they can connect those skills to print. Phonemic awareness helps children learn to read and write *and* the very acts of reading and writing help build phonemic awareness (e.g., Scanlon & Vellutino, 1997; Stanovich, 1986).

In our view, the promotion of "advanced" phonemic awareness (APA) skills in LETRS presents three problems. First, APA is not a prerequisite for becoming a reader and writer (Clemens, et al., 2021). Blending and segmenting 3-4 phoneme words is a sufficient foundation for productive word recognition instruction (O'Connor, 2011). Second, success with more complex tasks like phoneme deletion is often tied to orthographic knowledge gained from print exposure through reading and writing (Castles et al., 2003; Perfetti et al., 1987). Third, there are opportunity costs in persisting with APA tasks well into the intermediate grades. There was no discussion of the curricular and cognitive trade-offs made by continuing to devote time to phonemic awareness with typically developing students who are already reading strategically.

Around the end of our second year, we encountered changes in the e-text regarding how LETRS presents phonemic awareness. The previous strong emphasis on developing APA was revised to give more attention to phoneme blending and segmenting. The top half of the "Hourglass" figure was redesigned and now carries the label "Phoneme Awareness" instead of "Phonological Awareness." The three divisions of early, basic, and advanced skills were replaced with a single category focused on phoneme blending and segmentation. We are in favor of such an influential, widely adopted PD program continuously improving its materials to bring them more in line with established research findings and effective instruction. However, we are concerned that no efforts were made to inform NC teachers of these updates.

Reinforcement of Deficit Views of Students from Non-Dominant Communities

The LETRS brochure claims that it will "provide an educator experience that validates and affirms diverse experiences and promotes an inclusive understanding of the world" (Lexia Learning, 2022, p. 4). While there were moments when this was true, overall, LETRS conveyed predominantly Western culture- and English language-centric views. This worldview was exemplified by a video we were shown during our Units 2 and 4 synchronous meetings, in which the narrator declared, "English is the language of literature and culture." Further, the program often discussed marginalized groups (e.g., racially minoritized students, multilingual learners, and those from low-income backgrounds) using deficit language across various media, including videos, module narration, and reading selections. It is conceivable that these Western culture- and English language-centric views may subtly influence how teachers perceive and interact with students from non-dominant communities.

LETRS emphasizes the importance of background knowledge for learning and comprehension, something we agree on. The question is, whose cultural knowledge should be recognized and valued in schools? In response to a cohort member's concerns that a reference to a Hart & Risley (1995) study could communicate a deficit perspective about low-income communities, our trainer acknowledged in the Unit 5 synchronous meeting that all children come to school with background knowledge and that the way teachers frame their background knowledge is consequential. Yet, Unit 6 promotes E.D. Hirsch's Core Knowledge curriculum—criticized for its Western bias. LETRS attempts to walk a fine line between acknowledging critiques of the Core Knowledge approach while expressing support for the cultural knowledge Hirsch determined was characteristic of well-educated adults:

> Hirsch's approach (2006) has been controversial. Arguing that there is a standard for what students should know in order to be 'educated' is not always popular, but most countries in the developed world have curricular standards that do just that. Hirsch's curricular outlines are based on defensible surveys and analyses and are not simply guesswork. However, while these have a role, it is also important to respect and accommodate individual differences in values, interest, goals, and abilities, and to diversify curriculum accordingly. (Moats & Tolman, 2019b, p. 95)

We appreciate that one of the chief social purposes of schooling is to develop some degree of collective knowledge. However, teachers in LETRS training are, on balance, exposed to mono-cultural views of what should count as cultural knowledge. The authors' use of terms like "developed world" and "accommodate" in their framing of Core Knowledge within their larger discussion of background knowledge reinforces the underlying Western-centric worldview we found across LETRS training materials.

During Unit 6, in a session called, "What causes poor comprehension?", multilingual learners are discussed alongside students diagnosed with language and learning disabilities. Within a section titled "Special Considerations for English Learners," LETRS acknowledges that "ELs are an extremely varied group, of course" (Moats & Tolman, 2019b, p. 91). However, this message was somewhat undermined by prior online module content that suggested all multilingual learners come to school without knowledge of academic language. One of the "symptoms" of language comprehension problems discussed is "impoverished or nonsequential retelling of basic events in a story or shared experience" (Moats & Tolman, 2019b, p. 89). In addition to the continued use of a term that connotes language deficits ("impoverished"), narratives that do not reflect the temporal and causal relationships privileged in Western culture are framed as inferior and possibly indicative of pathology. Absent from the discussion is an understanding that many cultures value non-linear narrative construction and socialize children into composing "nonsequential" personal narratives (Heath, 1983; Michaels, 1981).

In Unit 5, children who have had low language opportunities in the past are referred to as having a "vocabulary deficit" and being "verbally impoverished" (Moats & Tolman, 2019b, p. 9). A photo of a grim-looking young girl holding a cardboard sign that reads "please help" (as if she were possibly unhoused and panhandling) accompanies the online video narration, "Some children come to school already suffering from word poverty." Later, the narrator advises that educators can use instructional language to help students with "impoverished home language environments."

Toward the end of our training, we noticed that edits had been made in the Volume 2 e-text to several statements that had previously espoused deficit views towards linguistically, racially, and economically marginalized students. Much like the section on phonemic awareness, some of the online wording no longer matched our printed manuals. These changes aligned with statements our trainer made in our cohort's discussion of vocabulary development in Unit 5. For instance, she shared that LETRS is careful to use the term General American English instead of "Standard English" and that she replaced the term "dialects" with "language variations" in her personal speaking repertoire. We strongly support efforts to respectfully frame the linguistic and communicative capacities of children from non-dominant communities. However, we are concerned that again e-text edits were made without any transparent communication to LETRS participants and without acknowledgement of the outdated language that perpetuates injurious biases.

LETRS Implementation

In this section we describe our concerns with how LETRS adoption affected NC's learning infrastructure (e.g., duration, uneven implementation, missing support for providing instruction in higher order thinking (Garet et al., 2001)).

Extended PD programs come with a variety of potential benefits and challenges. Their length provides opportunities for deep reflection on a topic, more collaboration among teachers and increased mastery of specific skills and strategies (Desimone, 2009; Garet et al., 2001). These programs also: limit flexibility, sometimes preventing teachers and schools from responding to the changing needs in their specific context; can lead to program fatigue and disengagement where initial gains are lost over time; and can be implemented unevenly, both across contexts and over the duration of the PD (Borko, 2004).

Implementation of LETRS as a PD for all K-5 NC teachers has been uneven. This has left teachers in different circumstances depending on their school district (Schwartz, 2022). As noted earlier, some teachers received stipends to compensate for the additional work the training required, while some teachers were provided with substitute teachers so that the work could be completed during the school day. Both district actions supported teachers to focus on the training throughout

the two-year span. Others, however, were expected to juggle the PD without any compensation or time on top of the already full workload expected of the average teacher. This led to an inequitable amount of stress and time spent on the training across the state. Similarly, some schools created collaborative teams to engage with the training and integrate the LETRS content into classrooms. Elsewhere, teachers were expected to navigate the material in isolation. The patchwork approach to access and collaboration meant some teachers thrived in the program while others struggled (Le Cornu, 2013).

Further complicating these uneven experiences was a lack of meaningful differentiation based on teachers' knowledge and skills (Day & Gu, 2007). Lack of differentiation in any program will undermine the efficiency of that program. Whether a teacher had a wealth of knowledge regarding reading instruction (including systematic phonics instruction) or was brand new to the field, they received the same PD experience. This one-size-fits-all approach to instruction is congruous with how LETRS frames the learning of young students but does not align with what works best for training teachers. Without designing some options to account for different levels of expertise, LETRS forced teachers to spend extended time in redundant content. This wasted valuable time that could have been spent in more meaningful PD or planning instruction for their students.

Alongside issues of uneven access, differentiation, and collaboration was the underlying pressure tied to the LETRS implementation. Teachers faced pressure as completion of the online modules was surveilled by their districts (NCDPI, n.d.). For example, a teacher in one of our graduate courses reported getting mailbox notes reminding them to finish. While having expectations for completion is understandable, externally generated and closely monitored initiatives may also: prompt teachers to follow unquestioningly rather than engage critically, disrupt teachers' professional agency and resilience, and threaten teachers' motivation to implement what they learn (Day & Gu, 2007). The increased oversight seemed to be accompanied by an assumption that success in the LETRS program is ultimately measured by students' future success – despite little evidence that increased teacher knowledge about reading instruction gained via LETRS increases student reading outcomes (Garet et al., 2008). Without evidence connecting what teachers learn in LETRS to measurable gains in students' reading abilities, teachers are left bearing the brunt of responsibility for results that the program may not be equipped to deliver.

Conclusion

Educational policies have a significant impact on teaching practices and student outcomes and should be enacted with careful consideration to ensure they truly benefit educators and learners. In NC, the SOR policy mandating that all K-5 teachers undergo LETRS training missed the mark of thoughtful examination before implementation. LETRS claims to offer "comprehensive professional learning designed to provide early childhood and elementary educators and administrators with deep knowledge to be literacy and language experts in the science of reading" (Lexia Learning, 2022, p. 2). Although LETRS lasts two years and requires a considerable investment of time and resources, it falls short of offering teachers "comprehensive professional learning" in language and literacy due to the quality of the training design and the validity of the content.

Implementing LETRS has yielded some benefits, but many concerns also loom large. There is limited research supporting its effectiveness (Lexia LETRS, 2023), and even if such research existed, the fragmented and uneven implementation across NC has resulted in a patchwork of teacher experiences (Fofaria, 2022; Schwartz, 2022). Some teachers enjoyed robust support and

collaboration, while others navigated the material in isolation. Some teachers received consistent coaching from skilled facilitators, while others did not. The varied facilitation quality amplified inequities and cast doubt on the program's long-term impact as a unified PD experience.

Another considerable concern we have is the limited scope and use of research cited as evidence in LETRS materials. Despite LETRS' claim that it helps educators "distinguish between the research base for best practices and other competing ideas not supported by scientific evidence" (Lexia Learning, 2022, p. 4), we noticed a pattern of misinterpretation, selective inclusion, and omission of literacy research. LETRS is a prime example of a common problem with the deployment of research for educational policy and instructional decision-making, in that multiple claims are not substantiated by a close reading of the original research cited (cf. Hodge et al., 2020).

LETRS' focus on foundational skills comes at the sake of other vital literacy skills. The attention given to vocabulary, comprehension, and writing lack the depth needed to support teachers as they work to plan cohesive, comprehensive literacy instruction. LETRS' stance on reading connected text and their inconsistent guidance on phonemic awareness instruction and assessment are two examples of how the training can contradict the broader view from the field on literacy instruction. While we have highlighted these particular issues here, they are representative of a more extensive collection of conflicting information that we encountered over the two-year period of our training.

Even if the instructional content were flawless, a more insidious issue lies within: LETRS is grounded in a monolingual, ethnocentric perspective that doesn't reflect the cultural and linguistic diversity of today's classrooms. In an era where diverse, culturally sustaining pedagogy is called for (Aukerman & Chambers Schuldt, 2021), LETRS continues to lean into a one-size-fits-all approach (Moats & Tolman, 2019a, 2019b), possibly distancing students whose linguistic and cultural backgrounds do not fit this narrow mold and those who teach them. To move forward, literacy instruction must embrace research-backed, inclusive strategies that recognize the complexity of teaching and learning in diverse environments. In short, we need the pendulum to stop swinging so that parents, teachers, researchers, and all other stakeholders can work together to create better systems and strategies that lead to student success. Policies that mandate narrow approaches with limited evidence of efficacy, like requiring LETRS training for all K-5 teachers, are unlikely to meet these demands.

Acknowledgements

We express our appreciation to all the University of North Carolina System teacher educators we learned with during our LETRS training in 2021-2023. We especially thank our East Carolina University colleagues who contributed to our understandings of LETRS' design and content.

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Science of Reading Policies: International Impacts and Impressions

education policy analysis archives

Volume 33 Number 82 November 18, 2025 ISSN 1068-2341