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A Mixed Methods Study of South Carolina Reading Policy on Teacher Knowledge

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A MIXED METHODS STUDY OF THE IMPACT OF SOUTH CAROLINA READING POLICY ON TEACHER KNOWLEDGE

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ABSTRACT

This sequential explanatory mixed methods study examines the impact of the Language Essentials for Teachers of Reading and Spelling (LETRS) professional learning intervention on teacher knowledge within the context of South Carolina's reading policy.

Quantitative analyses of pre- and post-assessment data indicate significant improvements in teacher content knowledge of foundational literacy skills following LETRS training. Descriptive statistics and paired-samples t-tests demonstrate substantial gains in knowledge, particularly in Volume 1 of the LETRS curriculum. The study reveals notable increases in pre- and post-assessment scores, suggesting the effectiveness of LETRS in enhancing teacher expertise.

Qualitative findings from focus groups highlight the positive impact of LETRS on teacher knowledge and classroom practices. Stakeholders at various levels identify LETRS as a valuable tool for improving literacy instruction, citing enhanced understanding of foundational reading skills and observable improvements in student performance. However, challenges such as the need for structured time and aligned instructional resources are identified as inhibiting factors.

Leadership emerges as a critical factor in successful LETRS adoption. Effective leaders prioritize LETRS training, create supportive environments for teachers, and ensure alignment with best practices in literacy instruction.

Policy implications highlight the importance of prioritizing the science of reading in state initiatives, addressing implementation challenges, and integrating LETRS into teacher and education leader preparation programs. Practical recommendations include establishing support

networks for administrators, providing dedicated time for LETRS learning, and ensuring alignment of instructional resources with LETRS principles.

Future research should explore the relationship between LETRS training and classroom practice, investigate its impact on student outcomes, and contribute to the discourse on statewide implementation efforts. Overall, this study provides valuable insights into the role of LETRS in enhancing teacher knowledge and advancing literacy education in South Carolina.

DEDICATION

I dedicate this work to the students of South Carolina. My experience has reaffirmed that children aren't broken; instead, every system is perfectly designed to achieve the results that it is producing. Literacy is a fundamental civil right and the foundation for any successful outcome. We're wasting time if we're not addressing (il)literacy.

I remain deeply grateful to the teachers of South Carolina who tirelessly work to overcome the obstacles that stand in the way of student success. Your dedication and unwavering commitment to improving literacy skills have a profound impact on the lives of children and our communities.

ACKNOWLEDGMENTS

Kylie: For your unwavering support, for the sacrifices you've made, and for the love and encouragement you've given every step of the way. Every sacrifice and word of encouragement has sustained me in moments of doubt and exhaustion.

Harper, Ford, and Virginia: For being the driving force behind my academic achievements. Your presence is a constant reminder of what truly matters, and I am profoundly grateful for each of you.

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CHAPTER ONE

PROBLEM OF PRACTICE: SOUTH CAROLINA STUDENT READING OUTCOMES

I remember visiting town with my uncle during summer vacation as a young child. He asked me to read the daily lunch specials from the restaurant's menu. I thought he was testing me on what I had been taught in school that year, and I stubbornly refused, telling him to read it to me instead. He couldn't. This was a man whom I greatly respected and who remains a pillar of my family. I distinctly remember the shame in his eyes. I remain haunted by this memory, and later, the realization of what an illiterate life must be in our text-based society.

Poor reading outcomes are not confined to my family's story. Unfortunately, too many of South Carolina's former students have confronted a similar fate, and regrettably, far too many current students are on track for a similar future. According to the National Assessment of Educational Progress (NAEP), nearly four in 10 South Carolina fourth-grade students from 1992 through 2022 have consistently scored below basic on NAEP (National Center for Education Statistics[NCES], 2022). A score of below basic on NAEP reading indicates that students "were unable to locate relevant information, make simple inferences, and use their understanding of the text to identify details that support a given interpretation or conclusion, or to interpret the meaning of a word as it is used in the text" (Folsom et al., 2017, p. 1). Literacy is a civil right and the foundation for any successful outcome. As educators and leaders within the education system, we're wasting time if we're not addressing (il)literacy.

South Carolina Reading Policy and Student Outcomes

Recognizing that South Carolina's reading proficiency ranked near the bottom nationally as compared to other states (NCES, 2022), the South Carolina General Assembly took a systematic approach to address poor student reading achievement via the Read to Succeed Act of

2014 (S.C. Code Ann. § 59-155, 2014). This groundbreaking literacy legislation was comprehensive in scope and sought to shift the experience of every South Carolina student and educator by: (a) instituting state, district, and school reading plans, (b) broadening access to state-funded full-day prekindergarten for students in poverty, (c) mandating reading interventions for students at-risk of not meeting English Language Arts (ELA) standard proficiency, (d) focusing on standards for third-grade promotion, (e) establishing summer reading camps, (f) funding a literacy coach for each South Carolina elementary school, (h) altering teacher preparation, and (i) mandating literacy coursework for in-service educators.

The Read to Succeed Act of 2014 (R2S) and the potential for sweeping change were not without criticism, especially from educator and administrator associations. Thomas (2017) claimed that the legislation sought to address a faux crisis in student reading achievement outcomes more closely correlated to social conditions than experiences within the control of schools. Other critics were myopic in their focus on the potential for mandatory third-grade retention of students substantially failing to meet grade-level proficiency standards as the primary effect of R2S (Bowers, 2020). As a result, implementing the legislation's envisioned changes was perfunctorily administered by the South Carolina Department of Education (SCDE) and often resisted by district and school-level actors. Though programmatic compliance regimes were instituted, the practice at schools and districts rarely changed substantively.

Consequently, reading outcomes for South Carolina students have not shifted drastically since the enactment of the R2S. South Carolina College- and Career-Ready Assessments (SCREADY) ELA is South Carolina's ELA standards assessment given to 95% or more of South Carolina students annually in grades three through eight. Students scoring "Does Not Meet" (DNM) and "Approaches" on SCREADY have not met grade-level standards expectations.

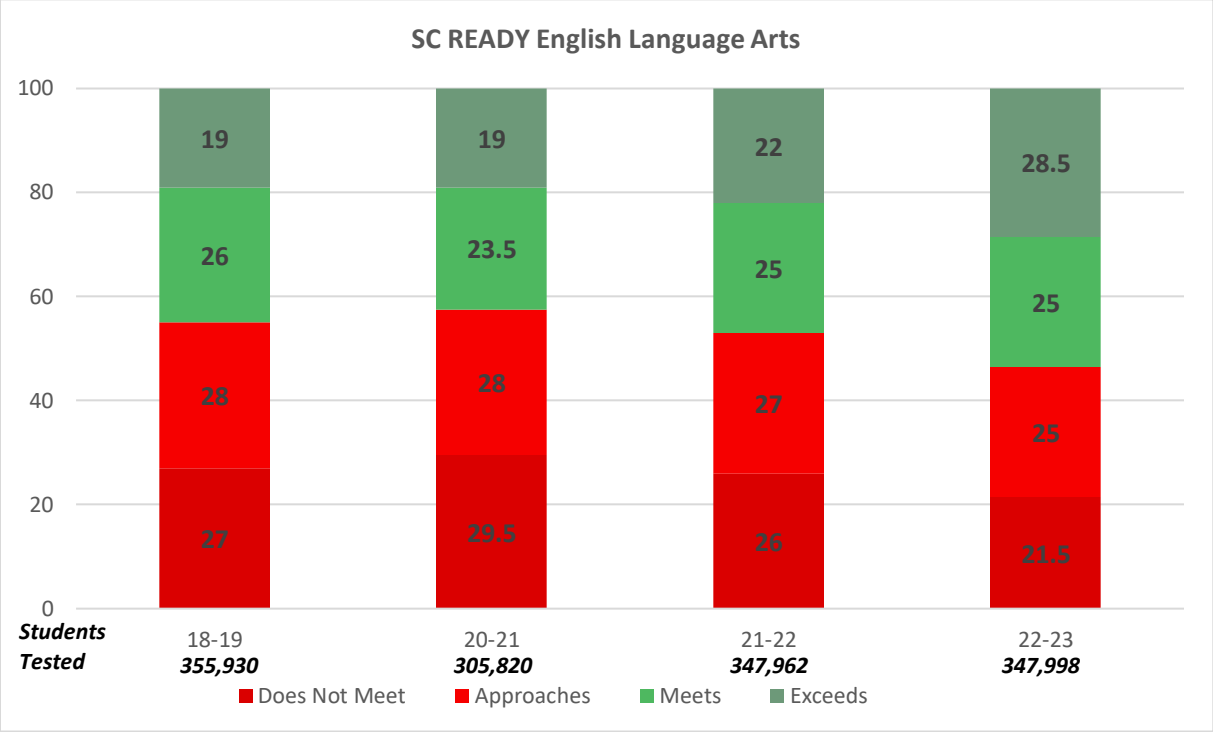
Scoring “DNM” indicates substantial academic support is necessary; these students are effectively two years below grade level standard (SCDE, 2023a). Scoring “Approaches” indicates additional academic support is required to be prepared for success in the next grade level’s standards and considered off track for college and career readiness (SCDE, 2023a). The odds of meeting South Carolina ELA standards proficiency on SCREADY ELA remain worse than that of a coin flip. It is worth emphasizing, as it is the cause du jour, that these poor results are not a new phenomenon caused by COVID-19 school disruptions.

As shown in Figure 1.1, 193,250 (54.7%) students assessed in grades three through eight in pre-COVID 2019 did not meet South Carolina ELA standard proficiency (M = 2.38, SD = 1.08). SCREADY assessments were not administered in 2020 due to COVID-19 school disruptions. In 2021, the SCREADY assessment immediately following COVID-19 school disruptions, 174,851 (57.5%) students in grades three through eight did not meet South Carolina ELA standard proficiency (M = 2.32, SD = 1.09). Predictably, there was a statistically significant difference with a medium effect in student ELA proficiency level scores between 2019 and 2021, $t(657688) = 22.36$, $p = .001$, $d = .05$. In 2022, the year heralded as the post-pandemic return to regular schooling, 183,235 (53.1%) students in grades three through eight did not meet South Carolina ELA standard proficiency (M = 2.43, SD = 1.09). Surprisingly, student ELA proficiency level scores were higher in 2022 after experiencing the pandemic and the disruptions in schooling than in pre-pandemic 2019, with a statistically significant difference but a small effect in ELA proficiency levels, $t(697745.01) = 18.36$, $p = .001$, $d = .04$. Again, in summary, South Carolina student performance was higher on ELA standard proficiency after the disruptions of the pandemic than before. This result was not observed in the mathematics performance of the same South Carolina student cohort, which indicates that there is something

fundamentally different and perhaps flawed in the ELA instructional experience of South Carolina students.

Figure 1.1

SCREADY English Language Arts (ELA) Grades 3-8 Student Proficiency Levels



Pending 2023 Revisions to the Read to Succeed Act of 2014

In 2023, a new South Carolina Superintendent of Education was sworn into office (Turcotte, 2022). The new administration announced early literacy as a priority and recognized that student reading outcomes had not improved in the state (Newman, 2023). Working with the South Carolina General Assembly, the new SCDE administration sought revisions to R2S to address perceived flaws in the legislation. The result of those efforts is S. 418 (2023). These proposed revisions to the R2S broadly fall into three categories. First, S. 418 (2023) seeks to amend the original language of R2S to emphasize instructional practices grounded in the science of reading as the preferred instructional method for reading rather than balanced literacy. For

example, S. 418 (2023) amends references to “research-based” to “scientifically-based,” prohibits the purchase of instructional reading materials that employ the three-cueing system in reading instruction, and amends the description of supports for students needing intervention to be more aligned to scientifically based practices.

Second, S. 418 (2023) seeks to prescribe specific professional development in the science of reading, structured literacy, and foundational literacy skills for all South Carolina educators certified and teaching in early childhood, elementary, and special education. It also adds a scientifically based assessment of foundational reading skills for candidates seeking initial certification as a teacher in early childhood, elementary, and special education as an attempt to influence educator preparation programs within institutions of higher education (S. 418, 2023). The bill’s proposed changes focus the state’s literacy efforts on elementary schools, particularly grades K-3, rather than all K-12 public education.

Finally, S. 418 (2023) would strengthen mandatory third-grade retention requirements by requiring all students scoring DNM on SCREADY at the end of third grade to receive additional support and be mandatorily retained if standard benchmarks are not achieved (S. 418, 2023). See Appendix A for a summary of S.418’s (2023) amendments to R2S.

Though S. 418 (2023) did not become law by the end of the South Carolina General Assembly’s 2023 session, many revisions were included in Proviso 1A.73 of H.4300, the South Carolina 2023-2024 Appropriations Bill. Provisos are language included within the state budget that place conditions and limitations on the use of state appropriations and effectively serve as temporary law while the annual budget is in effect. As a result of Proviso 1A.73, instructional materials that employ the three-cueing system are prohibited for purchase by state appropriations in the fiscal year 2023-2024. The SCDE is further directed to “provide training in foundational

literacy skills to public school teachers working with students in kindergarten through grade three" (para. 1). Districts are directed to document scientifically based supports for grade one and two students who are projected to score DNM on SCREADY ELA in third grade.

During the 2024 legislative session, the South Carolina House of Representatives and Senate concurred on a version of S. 418 (2023). See Appendix A for a summary of the changes in the most recent version of the proposed legislation. In April 2024, S.418 (2023) was signed into law as Act 114 of 2024 with many of the changes going into effect in the 2024-2025 school year.

Literature Synthesis

Education policy is a complex process involving enacting policy goals and implementing actions designed to achieve specific educational outcomes (Guba, 1984; McDonnell & Weatherford, 2016). This literature review will depict the legislative context of United States and South Carolina education policy, describe the governance structure of educational policy within the United States (U.S.) and South Carolina, discuss the school context of changing educational practice, consider enactment and implementation factors for education policy, and introduce the historical context of U.S. reading policy.

U.S. Educational Policy Governance

Cohen and Spillane (1992) contrast the centralized power of many of the world's national governments with the U.S. federal government's historically and structurally weak role in education policy. In many nations, the role of the central government is unrestricted and vast, but within the United States, the federal government has, until relatively recently, shied away from education policy. Education is not explicitly mentioned in the U.S. Constitution as a responsibility of the federal government (Cohen & Spillane, 1992). Instead, education has historically been considered a matter of public welfare reserved to the individual states by the

10th Amendment: "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people." Nonetheless, the federal government's role is in flux and has recently begun to address and shape education policy in the late 20th and 21st centuries.

A Nation at Risk. A Nation at Risk (1983) sparked a national conversation around the student outcomes of U.S. public education (National Commission on Excellence in Education [NCEE], 1983). Forty years later, it remains a seminal and prescient work on public education's challenges and promises. The National Commission on Excellence in Education published A Nation at Risk (1983) in response to growing concerns about the declining quality of public education and to warn of a "rising tide of mediocrity that threatens our very future" (NCEE, 1983, p. 112). The report cites high rates of functional illiteracy among U.S. adults and school children and argues that "individuals in our society who do not possess the levels of skill, literacy, and training essential to this new era will be effectively disenfranchised" (p. 114). Moreover, citing declining SAT scores and poor student outcomes on international tests, A Nation at Risk (1983) warns that U.S. global competitiveness is at stake, claiming that "if an unfriendly foreign power had attempted to impose on America the mediocre educational performance that exists today, we well have viewed it as an act of war" (NCEE, 1983. p. 112).

A Nation at Risk (1983) made several policy recommendations to improve the U.S. public education system. The first recommendation encouraged strengthening content and focusing on the rigor of high school graduation requirements. Second, it sought to raise standards in classrooms and expectations for student achievement in high school and strengthen admission requirements at the college level. The third recommendation sought to increase the time allotted to learning by extending school days and reconsidering the academic calendar. The report also

recommended focusing on improving the quality of the teaching profession because the quality of teachers was recognized as a critical ingredient to school improvement. The final recommendation was a call to action for courageous and focused leadership from policymakers, district and school administrators, and teachers in implementing the report's recommendations.

Goals 2000: Educate America Act of 1994. In light of the concerns and recommendations of the Nation At Risk (1983) report, the federal government responded with Goals 2000: Educate America Act of 1994 (Goals 2000), a federal statute that sought to codify many of the recommended education reforms. The legislation provided a framework for improved education outcomes for U.S. students by the year 2000. The goals sought to provide a clear vision for improvement and set measurable benchmarks for progress. Goals 2000 (1994) emphasized the role of accountability in education, with schools and districts being responsible for student outcomes. Teacher professional development was also recognized as a critical improvement lever, and research to identify best practices was supported. Though the benchmarks set for improvement were national, Goals 2000 (1994) recognized the importance of the local level: states and local school districts were the implementers of improvement, and parents and communities were critical stakeholders in developing improvement plans within the local context. Goals 2000 (1994) emphasized high standards, accountability, early childhood readiness, parental involvement, and preparation for a global world. While the legislation's metrics were not achieved by the year 2000 deadline, the law set the stage for greater federal involvement in education and influenced subsequent federal education initiatives.

No Child Left Behind Act of 2001. In 2002, the No Child Left Behind Act (NCLB) of 2001 replaced Goals 2000 (1994), representing a significant step into education by the federal government. NCLB (2002) overhauled federal education policy, aiming to improve the quality of

public education and close achievement gaps among students. School accountability was a central tenet of the law. For the first time, U.S. public schools were federally required to administer annual reading and mathematics assessments to all students in grades three through eight and publish the results of these assessments. The results had to be disaggregated by student subgroups, including race, poverty, English Language Proficiency, and disability status. Schools were required to publish annual report cards with student outcome data and teacher qualification information to inform parents and the public of the school's status. Moreover, schools consistently failing to meet Annual Yearly Progress were subject to federally mandated consequences; for example, parents with children zoned for these schools were allowed to transfer their children out of the school and eligible for additional supplemental education services, such as tutoring. NCLB (2002) sought to increase public transparency in data reporting, hold schools accountable for student performance, guarantee highly qualified teachers, and ensure all students had access to a high-quality education. However, NCLB (2002) also faced criticism. Some argued that the accountability measures were too rigid, narrowed the curriculum, and relied too heavily on standardized testing (Fuller et al., 2007, Husband & Hunt, 2015; Wieczorek, 2017).

Every Student Succeeds Act of 2015. In 2015, NCLB (2002) was replaced by the Every Student Succeeds Act (ESSA) of 2015. ESSA (2015) retained some elements of NCLB (2002), such as requirements for rigorous academic standards and annual testing in reading and mathematics for students in grades three through eight. States were still required to produce annual school report cards and identify low-performing schools. However, ESSA (2015) provided states greater flexibility in designing holistic school accountability systems that did not rely only on standardized test scores. ESSA (2015) also allowed states to tailor evidence-based

support for identified low-performing schools rather than the top-down NCLB (2002) requirements. ESSA (2015) also eliminated the strict definition of "highly qualified" educators, returning many educator certification requirements to the state level. ESSA (2015) sought to balance accountability and state-level decision-making in education.

In summary, U.S. federal intervention in education policy has been in flux. Historically, education was viewed as almost entirely the responsibility of the individual states. In A Nation At Risk (1983), the federal government recognized a national imperative for a high-quality public education system. Subsequent federal legislation has introduced a more pervasive federal presence in education policy (Goals 2000, 1994; NCLB, 2002). ESSA (2015) seeks balance and represents a measured pendulum swing back to state decision-making in education.

South Carolina Educational Policy Governance

Within the United States, "state governments are the constitutional center of U.S. education" policy (Cohen & Spillane, 1992, p. 5). Complicating this governance structure, states have delegated much of their authority to local school district subdivisions (Cohen & Spillane, 1992; Fuhrman & Elmore, 1990). This delegation to the local level and distribution of decision-making authority of issues with immense import, such as school finance, the hiring of teachers, and the selection of curriculum, has resulted in significant variance among and within states within the United States (Chrispeels, 1997; Cohen & Spillane, 1992; McLaughlin, 1987).

South Carolina's educational governance landscape is vast and varied. At the state level, an Education Oversight Committee is responsible for school accountability and core content standards, with 17 members appointed by the leadership of the General Assembly and the Governor. The State Board of Education is responsible for educator certification and promulgation of regulations related to the overall instructional program, with 17 members appointed by the legislative delegation within a particular judicial circuit. South Carolina also

has a democratically elected state superintendent of education. In the 2021-2022 school year, South Carolina also had 76 public school districts, including three public school charter authorizers, 1,198 public schools, 777,292 enrolled students, 59,829 school-based instructional staff, and an additional 6,510 professional instructional staff based in schools and district offices (SCDE, 2023).

Additionally, the South Carolina General Assembly has often leaned into its responsibility for comprehensive state education policy. It has asserted robust state-level education policies and established frameworks to improve educational outcomes for students. These initiatives include the Education Accountability Act (EAA) of 1998 and R2S (2014).

Education Accountability Act of 1998. The EAA (1998) established South Carolina's school accountability system and sought to hold schools, districts, and the state accountable for student academic performance. The EAA (1998) reaffirmed state responsibility for student outcomes with the creation of the South Carolina Education Oversight Committee, with membership including representation from the education and business communities as well as legislators, the Governor's Office, and the Superintendent of Education. The EAA (1998) required the development of South Carolina content standards for ELA, mathematics, science, and social studies, as well as aligned state summative assessments for students in grades 3 through 8. The EAA (1998) defined criteria to measure school performance, required annual report cards, and instituted school ratings based on identified performance measures. The EAA (1998) established state intervention models, support for low-performing schools, and rewards for high-performing schools. Professional development for teachers and administrators was also emphasized in the EAA (1998) to ensure high standards for student performance. In many

respects, South Carolina's EAA (1998) previewed many requirements that would later become federal mandates under NCLB of 2002.

Read to Succeed Act of 2014. Despite the two (*i.e.*, federal and state) school accountability systems in place in South Carolina as a result of EAA (1998) and NCLB (2002), literacy rates in South Carolina remained concerning and continued to lag national reading scores (NCES, 2022). The R2S (2014) was a comprehensive effort to improve literacy in South Carolina. R2S (2014) sought to ensure every child had a strong literacy foundation by the end of third grade. The legislation was comprehensive in scope, seeking to guarantee that students graduate with the necessary reading skills to be college or career-ready. It sought to shift the experience of every South Carolina student and educator.

A significant portion of the legislation focuses on early childhood education and student intervention. R2S (2014) expands South Carolina's state-funded, full-day 4K classrooms for students eligible due to living in poverty. It establishes universal literacy screening for K-2 students and calls for research-based interventions for those at risk of not meeting reading proficiency. Summer reading camps were created to add additional instructional time for students needing supplementary reading intervention. Students who were still significantly below proficiency in reading at the end of third grade were mandatorily retained, absent one of the many good cause exemptions listed in the legislation.

R2S (2014) also addresses systemic changes to educator experiences to improve reading outcomes. It requires schools and districts to create specific, research-based reading plans. It provides funding for a school-based literacy coach for each South Carolina elementary school to provide job-embedded professional development in reading instruction. R2S (2014) altered

educator preparation programs by requiring explicit coursework in reading instruction, and it also mandated literacy coursework approved by the SCDE for in-service educators.

Despite the comprehensive and systematic vision of the EAA (1998) and R2S (2014) for education improvement, student results have stubbornly lagged in South Carolina. The SCDE administered procedural compliance with these new policies; districts and schools viewed the changes through local control, resulting in significant variance among and between schools, mostly reimagining the new policies to fit established procedures. As a result, classroom practice rarely changed, and student outcomes have continued to lag.

Policy Implementation in Schools

Despite significant variance, there are pervasive constants among U.S. schools. Tyack and Tobin (1994) describe a set of ubiquitous rules, assumptions, and beliefs that have shaped instruction and organized schools within the United States. For example, organizational structures that have become part of this implicit "grammar of schooling" include the division of students into grades, the role of the individual teacher in monitoring and assigning tasks to groups of students, the use of subject-specific textbooks, and the lack of student choice in the selection of coursework (Tyack & Tobin, 1994, p. 455). These organizational patterns are not necessarily the organic result of the system; instead, they represent the vestiges of historically successful education policy reforms that systematically coordinated state, local district, and school levels system changes while simultaneously meeting the functional needs of school-level practitioners (Tyack & Tobin, 1994). Attempted education policy reforms that have not fit within this grammar of schooling have mostly met with limited and localized success because they require changing the basic schema of schools for a wide-ranging group of stakeholders, including parents, students, state policymakers, and school board members, and simultaneously proving to

practitioners that the additional effort to learn new (and unlearn old) material as well as the resulting cognitive dissonance is worthwhile (Cohen, 1990; Tyack & Tobin, 1994).

The importance of the role and experience of policy implementers must be considered. Cohen (1990) describes the transformation of one teacher's practices after encountering a new mathematics instructional policy. The author, however, problematizes this instructional practice transformation by pointing out that the instructional changes were not the same as those intended by the new policy (Cohen, 1990). The result was a specific combination of the new policy and the individual teacher's experience. "The consequences of even the best planned, best supported, and most promising policy initiatives depend finally on what happens as individuals throughout the policy system interpret and act on them" (McLaughlin, 1987, p. 172). At each level of the governance system, policy encounters individuals with historical experiences and knowledge that must contend with the new desired practice, resulting in a mix that is neither what was nor perhaps what was intended by the new policy (Cohen, 1990; McLaughlin, 1987). McLaughlin (1987) argues that even though policymakers may not be getting the exact practices they intended from the policy enacted via this local variation, they are getting the policy necessary for improvement in the local context as these professionals generally want to be effective in their jobs.

Education Policy Enactment and Implementation Factors

For successful implementation, McLaughlin (1987) found new policy needs "to (a) maintain a system orientation; (b) address content and process; (c) use natural networks of teachers; and (d) focus on improving classroom practice" (as cited in Chrispeels, 1997, p. 454). To support these goals, Chrispeels (1997) identifies five policy instruments that influence policy implementation: mandates, inducements, capacity-building, system-changing, and hortatory. If addressed strategically and systemically, these policy levers can work together to support

consistency within the system for educators and encourage the successful translation of enacted policy into implemented practice. A specific example of these processes working together is offered by Chrispeels (1997) in rejecting textbooks not aligned with the state's policy goals. Since funding was only available to approved materials (inducement), this rejection action aimed to create consistency in the state system's orientation by requiring alignment; it also built content and process by seeking to build the capacity of teachers (Chrispeels, 1997).

Cohen (1990) suggests, "It is relatively easy for policymakers to propose dramatic changes in teaching and learning, but teachers must enact those changes" (p. 327). McLaughlin (1987) proposes considering the capacity and will at the policy implementation level. Capacity is built through training and funding (Cohen, 1990; McLaughlin, 1987). Coburn (2005) advises engaging with nonsystem actors, such as for-profit firms, membership organizations, and nonprofit organizations, to support building the capacity of educators. These organizations serve as natural networks for teachers, shaping what they learn about policy ideas and assisting them in transforming policy into practice (Coburn, 2005).

McLaughlin (1987) also recommends attending to the proper combination of pressure and support when implementing a policy change. "Pressure is required in most settings to focus attention on a reform objective; support is needed to enable implementation" (McLaughlin, 1987, p. 173). Cohen (1990) describes how the state focused on changing instructional practices in mathematics. As a result, the teacher shifted her practice, albeit in ways the state did not intend – perhaps because the pressure was not accompanied by adequate support (Cohen, 1990). For example, the state used the same, old pedagogy it criticized to introduce and support teachers in the new pedagogy it sought to institute (Cohen, 1990).

Finally, policy change takes time to be instituted. Translating enacted policy into implemented classroom practice at the local level often requires years of consistent and laborious effort (McDonnell & Weatherford, 2016; Tyack & Tobin, 1994). Local implementers need time "to make sense of, interpret, and adapt external policy directives," thereby enabling the development of locally available resources and guidance (McDonnell & Weatherford, 2016, p. 236). Such resources are necessary to support teachers' capacity to actualize new policies and transform their "conceptions of knowledge, and their approaches to learning and teaching" (Cohen, 1990, p. 326). Additionally, extended time is required to cultivate support from a diverse stakeholder group to institutionalize the change in the grammar of schooling (Tyack & Tobin, 1994).

School Accountability and Student Achievement in Rural Schools

Federal and state school accountability models have focused the public's attention on the student achievement outcomes of individual schools. This emphasis has caused additional pressure on the PK-12 public education system to achieve results. Educators and researchers alike have been forced to grapple with how to improve student achievement outcomes. Improving student outcomes is undoubtedly a worthwhile endeavor, though some have questioned whether parents primarily focus on student outcomes as a measure of school quality (Lubienski & Lubienski, 2006). Others have wondered if school accountability systems accurately measure what they are designed to report, particularly in schools with smaller student enrollments (Carrier & Whaland, 2017; Ho, 2008). Moreover, even if, perhaps especially if, the models of school accountability are the framework in which schools must operate, researchers have been interested in the optimal school context in which student achievement outcomes are achieved (Diaz, 2008; Lubienski & Lubienski, 2006; Stewart, 2009).

There are limits to the reporting measures and resulting implications of accountability systems within school operations. Because these limitations are made more problematic in smaller, rural schools, Ho (2008) argues against school accountability measures that overemphasize measures of the percentage of proficient students (PPS). PPS measures blur the distribution-wide perspective necessary to improve student achievement outcomes by focusing on bubble students near proficiency rather than the most disadvantaged. This problem is compounded in small, rural schools that often lack the minimum aggregate and subgroup sizes for consistent data reporting. When data is unavailable at the building level and to the classroom teacher, attitudes toward data tend to be negative (Carrier & Whaland, 2017). As a result, Carrier and Whaland (2017) hypothesize that "data was not utilized to assess program strengths and weaknesses as they relate to student achievement, and that did not enable the use of data as a tool for the type of professional growth that is needed to affect student achievement" (p. 25). Without access to the data and the professional development to support its use, the focus on student achievement remained external accountability imposed upon the school rather than an internal set of circumstances that the school could influence (Carrier & Whaland, 2017).

Nevertheless, federal and state school accountability models remain in effect for small, rural schools. The research on the correlations between school size and student achievement remains mixed. Diaz (2008) applied a regression analysis to investigate the relationships among district size, socioeconomic, and state assessments in reading and mathematics among Washington's eighty-two smaller school districts. The results indicated no statistically significant correlations between student achievement and district size (Diaz, 2008). Conversely, Stewart (2009), analyzing the results of student achievement outcomes of all public Texas high schools, found that smaller schools demonstrate higher student achievement percentages than larger

schools in Texas. Though these results seem to conflict, student demographic characteristics are pivotal in the analysis. When the characteristics of student demographics are controlled, differences in student achievement among school types tend to be mitigated (Lubienski & Lubienski, 2006).

In the final analysis, school accountability models are the realities in which schools, including rural ones, operate. Limitations are inherent in accountability systems at sites where the minimum group sizes are not consistently met (Ho, 2008). Yet, there are strategies for making the data more meaningful (Carrier & Whaland, 2017). Some of the research indicates that student achievement outcomes are positively impacted in smaller schools (Lubienski & Lubienski, 2006; Stewart, 2009).

Implementing Systemic Educational Improvement

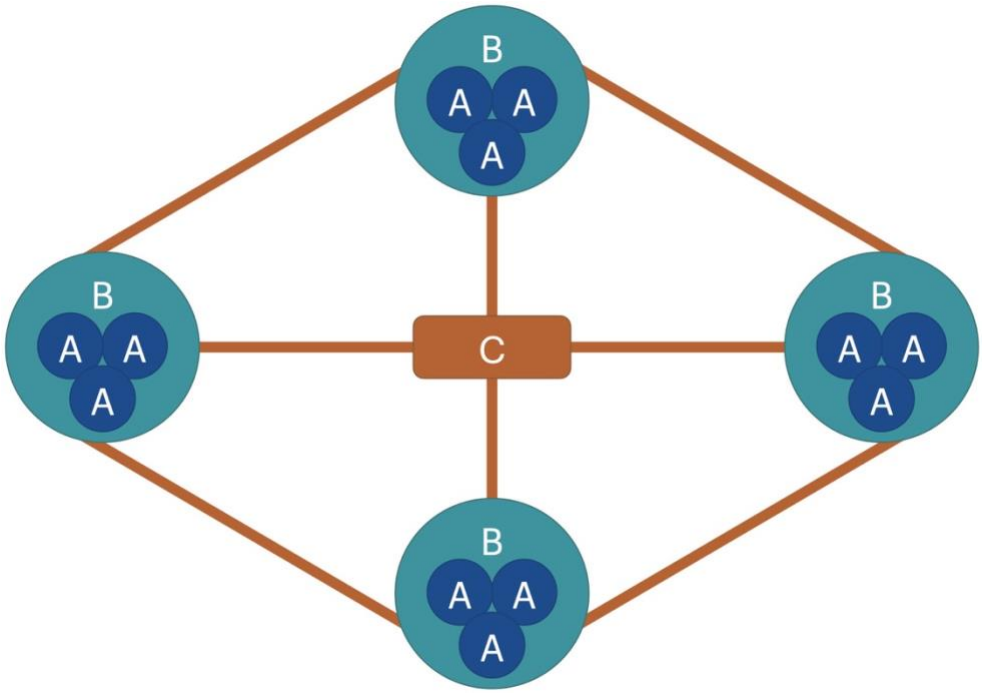
According to Russell et al. (2017), educational systems are "not organized to learn systematically, accumulate, and disseminate the practical knowledge needed for the improvement of teaching and learning" (p. 1). Due to its weak and disconnected infrastructure, the system design produces outcome variability. A Network Improvement Community (NIC) is an approach the Carnegie Foundations for the Advancement of Teaching developed to provide an organizational redesign. The NIC process framework continuously improves the quality of practices, processes, and outcomes in education systems (LeMahieu et al., 2017).

First theorized by Engelbart (1992, as cited in LeMahieu et al., 2017; Russell et al., 2017), a NIC is a group collectively engaged in improving a system, its processes, and outcomes. Engelbart offered a framework for knowledge generation that occurs as three levels: Level-A learning occurs when individuals acquire knowledge while engaging in efforts to improve their daily practice; Level-B learning occurs within organizations as individuals share and reflect on practices; Level-C learning occurs when many organizations, networked together, share, test, and

elaborate ideas for improvement in multiple, diverse organizational contexts (Russell et al., 2017). Networking is required to achieve Level-C learning. Thus, current variability in outcomes within broader educational systems results from a lack of Level-C learning facilitated by NICs. These organizational structures facilitate learning at the individual and organizational levels, but more importantly, they provide a mechanism for the learning to accumulate and scale across the organizations. As Russell et al. (2017) summarize, "a NIC accelerates collective improvement" (p. 7).

Figure 1.2

Network Improvement Community (NIC) framework for knowledge generation



Note. From Engelbart, 1992, as cited in LeMahieu et al., 2017, p. 6; Russell et al., 2017, p. 50

Establishing this type of collaborative work is not without challenges and threats. Many technical issues exist, such as establishing a shared vision, identifying measurable aims, and organizing stakeholders for collective action (Russell et al., 2017). Creating effective networks, however, is not only about discovering and relaying what is best practice; it involves navigating

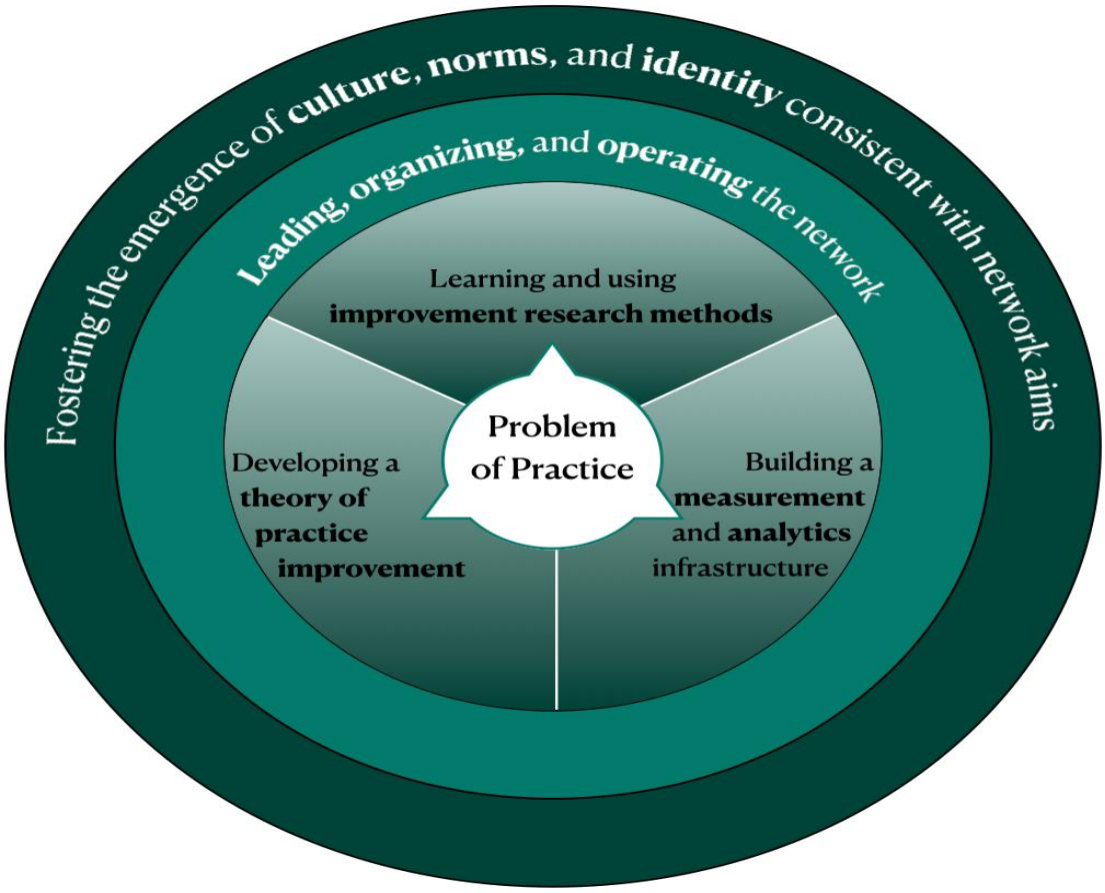
“a complex constellation of social, political, and economic forces that support the continuing development and scale-up” (Glazer & Peurach, 2012, p. 702).

LeMahieu et al. (2017, p. 13) provide a timeline of a phased approach to NIC initiation and operation: Phase 1: Chartering (3-9 months); Phase 2: Network Learning (1-3years); and Phase 3: Spreading (Ongoing). Russell et al. (2017) expanded upon this research on NIC phases by focusing specifically on the initiation phase of a NIC. These authors provide a framework for establishing a viable NIC described as follows:

> At the center, three interrelated domains specify the work necessary to launch the technical core of a NIC: developing a theory of practice improvement, learning and using improvement research methods, and building a measurement and analytic infrastructure. These three domains center around a specific problem of practice that anchors all activity in the NIC. The fourth domain, leading, organizing, and operating the network, is depicted as a circle surrounding the NIC core to emphasize that the structure of the network is aligned with the three central domains of activity. Leadership and emergent organization are critical during initiation because they lay the foundation for a sustainable organizational structure. Finally, the outer layer of the framework, fostering the emergence of culture, norms, and identity consistent with network aims, refers to the characteristics of a network that enable participants' sustained voluntary engagement and discretionary effort. (Russell et al., 2017, p. 16)

Figure 1.3.

Framework for Initiating Network Improvement Communities



Note. From Russell et al., 2017, p. 51

Teaching Reading: The Shifting Policy Pendulum

The reading wars have raged for decades, and their pedagogical roots can be traced back centuries. At one side sits the bottom-up, alphabetic approach; at the other, there is the top-down, whole word or sight memory approach to reading. Though seemingly innocuous, Rothman (1990) writes,

> the arguments over reading instruction—the first “R"—have been perhaps the most vociferous—and the most public, often spilling over into school boards, state legislatures, and even Congress … And in recent years, as educators have grown increasingly

> desperate over students' poor performance, and frustrated over a seeming inability to change their programs, the gloves have come off. The two sides have become intractable, with advocates at both extremes accusing each other of stoking the flames with incendiary rhetoric, rather than reason. (para. 6)

Though this quote was written over 30 years ago, Schwartz (2023) begins her recent *Education Week* article on the origins of the reading wars with the same excerpt, remarking that the words could have been written yesterday, and she notes that to understand the reading wars it is important to understand the history of reading instruction.

The Philosophical and Historical Roots of Reading Instruction. European and early American reading pedagogy was heavily influenced by Jean-Jacques Rousseau's philosophy of naturalism. In *Emile,* Rousseau (1899) touted the idea that children under 12 were not developmentally ready for structured reading instruction. Instead, children should primarily learn from sensory experiences in nature rather than through books, and their interests and life experiences should inform their exposure to books and motivate their eventual entry into reading (Rousseau,1899). In many ways, this can be viewed as the genesis of the philosophy of a top-down approach to reading instruction.

However, while Rousseau's philosophy was shaping pedagogical thought, a more systematic, bottom-up approach to reading was taking root in practice via the publishing industry – with spelling books being second only to theology texts in publishing sales by the early 1800s (Venezky, 1987). Noah Webster's spelling book, the most popular for nearly a century, introduced and expanded access to a methodical, skills-based model of teaching reading that emphasized phonics, syllable division, decoding, and spelling (Venezky, 1987). "Decoding in the Webster spelling book, and in most other spellers up to the 1820s, was taught

via a progression from phonetic rules, to tables of consonant-vowel and vowel-consonant syllables (*e.g.*, ba, be, bi, …), to three-letter syllables (*e.g.*, blah, ble …), and then finally to words" (Venezky, 1987, p. 254). By the 1830s, this alphabetic approach had become the dominant method of reading instruction in America (Venezky, 1987).

The early 19th century experienced limited formal education: the average person attended school for less than 90 days in an entire lifetime (Venezky, 1987). The landscape for publicly funded education and those allowed to attend formal education changed significantly with Horace Mann's advocacy for the "common school." In these schools, Mann instituted and standardized curriculum for reading into two spheres: the lower skills were comprised of technical mechanics, such as phonics, and once the lower skills were mastered, the higher sphere of reading focused on comprehension (Venezky, 1987). While initial instruction focused on the alphabetic code, students quickly transitioned to literature and texts with moral messages (Pearson, 2001).

Colonel Frances Parker (1837-1902) introduced an alternative to the alphabetic methodology to reading instruction that dominated much of the first part of the 20th century. His "whole word" or "look–say" method of reading rejected the skill and drill of the alphabetic approach (Pearson, 2001). Instead, it urged students to recognize words as entire units rather than individual letters or letter blends (Pearson, 2001). This method emphasized attending to words' shape, structure, and contexts for clues as to meaning (Pearson, 2001). The result was often that students were given a list of high-frequency, grade-level words to memorize, and the idea was that as their exposure to these high-frequency words expanded, they could access increasingly complicated texts (Venezky, 1987).

The Influence of Behaviorism (1950 – 1965). In 1955, Flesch published *Why Johnny Can't Read,* a controversial but influential work that prompted interest in reading research (Alexander & Fox, 2019). Flesch (1955) claimed that widespread illiteracy was the result of flawed instructional reading practice of the look-say method:

> Teach children the 44 sounds of English and how they are spelled. Then, they can sound out each word… and read it off the page… The ancient Egyptians learned that way, and the Greeks and the Romans, and the French, and the Germans – every single nation throughout history that used an alphabetic system of writing. We have thrown 3,500 years of civilization out the window and have gone back to the Age of Hammurabi. (Flesch, 1955, p. 32)

This approach attempted to introduce a more scientific approach to diagnosing reading problems and became linked to Skinnerian behaviorism, which was popular in the era (Alexander & Fox, 2019). "Based on this perspective, the processes and skills involved in learning to read could be clearly defined and broken down into their constituent parts. Those constituent parts could then be practiced and reinforced in a systematic and orderly fashion during classroom instruction" (Alexander & Fox 2019, p. 37). Diagnosing and remediating deficits in these foundational skills became the resulting approach to reading instruction.

In *Learning to Read,* Chall (1967) argued for emphasizing phonics as an early reading skill (as cited in Pearson, 2001). Skill-based or phonic methods are often considered a bottom-up model, envisioning "the reading process as one during which learners ultimately acquire meaning by first focusing on the graphemes and associating their phonemes, then by combining graphemes-phonemes into words that string together to create sentences" (Shaw & Hunt, 2012, pg. 2). As a result, instructional texts transitioned from the look-say *Dick and Jane* books to

more controlled vocabulary readers and phonics drills and practice within classroom instruction (Alexander & Fox, 2019; Pearson, 2001). The conversations around reading policy and research shifted towards phonics as the foundation upon which reading was built.

The Shift to Naturalism (1966 – 1975). Discontent with behaviorism and the reduction of reading into skill and drill, linguists and psycholinguists lead a shift in reading research in the mid-1960s (Alexander & Fox, 2019; Pearson, 2001). These researchers argued that learning to read is a natural ability rather than a mere combination of discrete skills. Chomsky viewed humans as wired to acquire language (Pearson, 2001). Given enough exposure, linguists posited that children would learn to read naturally (Alexander & Fox, 2019). This shift resulted in integrating language arts into the broader field of literacy rather than a myopic focus on just reading. "This period was less about isolating and correcting problems in the underlying skills of reading than it was about understanding how readers arrived at their alternative interpretation of text" (Alexander & Fox, 2019, p. 40). The focus shifted from identifying areas for reading remediation to reflecting on a student's attempt at meaning-making (Alexander & Fox, 2019). In *Reading: A Psycholinguistic Guessing Game*, Goodman (1967) described the three cue system (*i.e.*, syntax, semantics, and visual) and offered that by recognizing these (mis)cues, the reader could better make meaning from a text, and the teacher was better equipped to address reading difficulty (as cited in Pearson, 2001). Thus, the purpose of teachers "was not so much to teach reading as to help children read" (Pearson, 2001, p. 14).

The Influence of Information Processing (1976-1985). Growing interest in the structure and processes of the human mind, as well as increased federal funding in primary, as opposed to applied, reading research, shifted the emphasis from reading as an innate ability to the study of generalizable structures (Alexander & Fox, 2019). This era was dominated by

cognitive psychology, specifically information processing theory (Pearson, 2001). These researchers searched for general processes that explained the relationship between language and the human mind (Alexander & Fox, 2019). Schema theory, the idea that our mind is filled with containers based on prior experiences in which we deposit and interpret new learning, is the research of this era's most influential and enduring influence (Pearson, 2001). Similarly, the importance of prior knowledge for reading comprehension seems commonplace now, but it originated during the thinking of this era and shifted how teachers approach new learning (Alexander & Fox, 2019; Pearson, 2001). The reading research from this period also emphasized strategies in reading instruction, such as summarization, mapping, self-questioning, and predicting (Alexander & Fox, 2019).

The Shift to Sociocultural Learning (1986-1995). When student performance failed to live up to the promises of direct instruction in strategies and the generalizability of these processes did not account for classroom variability, social and cultural anthropologists provided a new viewpoint for literacy instruction (Alexander & Fox, 2019). During this era, the idea of context was expanded to include what was within the text, the reader's prior experience, and meanings constructed by others (Pearson, 2001). Learning became a collaborative experience, and the learner was a member of a larger learning community (Alexander & Fox, 2019; Pearson, 2001). As such, reading success was viewed as more about learning to "do school" than an individual's ability to independently read (Pearson, 2001, p. 19). Teachers were no longer viewed as knowledge dispensers but as process facilitators (Alexander & Fox, 2019). Moreover, meaning lived neither in the text nor the reader; it was co-created in the "transaction between reader and the document" (Rosenblatt as cited in Pearson, 2001, p. 19). The instructional approach to reading that resulted from this thinking was Whole Language.

Drawing on the philosophy of John Dewey, Whole Language is a top-down reading model with an emphasis on meaning-making, the importance of prior knowledge, and the interconnectedness of subjects over rote memorization or skill demonstration (Pearson, 2001; Shaw & Hurst, 2012; Vogelsang, 2009;). Dewey's progressive movement's positioning of "the child as the most important curriculum informant" serves as a philosophical grounding for Whole Language's "constructivist epistemology" (Pearson, 2001, p. 21). The Whole Language movement challenged the emphasis on systematic phonics instruction and the "basalization" of reading curriculum (Pearson, 2001). In its place, Whole Language stressed student exposure to authentic literature, and classroom teachers were to be individually responsible for customizing curriculum and instructional materials for their students (Pearson, 2001). This shift demonstrated a true revolution because instructional practices no longer focused on imparting sequential skills to produce student mastery; instead, instructional practices were attempts to co-create learning personalized for a specific group of students at a particular time (Pearson, 2001). By the 1990s, Whole Language had become the conventional wisdom of reading instruction (Pearson, 2001).

The Era of Attempting to Balance Literacy (1996 – 2023). Whole Language advocates were philosophically opposed to external evaluation and resisted calls to produce measurable student performance results on standardized testing (Pearson, 2001). The nation's shift towards school accountability, high expectations for student performance, and common content standards would result in Whole Language's decline as the mainstream approach to reading instruction (Alexander & Fox, 2019; Pearson, 2001). Balanced Literacy arose to answer these cultural shifts toward measurable results for students and sought to combine portions of whole language and skill-based, phonetic approaches to reading instruction (California Department of Education, 1996; Coburn, 2005).

Balanced Literacy emphasizes a both/and, rather than an either/or, reading model. Instead of a top-down or bottom-up process, Balanced Literacy is a middle-out, interactive model that suggests readers must "know and implement the alphabetic principles as well as bring their prior knowledge to bear while reading" (Shaw & Hurst, 2012, p. 2). Balanced Literacy suggests that effective reading instruction requires skill instruction, including phonics and phonemics, and stimulating reading and writing experiences. Moreover, explicitly teaching phonics and comprehension is an essential reading foundation, while immersing students in authentic literature is required for comprehension within the Balanced Literacy framework (Shaw & Hurst, 2012; Zygouris-Coe, 2001).

Baumann et al. (2000) suggest that teachers' view of reading instruction shifted to a Balanced Literacy mindset, with teachers more likely to identify themselves as having a balanced approach to reading instruction than a polar position on the phonics / whole language continuum. However, the Balanced Literacy framework – not a curriculum or a program – is dynamic, with overlapping components offering teacher flexibility and requiring teachers' professional knowledge and diagnosis of student needs (Shaw & Hurst, 2012). As such, district and classroom implementation of the Balanced Literacy framework varies widely from site to site, with multiple factors contributing to the variance (Coburn, 2005). Shaw & Hurst (2012) explain:

> When teachers lack understanding of balanced literacy instruction, the result may be a distorted or superficial view; teachers cannot intelligently implement, modify, or reject approaches, strategies, and viewpoints. The broader the teachers' understanding is, the more complete their repertoire will be and their success at teaching balanced literacy… [K]nowing the literacy components is not enough. Teachers must have a thorough understanding of the rationale for implementing specific instructional components. The

> same is true for structures. Knowledge about structures is insufficient. When teachers possess deeper understanding, they will have a better chance of ensuring their students will become strong readers and writers. (p. 2)

Shaw & Hurst (2012) conclude that most teachers implementing the Balanced Literacy framework do not know all the structures of the framework and substantially lack knowledge of specific components (*i.e.*, phonics, phonemes, vocabulary, and comprehension). Without a strong understanding of the framework, the result is often an unbalanced approach that loses the systematic, explicit teaching of phonics.

A New Shift Grounded in the Science of Reading. In 2013, Mississippi enacted its Literacy-Based Promotion Act, which aimed to have every student read at or above grade level by the end of third grade (Heubeck, 2023). Since enactment, Mississippi's reading scores have risen 10 points on NAEP, demonstrating more growth than any other state – some have even called it the "Mississippi Miracle" (Heaubeck, 2023; NCES, 2021). The legislation was comprehensive in its approach, including a third-grade retention strategy, expanded full-day pre-K programming, investment in literacy coaches, and investment in intense professional development for teachers in foundational literacy skills grounded in the science of reading (Heaubeck, 2023).

Heretofore, Mississippi had implemented rigorous content standards but had yet to focus targeted instruction on specific components of systematic literacy instruction (Folsom et al., 2017). Foorman and Schatschneider (2003) suggest that combining professional development with adopting a comprehensive and systematic reading program is key to teacher improvement and student success. Teacher knowledge of language structure, language and reading development, and the importance of oral language proficiency are required for effective reading

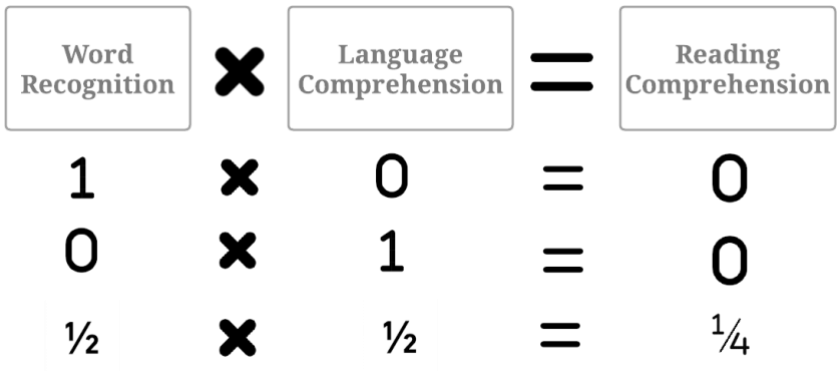
instruction (Foorman et al., 1998). Students do better when teachers understand how students learn to read and incorporate appropriate, systematic approaches to reading instruction (Foorman et al, 1998).

The Mississippi Department of Education selected and implemented the Language Essentials for Teaching Reading and Spelling (LETRS) professional development framework to increase teacher knowledge (Folsom et al., 2017; Moats & Tolman, 2009). The LETRS content focuses on transferring the science of reading theory into classroom application and practice, specifically addressing phonological awareness, orthography, morphology, systematic phonics, vocabulary instruction, and the importance of content knowledge to reading comprehension (Folsom et al., 2017).

The science of reading, as presented in LETRS, is a bottom-up model of reading instruction informed by the Simple View of Reading (SVR). Introduced by Gough and Tunmer (1986), the SVR is a model that states that reading comprehension can be equated to two independent processes: word recognition and oral language comprehension (See Figure 1.4).

Figure 1.4

Illustration of the Simple View of Reading

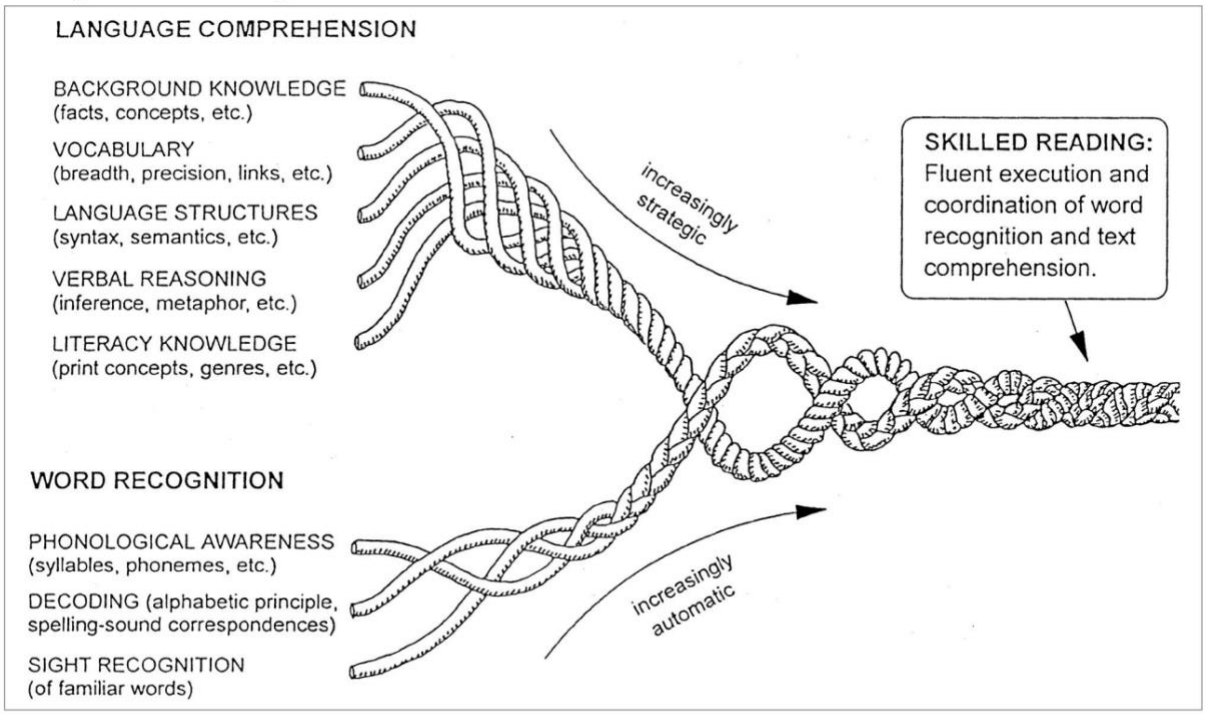


This model of reading contends that students need decoding skills or language comprehension to achieve reading comprehension, which is the overall goal of reading (Duke & Cartwright, 2021).

Additionally, building upon the SVR, Scarborough's rope (2001) also grounds the science of reading presented in LETRS training. Scarborough (2001) unpacks the concepts of word recognition and language comprehension in the rope model of reading. This illustration of reading deconstructs word recognition and language comprehension into distinct parts, but the rope also illustrates how the separate constructs eventually work in concert to achieve reading comprehension (Duke & Cartwright, 2021).

Figure 1.5

Scarborough's Reading Rope



Note. From "Connecting Early Language and Literacy to Later Reading (Dis)abilities: Evidence, Theory, and Practice," by H.S. Scarborough, 2001, in S.B. Neuman and D.K. Dickinson (Eds.), *Handbook of Early Literacy Research* (Vol. 1, p. 98), New York, NY: Guilford. Copyright 2001 by The Guilford Press. Reprinted with permission.

Folsom et al. (2017) concluded that Mississippi teachers who participated in the LETRS program demonstrated increased knowledge of early literacy skills and gains in ratings for the

quality of early literacy instruction, student engagement, and teaching competencies. The study suggested that future research include measures of student achievement (Folsom et al., 2017).

Other states have looked to Mississippi's success and sought to follow the example of literacy instruction grounded in the science of reading and professional development to improve teachers' content knowledge of reading instruction. This development could signal a shift in reading policy from Balanced Literacy towards a more systematic, bottom-up form of reading instruction that includes explicit instruction in phonemic awareness and phonics as well as a strong preference for decodable texts, especially in the early grades (Pearson, 2001). Critics question the "one-size-fits-all" solutions and call for caution before shifting toward policies grounded in the science of reading. (Thomas, 2022).

Literature Synthesis Conclusion

State policy regarding what constitutes effective reading instruction has consistently shifted between bottom-up, middle-out, and top-down models of reading instruction (Coburn, 2005). Consequently, state reading policy alternates between variations of systematic instruction in phonics and whole language (Coburn, 2005). The science of reading is a body of research concluding that reading builds from the bottom up, with systematic instruction in phonemic awareness, phonics, fluency, vocabulary, and comprehension strategies being the most effective approach to reading instruction (National Reading Panel, 2000). Alternatively, the balanced literacy framework takes a middle-out approach, emphasizing exposing students to a wide variety of authentic texts and "using multiple sources (or cueing systems) to decode, rather than a sole source or predominate emphasis on using phonics" (Coburn, 2005, p. 36). Conversely, whole language is top-down, suggesting that students learn to read naturally through authentic experiences rather than the teaching of discrete skills (Shaw & Hurst, 2012).

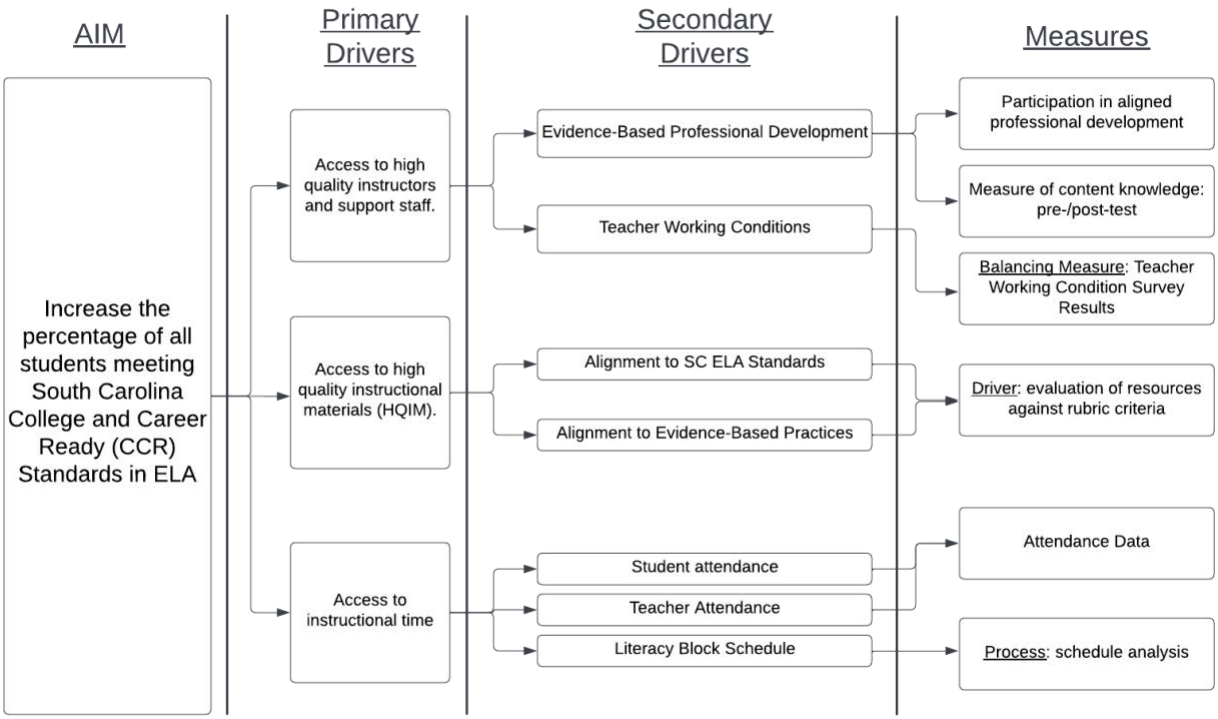
The continuous policy shifts reflect our ongoing search to identify the best strategy for reading instruction. With states like Mississippi showcasing success by grounding their approaches in the science of reading, there is growing policy momentum toward systematic phonics instruction and explicit, systematic reading instruction in the early grades. Further research is needed to measure the impact of these policies on teachers and students, as well as the factors that support successful implementation.

Policy Intervention

South Carolina's reading policy is in flux. For decades, South Carolina's reading policies and practices have been aligned with instructional practices informed by the balanced literacy framework of reading. However, the state's policy is beginning to shift towards instructional practices grounded in the science of reading. These policy shifts aim to improve student outcomes in reading. Regardless of the shifts in values and reading policy at the state level, practical changes at the district and school levels will not occur without intentional implementation strategies (Chrispeels, 1997).

Figure 1.6

Driver Diagram for Problem of Practice: Student Reading Achievement and Classroom Practice



One approach to support a policy change in classroom practice is to provide educators with professional development focused on the content and process of the change sought by the policy (McLaughlin, 1987). Capacity for policy implementation is reinforced when training and funding for the policy change are provided (Cohen, 1990). As such, the South Carolina General Assembly has allocated $39 million via Proviso 1A.73 of H.4300, the South Carolina 2023-2024 Appropriations Bill, to train educators in foundational literacy skills grounded in the science of reading. Inducements also play a vital role in translating policy into practice (Chrispeel, 1997). It is not enough to legislate change; there must also be incentives to encourage the policy to focus attention and incentivize change effectively. In South Carolina, Proviso 1A.73 provides a $1,000

stipend to compensate educators who successfully complete the training, focusing attention and incentivizing participation.

The South Carolina General Assembly, however, is not only providing an incentive; it has also issued a mandate for professional development in foundational literacy skills grounded in the science of reading that each early childhood, elementary, and special education teacher serving in an instructional capacity in a South Carolina public school must complete. The SCDE is also directed to provide the educator with the required professional development at no cost. These actions by the General Assembly provide both a carrot and a stick for implementing the new policy and impacting classroom practice.

By setting a standard of content knowledge as it relates to reading instructional practices, this intervention intends to create equity in teacher knowledge as it relates to reading across South Carolina. Proviso 1A.73 seeks to build educator knowledge and provide high-quality professional development to each K-3 teacher in the state. The quality of teacher knowledge should be independent of the ability of the local school district to fund high-quality professional development. Teachers in more-resourced districts should not have the advantage of high-quality professional development, while teachers in less-resourced districts go without training. Teacher knowledge should also be independent of the variability of educator preparation programs of the teachers within a particular school district or region of the state. The policy goal is to provide a consistent standard for South Carolina educators' knowledge related to reading instructional practice.

To fulfill the mandate of Proviso 1A.73 to provide professional development for K-3 teachers in foundational literacy skills, the SCDE has planned to scale and spread its engagement

with Lexia to provide all South Carolina K-3 educators with LETRS training (Moats & Tolman, 2009).

Research Question

To understand how state reading policy influences teacher knowledge and thereby improve student outcomes in achieving college and career readiness standard proficiency, this study will ask:

- How does the knowledge of foundational literacy skills among South Carolina's K-3 educators change after implementing LETRS professional development?

By answering this question, this study will provide policymakers with considerations for reading policy, state and district education leaders with suggestions for successful implementation, and researchers discourse on educational policy's impact on teachers' content knowledge, classroom practice, and literacy education. Ultimately, the hope is that it supports the delivery of the promise of college and career readiness to more students.

Positionality

This researcher serves as the SCDE Deputy Superintendent and Chief Academic Officer responsible for the Office of Early Learning and Literacy and the scale and spread of LETRS training into a statewide implementation. The researcher is also currently enrolled and participating in LETRS training. Due to the researcher holding a leadership position at the State Education Agency (SEA), there will likely be relatively open access to sites, participants, and data collection, as well as institutional access to expertise to analyze, interpret, and share data findings. However, there are also limits because of the status of the SEA, including legislative, political, and institutional considerations. For example, the positional authority of the SEA in relation to the Local Education Authority (LEA) may limit open conversations between the SEA

researcher and LEA representatives. There may also be political considerations, such as local control concerns. The levers of change available at the SEA level are broadly defined and limited in scope. As a result, change ideas will often be limited to policy recommendations, policy requirements, or the creation of lists of limited choices that the local LEAs are tasked with implementing in schools and classrooms.

Conclusion

This study will seek to answer the following problem of practice: How does the knowledge of foundational literacy skills among South Carolina's K-3 educators change after implementing LETRS professional development? In the previous sections, the study identified the problem of practice as the low performance of students on measures of ELA proficiency. The researcher has summarized the educational governance and policy landscape of the U.S. and South Carolina, considered policy enactment and implementation factors, discussed the school as a place of policy implementation, and surveyed the evolution of reading policy in the U.S. Finally, South Carolina's policy related to LETRS was introduced as an intervention for research within this dissertation in practice and the researcher's positionality at the SEA was disclosed and discussed.

CHAPTER TWO

RESEARCH DESIGN

This mixed methods sequential explanatory study aims to measure the change in teacher knowledge of foundational reading skills after implementing LETRS professional learning and then follow up with implementers of the LETRS professional development to explore those results further. In the first phase, pre- and post-assessments of teacher knowledge will be analyzed to quantify the impact of LETRS professional development on teacher knowledge of foundational reading skills. In the second phase, state, district, and school implementers of LETRS professional development will participate in focus groups to provide nuance, context, and understanding of the LETRS professional learning's impact and implementation.

Theoretical Framework

Improvement science serves as a theoretical grounding for this study. "Improvement science is about developing, testing, implementing, and spreading change informed by subject matter experts…improvement science is situated somewhere between change management and research (Lemire et al., 2017, p. 25 as cited in Hinnant-Crawford, 2020, p. 27). Improvement science draws upon various research traditions, including continuous improvement, organizational learning, and quality improvement (Bryk et al., 2015; Langley et al., 2009). According to Bryk et al. (2015), improvement science consists of the following six principles of improvement:

1. Make the work problem-specific and user-centered.
2. Focus on variation in performance.
3. See the system that produces the current outcomes.
4. We cannot improve at scale what we cannot measure.

5. Use disciplined inquiry to drive improvement.
6. Accelerate learning through networked communities.

A theory of improvement serves as the foundation of improvement science and illustrates the researcher's knowledge of the system and the logic for why a particular change idea may work to influence the overall system (Hinnant-Crawford, 2020). The theory of improvement seeks to answer what change can be introduced to address the identified problem and why these changes will impact the system (Hinnant-Crawford, 2020).

A driver diagram is a tool to help organize and illustrate a theory of improvement. It "contains the desired outcomes, key parts of the system that influence the outcomes, and possible changes that will yield desirable results" (Hinnant-Crawford, 2020, p.215). The driver diagram is a visual display to communicate to various stakeholders the theory of change and where and how the work will occur.

Research Question

To understand how state reading policy can influence teacher knowledge and thereby improve student outcomes in achieving college and career readiness standards, this study will ask:

- How does the knowledge of foundational literacy skills among South Carolina's K-3 educators change after implementing LETRS professional development?

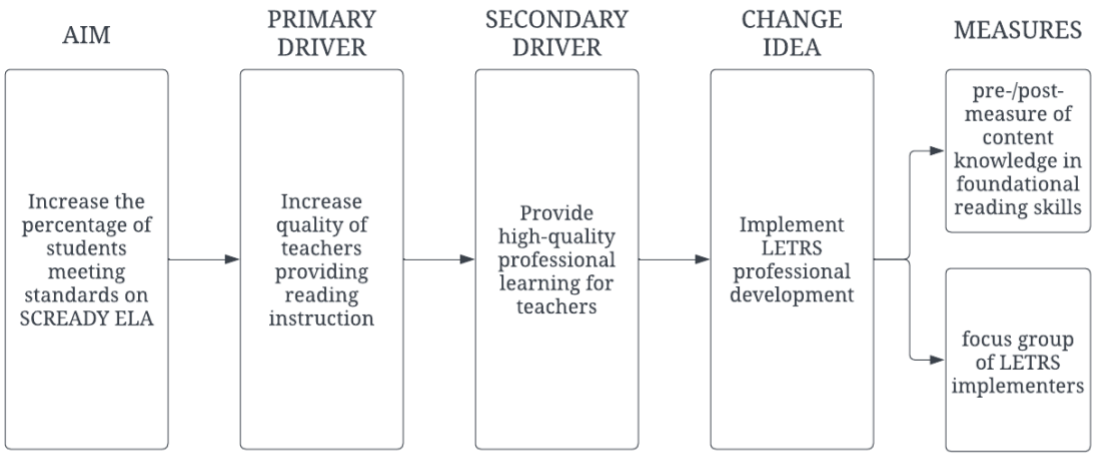
Theory of Improvement

If South Carolina wants to increase student reading success, South Carolina needs to provide access to high-quality reading instructors by focusing on teacher content knowledge in the foundational reading skills, and one way to do that is to implement LETRS professional

development for teachers responsible for instructing students in the foundational reading skills. Figure 2.1 is a driver diagram of the theory of improvement for this dissertation in practice.

Figure 2.1

Driver Diagram for Theory of Improvement



If South Carolina wants to increase student reading success, South Carolina needs to provide access to high quality reading instructors by focusing on teacher content knowledge in the foundational reading skills, and one way to do that is to implement LETRS professional development for teachers responsible for instructing students in the foundational reading skills.

Primary Driver: Teacher Quality

Teacher quality is the greatest source of in-school variance in student achievement outcomes (Hattie, 2023). Rowan et al. (2002) quantified the teacher effect as "between 4 – 18% of the variance in students' cumulative achievement status in a given year" (p. 9). Nye et al. (2004) employed hierarchical linear modeling to analyze the teacher effect, concluding that teacher effects are larger in mathematics than in reading and inconsistent across grade levels. Hanushek and Rivkin (2006) found that the average variance of the teacher effect for reading is 13% and 17% for mathematics. Conversely, Grasby et al. (2020) conducted a twin study of literacy and numeracy outcomes, concluding that only 2 – 3% of the variance could be explained

by teacher/classroom effects. Though there are certainly out-of-school variables influencing student achievement, teacher quality matters to improving student outcomes. The question then becomes how to effectively enhance teacher quality to influence student outcomes.

Secondary Driver: High-Quality Professional Learning for Teachers

The research on teacher professional learning often focuses on teacher outputs, such as satisfaction or knowledge accumulation, rather than changes in classroom practice and student outcomes (Hattie, 2023). A meta-analysis by Yoon et al. (2007) examined 1,300 studies evaluating teacher professional development's effects on student outcomes. Only nine of these studies met the criteria set by the What Works Clearinghouse evidence standards (Yoon et al., 2007). McCutchen et al. (2002) was one of these studies. It studied professional learning to enhance teacher knowledge in phonological and orthographic awareness (McCutchen et al., 2002). The study found improved teacher knowledge, resulting in notable changes in classroom practice and, most importantly, a positive impact on student outcomes in kindergarten (McCutchen et al., 2002).

To achieve successful outcomes in professional learning, Hattie (2023) and Yoon et al. (2007) conclude that it is essential to consider several key implementation factors:

1. focus on content and pedagogical knowledge (Foormal et al., 1998; Folsom et al., 2017),
2. sustained support rather than a one-day workshop or short-term intervention (Miller & Lord, 1993),
3. alignment to school goals and curriculum, evidenced by the presence of the school leader (Darling-Hammond et al., 2017), and
4. an emphasis on connecting professional learning to evidence of student outcomes (Carlisle et al., 2009).

Change Idea: LETRS Professional Development

Mississippi implemented LETRS in 2014, and in 2019, they were the only state nationwide to see growth in Grade 4 scores on NAEP (Heaubeck, 2023; Moats, 2023). Folsolm et al. (2017) studied teacher knowledge of early literacy skills in Mississippi after the implementation of LETRS by the Mississippi Department of Education. After implementing LETRS, teacher knowledge of early literacy skills, the quality of literacy instruction, and teacher literacy competencies increased at statistically significant levels (Folsolm et al., 2017). However, a limitation of the study was that due to the timing of the evaluation, it did not consider the impact on student learning outcomes (Folsom et al., 2017).

Subsequent dissertation research has been mixed on the impact of LETRS professional development (Bills, 2020; Greene, 2023; Houser, 2021). Houser (2021) investigated the impact of LETRS on teacher self-efficacy. Though the research was limited to post-test-only analysis and a self-assessed measure, the study found no statistically significant findings related to participation in LETRS (Houser, 2021). Greene (2023) produced a dissertation in practice considering improved literacy outcomes while implementing LETRS, finding improvement in kindergarten and second-grade outcomes but no improvement in first-grade outcomes. Conversely, Bills (2020) found statistically significant results in measuring first-grade teachers' knowledge and beliefs related to early literacy skills who received LETRS professional learning and those who did not receive content-specific professional development. Each of these studies was limited by a sample size of a few teachers in a single school.

Study Design

To answer the research question, the researcher will use a mixed methods approach (Tashakkori & Teddlie, 2003), which is a procedure for collecting, analyzing, and mixing or integrating both quantitative and qualitative data at some stage of the research process within a

single study (Creswell & Plano Clark, 2017). The rationale for mixing both types of data is that both quantitative and qualitative methods are insufficient by themselves to capture the complexity of the system of policy implementation, particularly as far removed as the impact of a state policy change on classrooms. When used together, quantitative and qualitative methods complement each other and provide a more complete picture of the phenomena (Greene et al., 1989; Johnson & Turner, 2003; Tashokkori & Teddlie, 2003).

This study will use a sequential explanatory mixed methods design consisting of two distinct phases (Creswell & Plano Clark, 2017; Tashakkori & Teddlie, 2003). In this design, the quantitative data is collected and analyzed first, while the qualitative data is collected and analyzed second to explain or elaborate on the quantitative results attained in the first phase. In this study, the quantitative data will quantify the impact of the LETRS professional development on teacher content knowledge. Then, a qualitative focus group using a semi-structured interview protocol will be used with state and district LETRS professional development implementers to provide context and a deeper understanding of the implementation and effect of LETRS professional development on teacher knowledge.

Proposed Plan-Do-Study-Act (PDSA) Plan

Proviso 1A.73 requires the SCDE to provide professional learning in foundational literacy skills for all K-3 teachers. To fulfill its obligations, the SCDE plans to scale and spread its engagement with LEXIA, a vendor, to provide all South Carolina K-3 educators with LETRS professional learning (Moats & Tolman, 2009).

The Intervention: LETRS Professional Development

LETRS professional learning will serve as the intervention for this dissertation in practice. LETRS is a content-specific professional development system delivered in two volumes, each including four units. Each volume contains approximately 120 hours of content. Generally, each volume is administered over the course of a year, with the full course of Volumes 1 and 2 administered over two years (See Table 2.1).

Table 2.1

Description and Pacing for LETRS Professional Development

LETRS Professional Development Outline	
Volume 1: Year 1	**Volume 2: Year 2**
Unit 1: The Challenge of Learning to Read	Unit 5: The Mighty Word: Oral Language and Vocabulary
Unit 2: The Speech Sounds of English	Unit 6: Digging for Meaning: Understanding Reading Comprehension
Unit 3: Teaching Beginning Phonics, Word Recognition, and Spelling	Unit 7: Text-Driven Comprehension Instruction
Unit 4: Advanced Decoding, Spelling, and Word Recognition	Unit 8: The Reading-Writing Connection

The LETRS content focuses on transferring the science of reading theory into classroom application and practice, specifically addressing phonological awareness, orthography, morphology, systematic phonics, vocabulary instruction, and the importance of content knowledge to reading comprehension (Folsom et al., 2017). The delivery is self-paced and multi-modal, with online modules, a content text, and a face-to-face professional learning session for each of the eight units facilitated by a LEXIA national trainer (Folsom et al., 2017).

LETRS professional learning will be offered at no cost to eligible K-3 educators and a school administrator at participating schools. Educators who successfully complete a volume of LETRS will earn a $500 stipend, and each LETRS volume earns an educator all of the renewal credits required for educator recertification. Thus, an educator who successfully completes the entire LETRS professional learning course (Volumes 1 and 2) will receive a $1,000 stipend and complete the requirements necessary for recertification.

The Research Site: South Carolina Elementary Schools

In the 2019-2020 school year, the SCDE's Office of Early Learning and Literacy (OELL) tiered South Carolina elementary schools and focused support on the Palmetto Literacy Project (PLP) schools. 222 PLP schools in 61 of South Carolina's 76 public school districts were identified based on the proportion of third-grade students scoring DNM on the 2019 SC READY ELA assessment (SCDE, 2021). Tier 2 PLP schools were identified because between 33 and 49 percent of third graders within the school scored DNM on ELA. Tier 3 PLP schools were identified as a result of 50 percent or more third graders within the school scoring DNM on the 2019 SC READY ELA assessment (SCDE, 2021). Comparatively, non-PLP schools averaged 19 percent of third graders scoring DNM on the 2019 SC READY ELA assessment (See Table 2.2).

Intervention

LETRS was implemented, piloted, and spread in three cycles across 202 Tier 2 and Tier 3 PLP schools by OELL as a means of support for literacy improvement. 20 Cycle 1 PLP schools began LETRS in August of 2021. In January 2022, an additional 41 PLP schools started the implementation of LETRS in Cycle 2. Finally,154 PLP schools began LETRS implementation in Cycle 3 in August 2022 (See Table 2.2). As of March 2024, 15 schools identified as PLP have yet to start LETRS implementation. The LETRS professional learning was implemented by national trainers from LEXIA, and an OELL Literacy Specialist also supported each PLP school

with instructional coaching and implementation support. A NIC was also established to support LETRS implementation at the school and district level.

Table 2.2

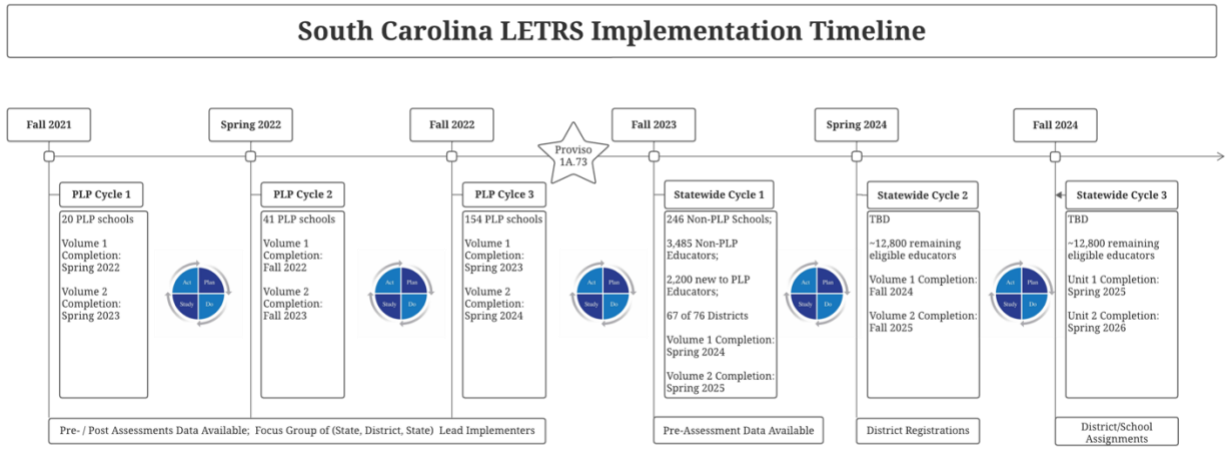
Palmetto Literacy Project (PLP) Schools by Implementation Cycle with Grade 3 ELA Scores

	2018-19		
LETRS Cycle	**Number of Grade 3 DNM ELA Scores**	**Number of Grade 3 ELA Scores**	**Percentage**
Cycle 1: 20 schools	502	1073	46.8%
Cycle 2: 41 schools	1118	2575	43.4%
Cycle 3: 154 schools	3599	8765	41.1%
Non PLP Schools	7802	41136	19.0%

In July 2023, the statewide scale and spread of LETRS professional development began per Proviso 1A.73. The SCDE invited districts to join a coalition of the willing by volunteering as a district, select schools, or teams of instructional coaches to participate in LETRS professional development. Statewide Cycle 1 launched in September 2023 and included 67 districts with at least one cohort of educators engaged in LETRS professional learning. Statewide Cycle 1 included 3,485 educators from non-PLP schools and 2,200 educators new to PLP schools. With the previous PLP Cycles and Statewide Cycle 1, 11,200 of approximately 24,000 eligible South Carolina educators will have begun LETRS professional learning in Fall 2023. As shown in Figure 2.2, approximately 12,800 eligible educators will begin in successive statewide cycles planned through the Fall of 2024 (See also Appendix B).

Figure 2.2

Timeline of South Carolina's LETRS Implementation



Practical Measurement System

Bryk et al. (2015) explain that improvement cannot occur without measurement. To improve at scale, we must measure various parts of the system (Hinnant-Crawford, 2020). A mixed methods approach provides for collecting and integrating both quantitative and qualitative data to capture the complexity of a system (Creswell & Plano Clark, 2017). Furthermore, practical measurement is focused on using data already being collected to inform improvement towards addressing the aim of the problem of practice (Hinnant-Crawford, 2020).

Quantitative Phase: LETRS Pre- and post-Volume Assessments

For the first, quantitative phase, an outcome measure will be analyzed to quantify the impact of participation in LETRS professional development on teacher knowledge of foundational reading skills. As a part of LETRS, participants complete a 45-question pre-test before beginning Volume 1, Unit 1. At the end of Volume 1, Unit 4, participants take the same assessments as a post-test. For Volume 2, participants take a 40-question pre-test before beginning Volume 2, Unit 4, and the same assessment as a post-test after finishing Volume 2, Unit 8. LEXIA designs these assessments to evaluate the participant's mastery of the course

content. The assessments are administered virtually within the online modules. The post-tests are not timed, but participants may only take the post-tests once. A certificate of completion is generated if a participant scores 79% or below on the post-assessment. A certificate of mastery is provided if a participant scores 80% or above.

The LETRS Volume Assessments are proprietary, meaning the individual items and detailed information about their reliability and validity are not publicly available. Despite this, an external evaluation conducted by McREL International assessed these tests using a sample of over 780 educators (Ho, 2021). The evaluation revealed that Cronback's alpha, a measure of reliability, for Volumes 1 and 2 tests were .81 and .85, respectively. Furthermore, the assessments demonstrated generally acceptable item discrimination with most distractors proving effective, indicating strong construct validity. Additionally, the content of the LETRS assessments a similar to those described in Moats & Foorman (2003), suggesting a continuity of educational standards and practices. This evidence suggests that the LETRS Volume Assessments are reliable and valid educational assessment tools, despite the scarcity of public information.

Participant pre/post-volume assessment data has been collected as a part of the administration of the LETRS professional learning PLP implementation and was a part of the statewide scale and spread of the program. As a practical measurement tool, it does not add to the administrative burden of users within the system (Hinnant-Crawford, 2020). However, analysis of these results can "illuminate the pragmatic questions of what works, for whom, and under what circumstances" (Hinnant-Crawford, 2020, p. 146).

Qualitative Phase: Focus Groups

For the second, qualitative phase, a purposive sampling strategy will be used to select teams for focus groups. A variety of implementers of the LETRS professional learning will be

identified, including representation at the state, district, and school levels. The focus groups will be structured as semi-structured interviews. Focus groups will be conducted in group settings, moderated by an interviewer, and allow for participants to build upon each other's answers so that large amounts of data can be gathered in a short amount of time (Asbury, 1995; Kitzinger, 1995; Twohig & Putnam, 2002)

Ethical Considerations and Limitations

Though SCDE has shared the PLP school selection criteria, SCDE has yet to publicly share a comprehensive list of PLP schools for concerns about placing a stigma on schools with the label. This practice of masking individual PLP school names will be honored and extended within this study. Participants selected for focus groups will be kept anonymous.

The pre- and post-volume assessment data will be de-identified such that it does not include personally identifiable information. Any presentation of assessment data will be aggregated to ensure that there is no reported *n*-size below 10 to guard against the accidental identification of a participant.

This study is limited to educators who participated in LETRS professional development. Participation by the PLP schools was mandatory because of poor student performance on SCREADY ELA. Statewide Cycle 1 participation resulted from districts volunteering educators for the LETRS professional learning. Selection bias occurs when differences in means between two groups result from differences in attributes between the group participants other than the independent variable (Showalter & Mullet, 2017). Given how the selection for initial participation, scale and spread occurred, this is a limitation of the transferability of the results to all teachers within South Carolina.

This study is limited by the lack of a linking element within the proposed dataset to connect the LETRS volume assessment data with other teacher datasets. With a more robust linking element, the pre- and post-volume assessment data could be linked to variables such as years of teaching experience, certification type, educator preparation history, and teacher demographics. These additional variables would provide more insight into how participant characteristics may have influenced the impact of LETRS professional learning.

Finally, the researcher's positionality at the SEA may inhibit honest participation by LEA and school-level implementers of LETRS professional learning. Thus, the focus groups will be facilitated by someone other than the researcher to limit the impact of this effect.

CHAPTER THREE

FINDINGS

The findings of this sequential explanatory mixed methods study of the impact of LETRS professional development on teacher knowledge will be provided in this chapter. In a sequential explanatory mixed methods study, quantitative data is collected and analyzed first; the qualitative data collection and analysis follow to explain or elaborate on the quantitative results (Creswell & Plano Clark, 2017; Tashakkori & Teddlie, 2003). In this study, the quantitative data quantified the impact of the LETRS professional development on teacher content knowledge. Then, qualitative focus groups using a semi-structured interview protocol were used with state, district, and school LETRS professional development implementers to provide context and a deeper understanding of the implementation and effect of LETRS professional development.

Quantitative Phase: LETRS Pre- and post-Volume Assessments

For the first quantitative phase, pre- and post-volume assessments of educators participating in LETRS professional learning were analyzed. LEXIA developed the volume assessments to measure content mastery as a part of the LETRS online coursework. Participants begin the online LETRS course modules by completing the 45-question pre-assessment for Volume 1. Participants must complete the same as a post-volume assessment at the end of Volume 1, Unit 4. Participants are administered a 40-question pre-assessment at the beginning of Volume 2, Unit 5 and given the same as a post-volume assessment after Volume 2, Unit 8.

These Volume assessments were designed by LEXIA and evaluated for reliability (Cronback's alpha of .81 and .85 for Volumes 1 and 2, respectively) and validity by McREL International (Ho, 2021). Despite their propriety nature, external evaluation supports their

reliability and validity as effective measures of teacher context knowledge (Ho, 2021; Moats & Foorman, 2003).

According to the South Carolina LETRS pacing guide, participants should complete one LETRS volume per academic year. Thus, two years are allotted to the LETRS user licenses to complete both volumes of LETRS professional learning (see Appendix B for a timeline of LETRS rollout and expected implementation in classrooms and student outcomes). Completing the post-volume assessments is required to process the $500 per volume stipend for educators participating in the LETRS implementation.

The volume pre- and post-assessments were administered within the online LETRS platform. The researcher accessed the pre- and post-assessment datasets through the state-level manager LETRS dashboard. After compiling all license sets purchased by the South Carolina Department of Education into a single report, the researcher generated and downloaded a Microsoft Excel file that contained the following variables: (a) Participant Name, (b) Email, (c) Location, (d) Licenses Expiration, (e) State ID, (f) Last Login, (g) Vol 1 Pre-Test, (h) U1, (i) U2, (j) U3, (k) U4, (l) Vol 1 Post-Test, (m) Vol 2 Pre-Test, (n) U5, (o) U6, (p) U7, (q) U8, (r) Vol 2 Post-Test.

Data Screening and Variable Creation

The dataset was screened for errors and anomalies as well as cleaned for analysis (Pallant, 2020). The State ID variable was missing, or alternative text included, for 81.9% of the records. This variable was included for the first time during the statewide implementation to connect the LETRS results to other state educator datasets that include demographic information. It was excluded from this analysis because of its limited utility in linking to other educator data sets. The work being done to include this element will allow for more robust analysis going

forward, to include connection to an educator's years of experience, specific certification area, or educator preparation history. Without this variable, this analysis will be limited to pre-/post assessment scores without other demographic information. The Participant and Email variables were also deleted to anonymize the dataset and prevent the unintentional sharing of personally identifiable information. Finally, it was noted that the U2, U3, U4, and Vol 2 Posttest variables loaded as text or string characters. These variables were converted to numeric characters.

The dataset did not include a variable to identify a participant's LETRS implementation cohort. A new variable was created within the Microsoft spreadsheet by adding a column and assigning a cohort (PLP 1, PLP 2, PLP 3, Statewide 1, or Statewide 2) to the participant based on a defined range of the License Expiration variable. Additionally, a randomized participant code variable was created for each participant so that the analysis could aid in identifying participants for the focus groups.

After cleansing the data and creating new variables within the Microsoft Excel file, the dataset was imported into SPSS version 29 for statistical analysis. SPSS was used to obtain descriptive statistics of the variables and to assess for normality of the distribution of scores on the pre-and post-volume assessments.

Descriptive Statistics

The dataset for this study includes 8,437 educators in 67 South Carolina public school districts who had been assigned a license for LETRS professional learning. Educators from PLP schools constitute 59.9% of the participants in the data set. The remaining participants are included in statewide implementation (see Table 3.1). The dataset for this study consists of 7,392 assessments on the Volume 1 pre-test. The number of completed assessments declines for each successive assessment, with only 1021 Volume 2 post-tests completed (see Table 3.1). This is a

function of the gradual scale and spread of the LETRS intervention by cohort, as illustrated in Figure 2.2 and Appendix B. All cohorts likely have a Volume 1 pre-assessment, except Statewide 2, scheduled to begin the LETRS implementation in Spring 2024. PLP 1, PLP 2, and PLP 3 cohorts should now have a Volume 1 post-assessment. PLP 1, PLP 2, and some PLP 3 Cohorts would have a Volume 2 pre-assessment, and only PLP 1 and PLP 2 cohorts are likely to have completed both volumes of LETRS and have a Volume 2 post-assessment.

Table 3.1

Frequencies of participants by implementation cohort and volume assessment

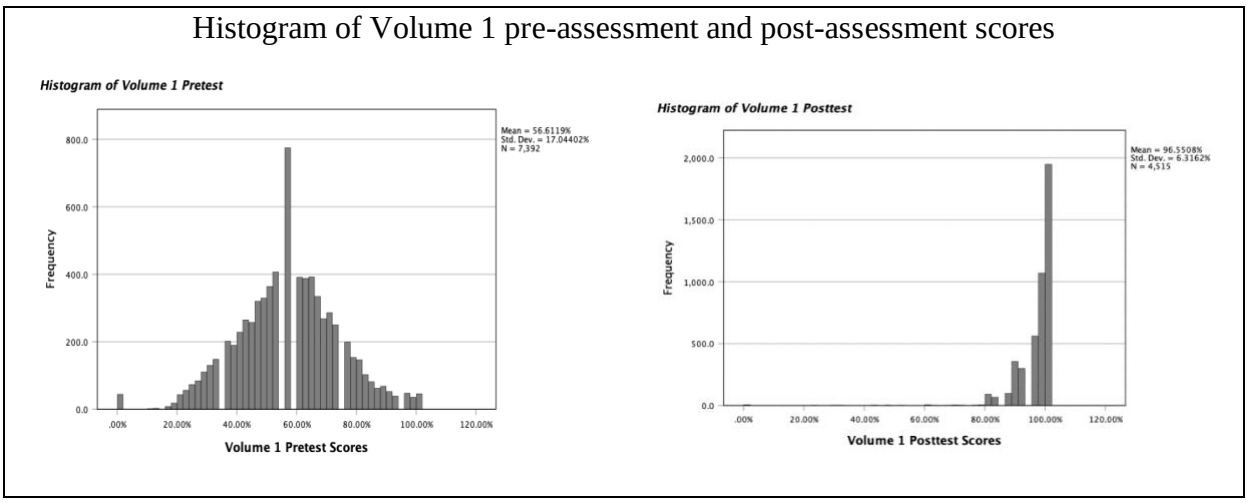
Participant Frequencies by Cohort and Volume Assessment					
Cohort	Total Count	Vol.1 Pretest Count	Vol.1 Posttest Count	Vol. 2 Pretest Count	Vol 2. Posttest Count
PLP 1	347	345	320	289	273
PLP 2	917	912	768	709	464
PLP 3	3790	3769	3360	2792	273
Statewide 1	2432	2124	66	36	11
Statewide 2	951	242	1	1	0
Total	8437	7392	4515	3827	1021

Histograms of the pre- and post-volume assessments for Volumes 1 and 2 are provided in Figures 3.1 and 3.2. These illustrations demonstrate the distribution of assessment scores across all participants. The histogram of Volume 1 pre-test scores in Figure 3.1 depicts a wide range of scores with a generally normal distribution (M = 56.61, SD = 17.04). The scores mostly fall in the center, with the rest falling toward both extremes (Pallent, 2020). This score distribution

indicates varied levels of initial knowledge among the participants. Conversely, the shape of the histogram of Volume 1 post-test scores in Figure 3.1 demonstrates an overall rightward shift towards higher scores (M = 96.55, SD = 6.31). This distribution of scores indicates that the intervention effectively increased teacher content knowledge. The histogram of Volume 1 post-test scores also depicts a narrower distribution, showing reduced performance variability between participants (Laerd Statistics, 2015).

Figure 3.1

Histograms of Volume 1 pre-assessment and post-assessment scores

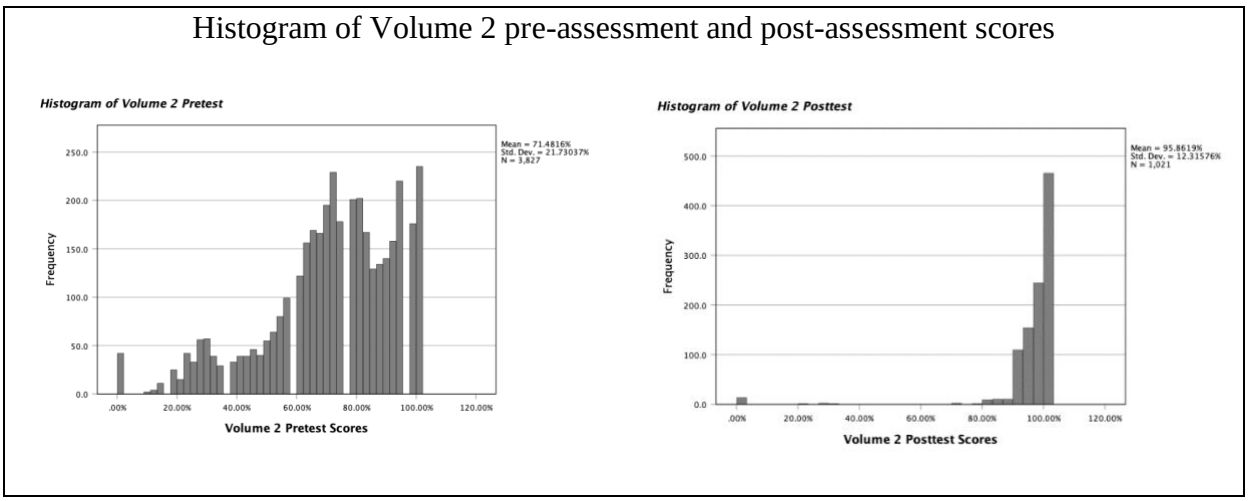


Similarly, Figure 3.2 illustrates a histogram of Volume 2 pre and post-test scores for participants in all cohorts. The histogram of Volume 2 pre-test scores is less normally distributed than Volume 1 pre-test scores but maintains a wide range of participant scores (M = 71.48, SD = 21.73). There is a normal clustering of scores in the middle, but it also includes more scores in the higher extreme than Volume 1 pre-test scores. The shape of the histogram of Volume 2 post-test scores in Figure 3.2 depicts a shift towards higher participant scores (M = 95.86, SD = 12.31). The Volume 2 post-test score distribution indicates that teacher content knowledge increased after engaging in the LETRS professional learning. Moreover, the

performance variability between participants narrowed significantly after the intervention, with clustering focused on a near-perfect score (Laerd Statistics, 2015).

Figure 3.2

Histograms of Volume 2 pre-assessment and post-assessment scores



In summary, comparing Volume 1 and 2 pre- and post-volume assessment histograms indicates shifts towards higher scores and reduced variability. This finding would suggest effective learning or acquisition of teacher content knowledge after the LETRS professional learning program intervention.

Paired Samples T-Test

"A paired-samples t-test is used when you have only one group of people and collect data from them on two different occasions or under two different conditions. Pre-test and post-test experimental designs are examples of the types of situations where this technique is appropriate" (Pallet, 2020, p. 256). In this study, the dataset contained pre- and post-volume assessments for educators who participated in the LETRS professional learning. Not all participants had a score for each of the pre- and post-volume assessments due to the scale and spread of the LETRS intervention by cohort. All cohorts likely have Volume 1 pre-assessment, except Statewide 2.

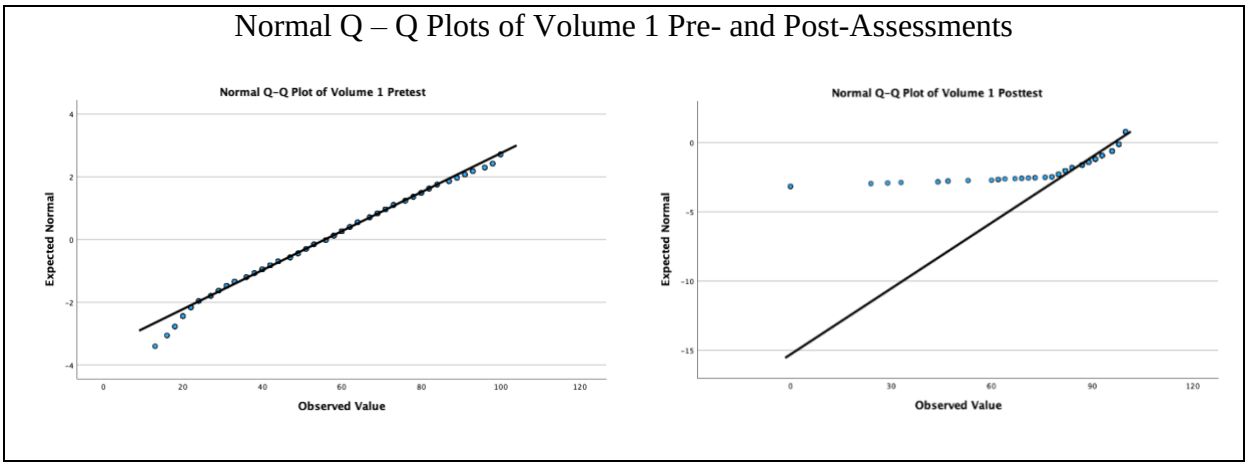
PLP 1, PLP 2, and PLP 3 cohorts should now have a Volume 1 post-assessment. PLP 1, PLP 2, and some PLP 3 Cohorts would have a Volume 2 pre-assessment, but only PLP 1 and PLP 2 cohorts are likely to have completed both volumes of LETRS and have a Volume 2 post-assessment. Missing values on the pre-and post-volume assessments were excluded based on a case analysis by analysis (Laerd Statistics, 2015).

Volume 1: Paired-Samples T-Test

A paired-samples t-test was used to determine whether there was a statistically significant mean difference between the Volume 1 pre-assessment scores compared to the Volume 1 post-assessment scores. Outliers were detected from the end of the box in a boxplot on the Volume 1 post-assessment scores. Inspection of their values did not reveal them as inaccurate, and they were kept in the analysis. The assumption of normality was violated, as assessed by Shaprio-Wilkes's test (Volume 1 pretest: $p = .995$; Volume 1 posttest: $p = .514$). Because the sample size is greater than 50, the Normal Q – Q Plots were analyzed. The observed values on the Volume 1 Pretest Q – Q Plots were normally distributed. However, the observed values on the Volume 1 Posttest Q – Q Plots were not found to be normally distributed, with higher scores observed than predicted (See Figure 3.3). The assumption of normality was violated, but given the sample size, no scores were excluded from the paired-samples t-test.

Figure 3.3

Normal Q – Q Plots of Volume 1 Pre- and Post-Assessments



Participants scored higher in the Volume 1 post-assessment after participating in the LETRS professional learning (M = 96.55, SD = 6.31) as opposed to their score on the Volume 1 pre-assessment (M = 55.73, SD = 17), with a large effect and statistically significant mean increase of 40.81, 95% CI [40.33, 41.31], $t(4514) = 162.74$, $p < .001$, $d = 2.42$. This observed increase in teacher knowledge scores after Volume 1 of LETRS professional learning is not only of statistical significance but also has practical significance. An average increase of more than 40 points on the assessment represents a near doubling of content proficiency, with the average educator achieving a near-perfect score after the intervention of LETRS professional learning.

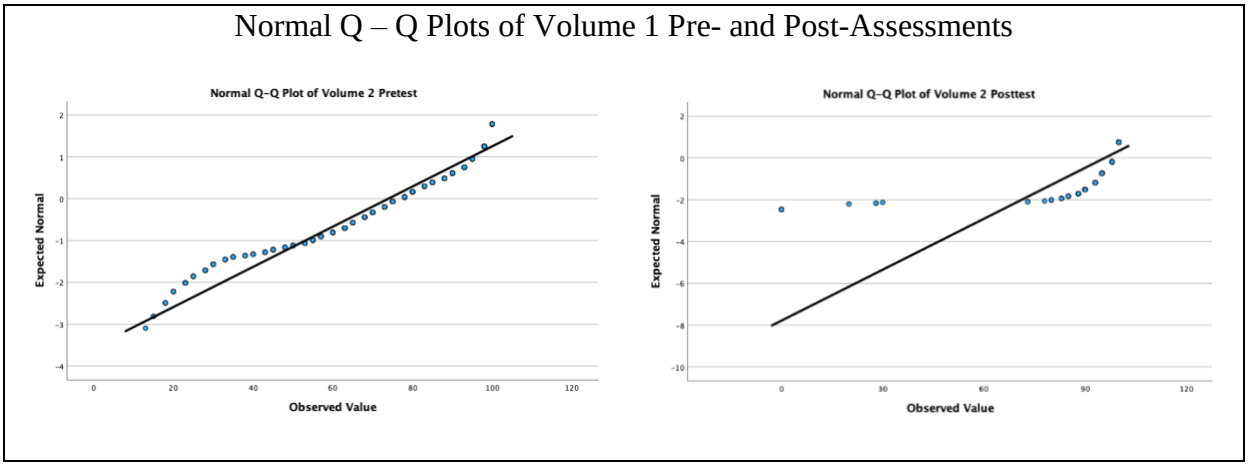
Volume 2: Paired-Samples T-Test

A paired-samples t-test was used to determine whether there was a statistically significant mean difference between the Volume 2 pre-assessment scores and the Volume 2 post-assessment scores. Outliers were detected from the end of the box in a boxplot on the Volume 2 post-assessment scores. Inspection of their values did not reveal them as inaccurate, and they were kept in the analysis. The assumption of normality was violated, as assessed by Shaprio-Wilkes's test (Volume 2 pretest: p = .923; Volume 2 posttest: p = .290). The Normal Q- Q Plots were

analyzed because the sample size is greater than 50. The observed values on the Volume 2 Pretest Q – Q Plots were normally distributed. However, the observed values on the Volume 2 Posttest Q – Q Plots were not normally distributed, with scores above and below what was predicted (See Figure 3.3). The assumption of normality was violated, but no scores were excluded from the paired-samples t-test analysis, given the size of the sample.

Figure 3.4

Normal Q – Q Plots of Volume 2 Pre- and Post-Assessments



The results of the paired-samples t-test demonstrated that participants scored higher in the Volume 2 post-assessment after participating in the LETRS professional learning (M = 95.86, SD = 12.32) as opposed to their score on the Volume 2 pre-assessment (M = 73.92, SD = 20.82), with a large effect and statistically significant mean increase of 21.94, 95% CI [20.49, 23.39], $t(1020) = 29.73$, $p < .001$, $d = .93$. The observed increase in teacher knowledge scores after Volume 2 of LETRS professional learning is not as large as that observed in Volume 1. However, the Volume 2 pre-test scores were also higher. Like with Volume 1, the change was of statistical significance and practical significance. Educators averaged an increase of more than 21 points on the assessment, with many educators achieving a near-perfect score after the intervention of LETRS professional learning.

Kruskal-Wallis Test

The Kruskal-Wallis Test is the "non-parametric alternative to a one-way between-groups analysis of variance" that allows comparing scores on a continuous variable for three or more groups (Pallant, 2020, p. 243). Simply put, this test can determine if there is a statistically significant difference between two or more groups on an independent variable (Laerd Statistics, 2015). Here, the pre- and post-volume assessment scores were analyzed to see if there were differences between the PLP cohorts and the Statewide implementation cohort of educators participating in the LETRS professional development. Missing values on the pre- and post-volume assessments were excluded based on a case analysis by analysis.

Cohort Comparison: Volume 1 Pre-assessment Scores

A Kruskal-Wallis test was conducted to determine if there were differences in Volume 1 pre-assessment scores between cohort groups: PLP 1 (n = 345), PLP 2 (n = 912), PLP 3 (n = 3769), and Statewide 1 (n = 2366). Distributions of the Volume 1 pre-assessment were similar for all groups, as assessed by visual inspection of a boxplot. Median Volume 1 pre-assessment scores were statistically significantly different between the different cohort groups, $\chi^2(4) = 146.578$, p = <.001. Pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. This post hoc analysis revealed statistically significant differences in Volume 1 pre-assessment scores between all the PLP cohorts (*Mdn* = 56.00%) (p = < .001) and the Statewide 1 cohort (*Mdn* = 60.00%, (p = < .001), but not between the PLP cohorts (*Mdn* = 56.00%) or any other group combination (See Appendix C).

Cohort Comparison: Volume 1 Post-assessment

A Kruskal-Wallis test was conducted to determine if there were differences in Volume 1 post-assessment scores between cohort groups: PLP 1 (n = 320), PLP 2 (n = 768), PLP 3 (n = 3360), and Statewide 1 (n = 66). Distributions of the Volume 1 post-assessment were similar for all groups, as assessed by visual inspection of a boxplot. Median Volume 1 post-assessment scores were statistically significantly different between the different cohort groups, $\chi^2(4) = 44.330$, $p = <.001$. Subsequently, pairwise comparisons were performed using Dunn's (1964) procedure with a Bonferroni correction for multiple comparisons. Adjusted p-values are presented. This post hoc analysis revealed statistically significant differences in Volume 1 post-assessment scores between PLP 1 (*Mdn* = 98.00%, SD = 7.99, skewness = -3.086) ($p = < .001$) and PLP 3 (*Mdn* = 98.00%, *SD* = 5.68, skewness = -7.668) ($p = < .001$) cohorts and between PLP 2 (*Mdn* = 98.00%, *SD* = 6.89, skewness = -6.551) ($p = < .001$) and PLP 3 (*Mdn* = 98.00%, *SD* = 5.68, skewness = -7.668) ($p = < .001$) cohorts, but not between any other group combinations (See Appendix D).

Quantitative Analysis Summary

This study examines the impact of LETRS professional learning on educators in South Carolina public schools. For the first quantitative phase, pre- and post-volume assessments of educators participating in LETRS professional learning were analyzed. The dataset consisted of 7,392 educators who had completed at least one LETRS volume assessment. The participants' pre- and post-assessment scores indicate increased knowledge after LETRS professional learning. The histograms illustrate shifts towards higher scores and reduced variability. Paired-sample t-tests confirm statistically and practically significant improvements between pre- and post-assessment scores for both volumes. Additionally, a Kruskal-Wallis test compared scores across PLP cohorts and Statewide implementation, revealing significant differences in pre- and

post-assessment scores among cohorts. Overall, the findings suggest the effectiveness of LETRS professional learning in enhancing educator content knowledge.

Qualitative Phase: Focus Groups

The qualitative focus groups are intended to provide context and a deeper understanding of the implementation and effect of LETRS professional development. Focus groups provide data similar to individual semi-structured interviews but are generally moderated in a group setting (Asbury, 1995; Kitzinger, 1995; Morgan, 1993). In this study, two focus groups were formed containing representatives of the following groups: state literacy specialists who lead LETRS implementation in PLP schools, district staff responsible for LETRS implementation across schools, and school-based staff responsible for LETRS implementation within identified schools (see Table 3.2). State-level participants were selected based on participation in implementing LETRS professional learning, with many serving across multiple cohort implementations. District and school-level participants were selected due to their schools' participation in LETRS professional learning, with the schools representing a range of student demographics, student achievement, student enrollment size, and rurality. A third-party researcher moderated each focus group to mitigate the risk of participants not sharing open and honest feedback due to this researcher's leadership position at the SEA. The analysis of each focus group yielded three themes related to the impact of LETRS on teacher knowledge: Impact, Needed Support, and Role of Leadership.

Table 3.2

Summary of Focus Group Participants

Summary of Focus Group Participants								
Group	Total	District or School Size			State Region			
		Small	Medium	Large	Upstate	Midlands	Pee Dee	Low Country
Literacy Specialists	6	2	2	2	1	2	2	2
District Administrators	5	2	1	2	0	1	2	2
School Administrators	5	2	1	2	0	1	2	2
TOTAL	16	6	4	6	1	4	6	6

Note: Literacy Specialists may serve more multiple school districts.

Literacy Specialist Focus Group

The focus group of state-level implementers was comprised of SCDE literacy specialists. Since 2019, SCDE literacy specialists have supported PLP schools on-site with the implementation of LETRS professional learning and supported the educators within their assigned PLP schools through classroom observations, instructional coaching, and professional development. Six individual literacy specialists were selected to participate in the focus group based on their continued support of districts and schools with implementing LETRS professional learning in PLP schools across multiple cohorts.

Impact

The literacy specialists reported that LETRS has been valuable to all participants: teachers, reading coaches, other instructional staff, school and district administrators, and even the literacy specialists. These focus group participants described LETRS as “invaluable,” “a good struggle,” “a very, very valuable experience,” and changing “my whole thinking about literacy instruction and the teaching of reading.” The literacy specialists report observing the

learning of LETRS being applied in classroom practice through the use of instructional strategies, like sound cards and Elkonin boxes, and assessments aligned with the science of reading.

The participants shared data indicating significant improvements in reading performance specific to their individual schools. One participant noted that after implementing LETRS, the percentage of students scoring DNM on the third grade SCREADY ELA exam decreased from 81% in 2019 to 45% in 2023. Participants reported Tier 3 schools moving to Tier 2 and even Tier 1 status. Other improvements noted were in special education, with students now receiving more differentiated support and experiencing more success because LETRS has helped teachers identify specific areas where students struggle with reading. As a result, schools have shifted the methods for identifying students needing intervention and focus the intervention support on the student's specific reading needs rather than a one-size-fits-all approach.

One participant shared a story of a second-grade teacher who did not have the tools she needed to succeed before implementing the LETRS professional learning within the school. As a result, she was "on the administrator's watchlist" and in danger of leaving the teaching profession. After participation in LETRS training, the teacher was reportedly equipped with the skills necessary to be successful in the classroom and positively impact the reading outcomes of her students. The literacy specialist said that LETRS training "saved the career" of this educator.

A few focus group participants reported that some educators needed help to see the value of the LETRS training, especially in the early units of Volume 1. While the theory is important, participants noted that educators "didn't start connecting the dots" until they applied it to classroom practice. They reported that teachers usually start to see the value of LETRS in Unit 2 and reflect on the (lack of) alignment of their instructional materials to LETRS content in Unit 3.

Moreover, the literacy specialists claimed LETRS training benefits classrooms even if teachers do not fully buy into the science of reading. Even teachers who complete LETRS solely for compliance are observed implementing practices in their classrooms that originate from the LETRS learning, and educators are starting to connect what they learned to the new foundational skills ELA standards.

The literacy specialists noted that much work is occurring to improve literacy in South Carolina; though it is an essential component of the overall work, successes cannot be attributed to LETRS alone. Another area mentioned that positively impacts student learning is the adoption of high-quality instructional materials aligned with the science of reading.

Needed Support

LETRS professional learning is a significant investment of time for districts, schools, and educators. LETRS professional learning requires watching LETRS videos, working through online modules, and completing required readings. Each of these tasks requires time. The literacy specialists mentioned additional support being necessary to organize time around the new LETRS learning so that the new knowledge is translated into classroom practice. Without the additional time, the requirements could overwhelm and lead to further teacher burnout.

These focus group participants noted that the impact of LETRS was more evident in sites where teachers were supported by administrators who scheduled time effectively around LETRS implementation and balanced the learning with other district initiatives and professional development (e.g., math and behavior management). A strategy mentioned to support the impact of LETRS was to allow teachers time during the school day to complete LETRS requirements. It was said that where teachers were not provided this time during the day, LETRS professional learning was more often met with resistance, resulting in decreased teacher working conditions.

Additionally, educators should be supported with structured time during the school day to engage in conversations about their new learning and how instruction should look and shift due to the new LETRS learning. It is not enough to receive the information; an intentional focus must be placed on bridging the new knowledge with classroom practice for the most significant impact. One of the participants remarked that the most successful implementations occur when "environments are created where teachers are cared for by their school leaders yet held accountable for the work that has to be done."

District and School-Based Implementer Focus Group

A focus group of district and school administrators responsible for LETRS implementation within schools was formed. The focus group comprised five district administrators and five school-based administrators, totaling ten focus group members. These individuals were selected based on their leadership in implementing LETRS professional learning at the school level, many over multiple cohorts and sites. These focus group members represent districts and schools with various student demographics, student achievement levels, and urban/rural settings.

Impact

The administrators mainly reported that LETRS effectively increased teachers' knowledge of the science of reading and how children learn to read. It was noted that teachers better understood how to explicitly teach foundational reading skills, especially phonics and phonemic awareness. They also reported that teachers were equipped with instructional strategies they could immediately use to teach and support students. One focus group member remarked, "LETRS has provided us with an understanding of how to recognize and fill the gaps of our students." Participation in LETRS helped "teachers identify the 'why' behind curriculum shifts."

Many participants noted improved reading performance on SC READY ELA within the schools they served. One participant shared that the percentage of students scoring DNM on SC READY ELA decreased from 68% in 2019 to 39% in 2023. Another participant remarked that based on the improvements, his school would no longer be identified as a PLP school. This participant attributed the school's improvement to LETRS implementation.

One participant shared disapproval with LETRS compared to other products aligned with the science of reading. The participant stated:

> LETRS is an inferior system and product to Orton-Gillingham's Recipe for Reading. Unlike O.G., LETRS does not provide concrete instructional strategies that can immediately be implemented in the classroom. It provides theory, insights, and some "ideas" for practice, but inexperienced teachers cannot easily implement this theory. It also contradicts some O.G. practices that our district has fully implemented with fidelity and causes confusion for teachers. LETRS training is also highly difficult to schedule. With a teacher shortage across the state and low teacher morale, it's unreasonable and a serious blight on teacher's family time to ask teachers to complete over 16 hours of coursework independently. As a result, caring districts, like my own, have tried to schedule LETRS training time during contractual hours. This negatively impacts student learning instead of the program's intent of helping instruction. Teachers will miss a total of five instructional days to receive training. Lastly, due to substitute shortages across the state, classroom assistants also have to be pulled to cover classes for missing teachers in training. This creates major detriments to student learning, especially in kindergarten and first grade. LETRS has been a tremendous hindrance to the academic growth of my

> school and has directly resulted in denying my children the core instructional time they desperately need.

There are several important considerations related to implementation contained within this quote. Several implementation factors, such as time and scheduling, will be discussed elsewhere, but it also speaks specifically to the tension between state and district policy implementation. Many districts worked to implement a science of reading initiative prior to recent legislation and a shift in state reading policy. Thus, even when the philosophies align, there may be differences to be negotiated between the state and districts in tactics to achieve the shared policy goals.

Several participants observed that some educators and school or district leaders might resist implementing what they learn in LETRS because they fear that it means they must overhaul their instruction and instructional materials completely. These educators feel emotionally invested in those methods and materials. It was suggested that guidance on repurposing some of what they have been doing and using it to align with the science of reading would help alleviate these fears.

One respondent expanded upon this idea to note that there can still be a place for balanced literacy materials in a classroom grounded in reading science. “Leveled readers are still valuable books that can be used for read-alouds and comprehension work.” A recommendation was to create a guide that thoughtfully examined how current instructional structures and materials can shift to incorporate the science of reading without necessarily throwing everything out. This could help educators envision how to transition and assist schools in saving money instead of purchasing new materials they do not need.

Needed Support

Two areas for additional support were identified consistently by the district and school administrator focus group: 1) finding time during the school day for teachers to complete the

modules and collaborate on LETRS; 2) aligning what staff are learning from LETRS with current instructional materials and strategies.

Provision of Time. All administrators in the focus group identified time as the most frequently cited need for successful implementation of LETRS professional learning. Some participants expounded and specified that their schools need time to complete LETRS professional learning, practice LETRS strategies, implement LETRS knowledge, and align what they are learning into instruction. One participant noted that support for LETRS implementation "was easier at the pilot stage in a few schools, but I worry district-wide implementation will be more difficult." Another participant shared, "I have worked closely with the administrators and coaches to help with pacing and teacher support. I have helped problem-solve how to work with teachers when they have 30 minutes of unencumbered time during planning. Teachers do not want to stay after school to complete the unit work."

Aligned Resources to Align Instruction. Another identified theme was the need for aligned materials and resources, including textbooks, supplemental resources, and supplies. Several participants mentioned a need for a stronger phonics program or curriculum, and one specified a need for decodable readers.

Several participants shared that they have observed a need for more alignment between LETRS learning and instructional materials currently being used and available within districts and schools. Educators usually note the lack of alignment as they complete the LETRS training. Examples of nonaligned materials that were shared by participants as widely available included Scholastic Resources, Fountas and Pinnell LLI kits, and various ELA curricula on the current South Carolina Board of Education approved instructional material list. Participants in PLP

schools were grateful that as a part of the PLP initiative, they received early adoption of high-quality instructional materials aligned with the science of reading.

According to many within this focus group, schools must align instruction and resources with what they are learning from LETRS if there is to be an impact on classroom practices and student outcomes. Participants described this as "connecting and transferring" LETRS knowledge to classroom instruction and understanding how to implement LETRS learning. The alignment of resources is critical in supporting teachers to connect "effective strategies, such as using interactive read-alouds, while incorporating effective phonics instruction." One respondent cited a need for follow-up professional development sessions to help teachers with this and noted, "Taking the course alone has not resulted in those practices learned being implemented in the classrooms."

Role of Leadership

Enthusiastic, engaged school leaders are crucial to the success of LETRS training within a school setting. Generally, the more engaged a school or district leader was in the training efforts, the more positively they talked about LETRS during the focus group. A common theme was that LETRS training is more successful in schools where the school leader is fully on board, especially if they are completing the training with their teachers. One participant noted that "teachers need to feel a sense of, 'We're all in this together.'" The leader sets the tone for the training within the building. Leadership mattered.

In some schools, the literacy/reading coaches were noted as the true leaders of LETRS training. In those cases, a school leader who promotes LETRS with the staff supports the literacy/reading coach and works closely to provide clarity of mission and alignment of resources can still result in effective leadership for LETRS training. Again, the school leader sets the tone and provides clarity of mission around literacy improvement. They do not necessarily have to be

the experts, but they must work to create the conditions necessary for the teachers to take risks and set the expectations that the new LETRS learning would be incorporated into classroom practice.

Similarly, according to the state-level focus group participants, the impact of LETRS was most significant when leaders (*i.e.*, principals, reading/literacy coaches, and district staff) were focused on aligned instructional leadership, not just the management of school operations. One participant remarked, "You have to have a vulnerable leader who will put themselves out there. That vulnerability and a culture of 'We're all in this together' helps teachers feel safe to risk trying out new practices in the classroom." It was stated that shifting classroom practice places teachers in an exposed position, where they must contend with unlearning old habits and incorporating new learning. An example of supporting this type of learning includes having educators "bring the Bridge to Practice portfolios to PLCs where discussion was centered around what they implemented and how it went." Consistency and support are key if the changes are sustained in the long term.

When leaders are not instructionally focused, they are more likely to fail to see the misalignment of practices and requirements. A participant reported that one school was simultaneously having educators complete LETRS training and attend balanced literacy professional development. Other misaligned practices mentioned by the participants included using Fountas and Pinnell Leveled Literacy Intervention (LLI) and Reading Recovery for reading intervention. These examples of misalignment resulted in a lack of cohesion and left educators wondering how to implement effective reading instruction and whether a shift was necessary.

Qualitative Analysis Summary

The qualitative phase of the study consisted of conducting focus groups to gain insight into the implementation and impact of LETRS professional development. Two focus groups were formed: one included state literacy specialists who supported the implementation of LETRS in PLP schools and the statewide rollout; the other included district and school-based staff involved in LETRS implementation, representing a variety of school sizes, student demographics, student achievement levels, and urban/rural locations. The discussions revealed several key themes:

1. **Impact**: Participants across all focus groups emphasized the positive impact of LETRS on teacher knowledge and classroom practices. They reported an increased understanding of foundational reading skills and observed student reading performance improvements. LETRS was credited with providing teachers with practical strategies and tools for effective literacy instruction. Although some educators initially struggled to see the value of LETRS, they were still observed applying the strategies in their classrooms.
2. **Needed Support**: Participants highlighted the significant time investment required for LETRS professional learning and the importance of structured support to integrate LETRS knowledge into classroom practice effectively. They emphasized the necessity of providing teachers with dedicated time during the school day for LETRS activities and collaborative discussions. Additionally, the availability and alignment of instructional materials with LETRS content were crucial for successfully implementing the strategies taught in LETRS.
3. **Role of Leadership**: Leadership emerged as a critical facilitating factor influencing the success of LETRS implementation. Engaged and supportive school leaders were essential

for creating a positive environment conducive to implementing LETRS practices. Leaders who actively participated in LETRS training alongside teachers were particularly effective in fostering a sense of shared commitment and facilitating the integration of LETRS principles into classroom instruction.

Overall, the focus group discussions highlighted the transformative potential of LETRS professional learning in improving teacher knowledge and student outcomes. However, they also underscored the importance of addressing logistical challenges and ensuring strong leadership support to maximize the impact of LETRS implementation.

Putting It Together: Integration of Data

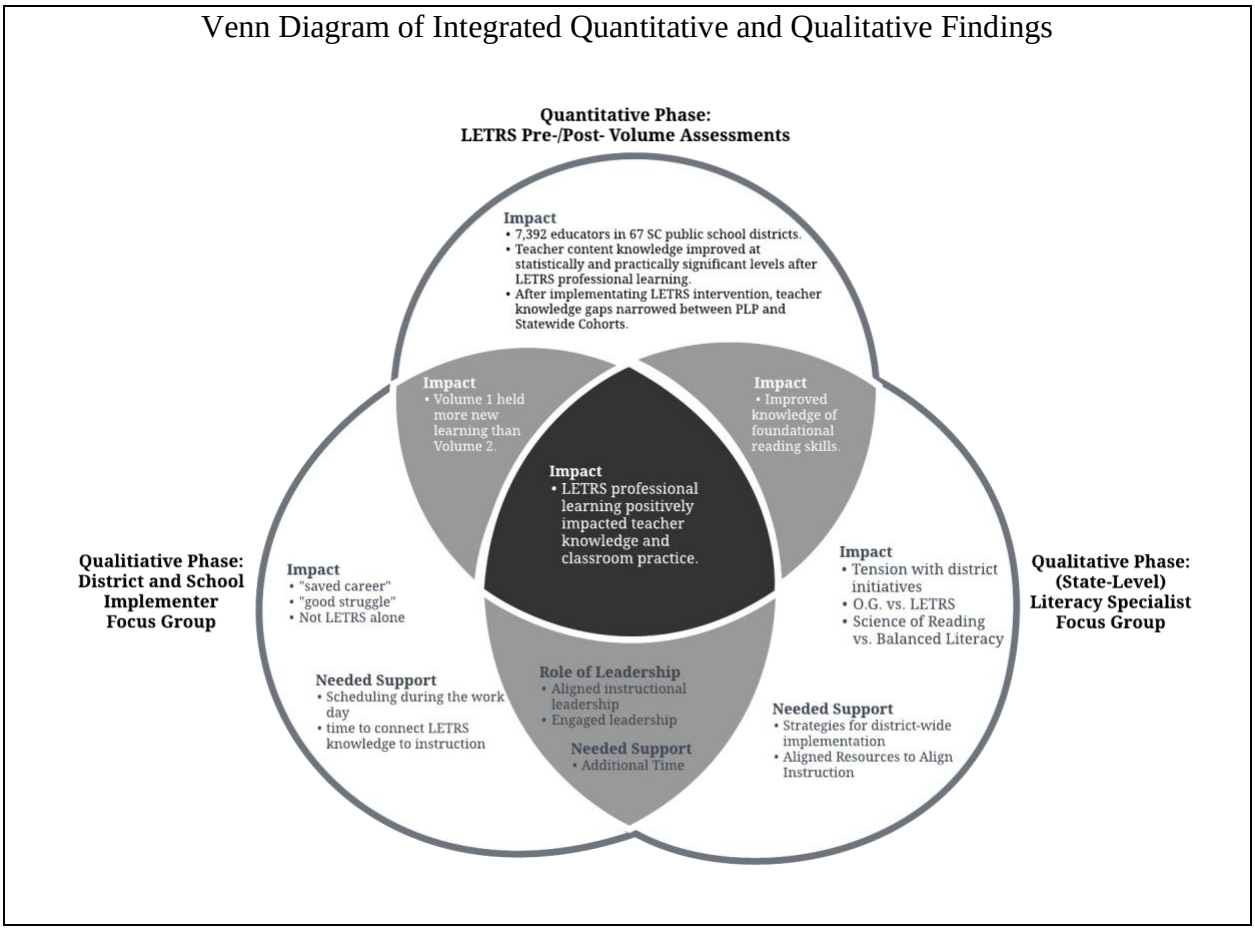
Integration within a mixed methods study necessitates treating quantitative and qualitative data as equal contributors to address a common research question (Moran-Ellis et al, 2006). The research question for this study, which sought to determine the impact of South Carolina's reading policy through the LETRS professional learning intervention, was initially quantitatively framed. It was then enriched by qualitative insights from focus groups of different stakeholder groups (Miseholm & Fetters, 2017). The quantitative analysis of pre- and post-assessment scores demonstrated a statistically significant and practically meaningful increase in teacher knowledge following the LETRS professional learning intervention. The quantitative results also revealed a statistically significant difference between PLP and statewide cohorts in pre-volume assessments that leveled after the LETRS learning intervention**.** Complementing these findings, multi-perspective focus groups not only corroborated the positive impact of the LETRS intervention on teachers but also identified areas where additional support is needed and highlighted the critical role of leadership. As Akerblad et al. (2021) observed, "The data

collected from the different actors ‘fed’ each other and opened up interpretative views that would not have otherwise emerged” (p. 160).

As shown in Figure 3.5, the process of integrating quantitative and qualitative data demonstrated the impact of the LETRS intervention on teacher knowledge and classroom practice and revealed the inhibiting and facilitating factors through the reflections of different stakeholders. The quantitative data enumerated the impact of the LETRS intervention on teacher knowledge of foundational skills as statistically and practically significant and revealed the leveling effect of the LETRS intervention on teacher knowledge gaps among the lowest-performing schools and their statewide peers. The qualitative focus group data added context and nuance to these quantitative findings by revealing where and to what extent this knowledge increase was perceived as most profound. The focus group data also extended the impact of the LETRS intervention from mere knowledge acquisition to observed implementation of the new learning in classroom practice. Moreover, though each focus group contributed to the understanding of the impact of the LETRS intervention with the identification of common themes, the multi-perspective approach allowed for the study to detect how the identified themes manifest at the state, district, and school levels.

Figure 3.5

Venn Diagram of Integrated Quantitative and Qualitative Findings



CHAPTER FOUR

DISCUSSION

Literacy is a fundamental civil right and serves as the foundation of lifelong academic and personal achievement. In South Carolina, the odds are often worse than a flip of a coin for whether a student meets ELA grade-level standards (see Figure 1.1). Moreover, South Carolina's historical NAEP reading performance ranks near the bottom nationally compared to other states (NCES, 2022). In short, this problem of practice affirms that we're wasting time as educators in South Carolina if we're not addressing (il)literacy.

This chapter delves into the insights and implications of this sequential explanatory mixed methods study, evaluating how the LETRS professional learning intervention has impacted teacher knowledge within the context of South Carolina's reading policy. This chapter summarizes the study's findings and seeks to answer if South Carolina's reading policy, via the LETRS professional learning intervention, is addressing the problem of practice of poor reading performance of South Carolina's students. The study's implications for practice, policy, and future research are also considered.

In this study, the quantitative data demonstrated the positive impact of the LETRS professional development on teacher content knowledge. Then, a qualitative phase with focus groups of multi-perspective stakeholders confirmed the effect of the LETRS intervention on teacher knowledge and classroom practice. Additionally, through analysis of stakeholders' reflections from diverse perches at the state, district, and school levels, the focus groups revealed the provision of time and lack of aligned instructional resources as inhibiting factors and the role of leadership as a facilitating factor of the LETRS professional development intervention.

Discussion of Findings

Finding 1: Impact

Overall, the study's findings suggest the effectiveness of LETRS professional learning in enhancing educator content knowledge. In the first quantitative phase, LETRS professional learning pre- and post-volume assessments of educator knowledge of fundamental literacy skills were analyzed. The descriptive statistics suggest that teacher content knowledge of foundational literacy skills was positively impacted by participation in the LETRS professional learning intervention. The histograms of pre- and post-volume assessments for Volume 1 and Volume 2 demonstrated shifts towards higher scores and reduced variability in post-volume assessment scores compared to pre-volume assessment scores.

The paired-samples t-test analyses of pre- and post-assessment scores in Volumes 1 and 2 resulted in statistically significant increases. The observed increase in Volume 1 pre- and post-assessment scores was greater than in the analysis of Volume 2 pre- and post-assessment scores, with a mean increase of 40.81 compared to 21.94. Both increases are practically significant, with participants answering 10 and 5 more questions accurately on average.

The focus groups corroborated this finding, with participants observing that educators struggled more with LETRS Volume 1 because it contained knowledge that was newer and more foreign to educators than the content of LETRS Volume 2. It was also noted that after this new learning in LETRS Volume 1, educators began to question current classroom practices and noticed the need for more alignment of their instructional materials with the science of reading and the instructional practices advocated by the LETRS intervention.

Most notably, the study's quantitative findings suggest gaps within teacher knowledge of foundational reading skills leveled across PLP cohorts and their statewide peers after participating in the LETRS intervention. A Kruskal-Wallis test comparing LETRS Volume 1

pre-assessment scores in the PLP cohorts and the Statewide cohort demonstrates statistically significant differences, indicating initial disparities in teacher knowledge in the state's elementary schools identified as low-performing (PLP) and those not identified as PLP (Statewide). The median scores on the assessments show that before the LETRS intervention, teachers in the PLP cohorts had a lower knowledge level than the Statewide cohort.

LETRS Volume 1 post-assessment results showed significant improvements, particularly within certain PLP cohorts, with median scores reaching 98%. The lack of significant post-assessment differences in some group combinations could indicate that the LETRS intervention effectively leveled teacher knowledge across cohorts, potentially reducing initial disparities in teacher knowledge. This positive outcome indicates that the LETRS intervention successfully elevates teachers' content knowledge within South Carolina's underperforming schools to a level comparable to their statewide peers.

Focus group participants at the state, district and school levels emphasized the positive impact of LETRS on teacher knowledge and classroom practices. They reported an increased understanding of foundational reading skills and noted student reading performance improvements. LETRS was credited with providing teachers with practical strategies and tools for effective literacy instruction. Some educators initially struggled to see the value of LETRS, yet even these educators were observed applying the new knowledge in their classrooms. Instructional strategies cited in the focus groups observed in classroom practice included sound cards, Elkonin boxes, and assessments aligned with the science of reading. There were also examples provided of teachers being newly equipped with the skills and tools necessary to successfully teach children how to read, who before the LETRS intervention struggled to teach reading.

Finding 2: Needed Support

As new policy encounters individuals with historical experiences and knowledge that differ from newly desired practices, successful policy implementation must attend to a system orientation, address content and process, use networks of teachers, and focus on classroom practice (Cohen, 1990; McLaughlin, 1987). Without attending to policy implementation factors, the practical result may be a mix that is neither what was nor perhaps what was intended by the new policy (Cohen, 1990; McLaughlin, 1987).

The focus group discussions provided nuance and context for implementing LETRS across the state. The data analysis deepened the understanding of the impact of the LETRS intervention while revealing inhibiting factors within the system, such as needed support for the provision of additional time and aligned resources.

Provision of Time. The focus group participants report requiring structured time within their workday to complete the LETRS modules and collaborative discussion. The administrators must schedule this time to ensure it is used effectively without contributing to teacher overload. Sites that have successfully implemented the LETRS professional learning intervention balance LETRS learning with other school and district initiatives, thereby reducing resistance that may occur when educators feel burdened by too many initiatives or after-hour requirements. The strategic scheduling of LETRS is key in fostering a supportive environment where teachers feel valued and can dedicate the necessary attention to their professional development.

Alignment of Resources. The focus group discussion stressed the importance of high-quality instructional materials aligned with LETRS professional learning. Educators note the misalignment of current resources and the new learning during Volume 1 of LETRS. A disconnect between the LETRS training and the instructional materials available can hinder the application of the LETRS practices. Participants stressed the significance of having aligned

phonics programs, decodable readers, and instructional materials that support the principles of the science of reading. Such alignment facilitates the connecting and transferring of LETRS knowledge into classroom practice, allowing for an aligned and effective literacy framework. The support needed for the effective implementation of LETRS extends beyond professional development sessions; it involves the intentional planning of educators' time and the careful curation of instructional resources that align with a systematic approach to literacy instruction. This need for alignment with the science of reading was noted and a priority in evaluating and selecting high-quality instructional material in South Carolina's most recent state-level adoption process.

Finding 3: Role of Leadership

Leadership emerged as a critical facilitating factor influencing the success of LETRS professional learning implementation. Effective school and district leaders in this context understand the content of LETRS and can model the practices of systematic literacy instruction, but most importantly, these leaders carve out time for LETRS professional learning and create spaces for the necessary collaboration among educators. They ensure that teachers within a culture of trust and safety have the time and resources to engage with the LETRS material academically and practically to shift their classroom practice.

These leaders are adept at fostering a culture that values continuous improvement and evidence-based practices. They align the school's instructional programs and strategies with the science of reading, ensuring that the policy and practice align with the changes LETRS introduces. In this sense, the leadership necessary is not just administrative but instructional based, equipped to recognize the barriers to implementing the policy in practice and actively working to remove the identified barriers. In summary, leadership support for LETRS

implementation is about engagement, support, modeling, and the strategic alignment of practices and policies to support teachers in effectively delivering literacy instruction.

Upon reflection on the findings of this study, leadership is an essential element absent from Figure 1.6's driver diagram of the problem of practice for this study. The identified primary drivers are certainly necessary to improve student outcomes: access to high-quality instructors, access to high-quality instructional materials, and access to instructional time. However, these elements may be predicated upon effective instructional leadership within schools. Without effective leadership to create, and sometimes demand, these conditions, individual teachers may not be able to create these necessary conditions alone.

Implications for Policy

As states and districts ponder reading policy and enactment factors for improved outcomes and successful policy implementation, this research study provides several implications for consideration by policymakers:

- **Consider a Science of Reading Focus.** Reading policy is in flux nationwide. There is growing policy momentum toward incorporating systematic phonics instruction and explicit, systematic reading instruction in the early grades. Policies prioritizing the science of reading are grounded in evidence-based practices, providing a theory of action for literacy instruction that has been empirically validated. This comprehensive policy lens focuses the system's approach to literacy instruction and can serve as a foundation to guide curricular decisions and professional development programs, ensuring educators are equipped with the tools and skills necessary to teach reading effectively.

- **Consider Policy Implementation Factors.** A comprehensive understanding of the factors influencing policy implementation can lead to more effective enactment. It is relatively easy for policymakers to propose changes, but it is more difficult to implement those changes. To support success, new policy needs to have a comprehensive system focus, address both content and process, network teachers, and emphasize translation to classroom practice (McLaughlin, 1987). There should also be a balance between support for implementation and pressure to implement (McLaughlin, 1987). Finally, there should be a recognition that large changes require time for successful implementation (McDonnell & Weatherford, 2016; Tyack & Tobin, 1994). Each of these policy implementation factors is addressed in R2S and S.418, likely contributing to the success of South Carolina's policy enactment.
- **Consider LETRS as a Tool for the Science of Reading Implementation.** The science of reading is not a specific product or curriculum. It is a body of research providing a comprehensive framework for effective literacy instruction. It is essential to understand that the science of reading is not LETRS or any other specific product. There are other products and partners in the market aligned to the science of reading. There are many other products and vendors claiming the science of reading that are misaligned. Discernment between the two is essential. Nevertheless, incorporating LETRS as a key component of state literacy initiatives could provide a standardized approach to improving teacher knowledge and practice grounded in the science of reading, which may positively influence student learning outcomes. LETRS has been shown in this study and other

research as an effective tool for states looking to implement the science of reading-aligned initiatives.

- **Elevate the Teacher Voice and Use Natural Educator Networks.** Policy implementation should utilize the natural networks of teachers to assist in transforming policy into practice (Coburn, 2005). It is not enough for state policymakers, or even district and school leadership, to advocate for a shift in classroom practice. The voice of classroom teachers should also be included in the conversation. Teachers trust other teachers who are in classrooms doing the work of teaching children each day. South Carolina has attempted to elevate the teacher voice in the science of reading policy conversation by creating videos and vignettes of teachers in their own words explaining how LETRS has supported and equipped their classroom practice. These can be accessed at ed.sc.gov/literacy.
- **Address Pre-Service Educator Preparation.** Policymakers should consider addressing identified gaps in teacher knowledge upstream of classroom practice. Re-training teachers in the science of reading once in-service is costly and a far downstream response to a lack of fundamental knowledge necessary for successful literacy instruction. Instead, policy should consider improving and aligning the training pre-service teachers receive in educator preparation. Those seeking to become K-5 educators should enter the classroom with the knowledge to successfully teach reading because most students only receive one chance at learning a particular grade level content; the state should not have to pay for the knowledge twice – once in teacher loans and then again in required professional

development to address a lack of teacher knowledge. Many have commented that there is so much learning necessary in educator preparation that there may not be space to include anything additional. This researcher would submit that a K-5 educator should, at the very least, be prepared to teach children to read on day one of their classroom practice. South Carolina's reading policy, via S. 418 (2023), addresses this concern by adding a requirement for pre-service educators graduating in early childhood, elementary, or special education in 2026 to successfully complete an assessment grounded in the science of reading before becoming initially certified. This policy attempts to incentivize higher education institutions to address these learning competencies in their pre-service coursework.

- **Address Education Leadership Preparation.** Given this study's finding of the importance of effective leadership in translating policy into realized classroom practice, policymakers should attend to the quality and content of preparation programs for educational leaders. Educational Leadership Preparation programs may be the linchpin to effective education policy reform work – in reading and beyond. A gap emerges when reflecting upon the primary drivers first identified in Figure 1.6 in this study. The primary drivers – high-quality staff, high-quality instructional materials, and access to instructional time – are necessary but cannot be fully leveraged without high-quality school leadership. Thus, Education Leadership Preparation programs must equip participants to understand policy implementation strategies beyond mere recognition of ethereal leadership and program administration theory. They should also prepare future education leaders

to effectively mobilize resources and organize structures to support the actualization of policy goals. Effective leaders are the catalyst for creating the systemic conditions necessary for policy implementation (Mania-Singer, 2017).

Implications for Practice

As LETRS professional learning continues to scale and spread toward statewide implementation in South Carolina, this research study provides several implications for practice:

- **Establish a Network Improvement Community (NIC) for School and District Administrators Implementing LETRS.** With leadership emphasized as a critical facilitating factor to aid in implementing the LETRS professional development, a NIC should be established to support school and district administrators in creating conditions for LETRS professional learning implementation. The NIC organizational structure facilitates learning at the individual and organizational levels; more importantly, a NIC provides a mechanism for the learning to accumulate and scale across the organizations (Russell et al., 2017). "A NIC accelerates collective improvement" (Russell et al., 2017, p. 7). Creating effective networks, however, is not only about discovering and relaying what is best practice; it involves navigating "a complex constellation of social, political, and economic forces that support the continuing development and scale-up" (Glazer & Peurach, 2012, p. 702). As the state scales LETRS implementation, an administrators' NIC would help administrators navigate the successful implementation of the LETRS intervention and provide practical structures to support teachers in the transfer of LETRS learning to LETRS practices within the classroom.

- **Include Space for Collaborative Educator Discussion.** Like administrators, educators need to be engaged in professional learning communities; these supportive spaces for collaborative discussions among educators link the new LETRS learning with classroom practice. Local implementers need time "to make sense of, interpret, and adapt external policy directives," thereby enabling the development of locally available resources and guidance (McDonnell & Weatherford, 2016, p. 236). Such resources are necessary to support teachers' capacity to actualize new policies and transform their "conceptions of knowledge, and their approaches to learning and teaching" (Cohen, 1990, p. 326). Allowing time for LETRS learning during the workday is essential but not enough to bridge the learning to practice. Deliberate efforts must be made to provide collaborative discourse around connecting theory to practice.
- **Provide Additional Time.** For LETRS to be successfully embedded in educational practice, the provision of time is a necessary condition revealed by the finding of this study for consideration. School and district leaders must ensure teachers have allocated time within their daily schedules for LETRS learning. This means protected periods for engaging with LETRS modules, collaboration with peers, and integrating learned strategies into classroom instruction without encroaching on their personal time. Without careful consideration of teacher schedules and the provision of time within the school day, teachers are more likely to resist LETRS and become frustrated and overwhelmed by the LETRS initiative. This may result in an unintended consequence of increased teacher burnout.

- **Identify and Provide Aligned Resources.** It was observed that the curricula and instructional materials currently in use within South Carolina schools need to be aligned with the science of reading. This lack of alignment makes educators question how to effectively implement the new learning into classroom practice. State and district leaders should make a concerted effort to recognize the need for more alignment and identify and provide resources that align with the LETRS framework. This includes curated materials, such as phonics programs and decodable readers, that complement the content of LETRS and support the science of reading approach. Additionally, implementers should support educators in bridging the divide between available resources and the new LETRS practices. With a different application, these resources may still have instructional value. Without guidance on effectively incorporating these resources within the classroom, these resources serve as fiscal and mental barriers to implementing best practices.
- **Include Linking Data within Implementation Datasets.** State-level LETRS implementers should work to incorporate data links that connect educators participating in LETRS with other available teacher databases. These data links might include teacher certification numbers, enabling researchers to determine if the impact of the LETRS intervention differs based on other participant characteristics, such as years of experience teaching, certification type, or other teacher demographics. The data links would also connect LETRS professional learning participation with student reading performance outcomes. These links would inform ongoing program evaluation and help further quantify the impact on

literacy achievement in South Carolina. This research study was limited by needing a data element to link educator participation in LETRS with other educator data sets. If these links had been in place, the quantitative data would have been able to provide more nuance and subgroup differentiation.

Implications for Research

This study contributes to the discourse on educational policy's impact on teachers' content knowledge, classroom practice, and literacy education. It also provides several implications for future research:

- **Contributes a Study of Statewide Implementation.** This research adds to the current discourse by studying the impact of a statewide LETRS implementation, with a sample size of 7,392 educators. This research also provided perspectives via the focus groups from stakeholders at multiple levels of the system, revealing inhibiting and facilitating factors to policy implementation. Folsom et al. (2017) was the only other statewide LETRS implementation found in the research, which studied the impact of Mississippi's state-wide LETRS enactment. The remaining research in the current LETRS literature included dissertation studies at a single school level with limited sample sizes. These studies found mixed effects of LETRS implementation (Bills, 2020; Greene, 2023; Houser, 2021).
- **Dataset Limited by Lack of Linking Variable.** A limitation of this study stems from the absence of a linking element within the dataset, which hindered the ability to provide deeper context by integrating data from other teacher datasets. With a more robust linking element, the dataset could have been linked to variables such as years of teaching experience, certification type, or participation

in specific educator preparation programs. These additional variables could have provided valuable insights into how participant characteristics may have influenced the impact of the Language Essentials for Teachers of Reading and Spelling (LETRS) intervention. For instance, understanding how differences in educator backgrounds or qualifications correlate with the effectiveness of LETRS implementation could have offered nuanced perspectives on program outcomes. Integrating such data links would have facilitated subgroup analysis and enriched the interpretation of results, offering a more comprehensive understanding of the intervention's impact on literacy achievement in South Carolina.

- **Distinguish Between LETRS Trained vs. Implemented.** Further research is needed to explore the relationship between LETRS professional learning and what is implemented in classroom practice. Increased teacher knowledge does not necessarily mean a change in classroom practice. Educators can know better without doing better. Future research should expand on the relationship of observed practices before and after implementing LETRS professional learning. This research could provide additional insights into barriers to effective practice and strengthen any connection to student outcomes.
- **Consider LETRS Impact on Student Outcomes.** Further research is needed to directly link the intervention of LETRS professional learning with student reading outcomes, helping to quantify the program's ultimate impact of its intended goal and guide educational strategies. A limitation of this study was that due to the timing, SCREADY student outcome data that could be linked to the full implementation of LETRS professional learning was yet to be available. As

shown in Appendix B, LETRS implementation is a multi-year endeavor, with five years necessary after the beginning of LETRS before results in grade 3 SCREADY scores are expected. This was a similar limitation found in the other studies on the efficacy of LETRS (Bills, 2020; Greene, 2023; Folsom et al., 2017; Houser, 2021).

Conclusion

This sequential explanatory mixed methods study investigated the impact of LETRS professional development on teacher knowledge within the context of South Carolina's reading policy. In the study's first phase, quantitative pre- and post-assessments of teacher knowledge were analyzed, outlining statistically significant gains and leveling of teacher knowledge attributed to LETRS training. In the study's second phase, qualitative focus groups of a diverse range of stakeholders corroborated the quantitative impact findings, highlighted the positive influence of LETRS, revealed obstacles to implementations, such as insufficient time and misaligned teaching materials, and identified leadership as key to successful LETRS/policy intervention. Further implications for policy, practice, and future research were also discussed.

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APPENDIX A

Summary of S.418's Amendments to R2S	
Section	S. 418
59-155-110	• Amends reference to "research-based" practices to "scientifically-based" practices • PreK-Grade 5 focus • Exclusion of curriculum and instructional materials based in three-cueing • Mandates pre-service and in-service professional development based in science of reading, structured literacy, and foundational literacy
59-155-120	• Deletes definition of "discipline-specific literacy" • Adds a definition of "foundational literacy skills" • Adds a definition of "formative assessment" • Adds a definition of "literacy" • Amends "readiness assessment" definition to focus on student competency • Deletes definition of "reading portfolio" • Deletes definition of "research-based formative assessment" • Adds a definition of "Science of Reading" • Adds the definition of "Scientifically-based" • Amends the definition of "Substantially fails to demonstrate third-grade reading proficiency" to include all of Does Not Meet Expectations. • Adds a definition of "Universal reading screener" • Deletes definition of "Writing proficiency skills"
59-155-130	• Deletes professional development requirements for teachers, and school principals on reading and writing in the content areas • Focuses professional development requirements on educators certified in early childhood, elementary, and special education • Clarifies requirements of school and district reading plans and reporting for Summer Reading Camps
59-155-140	• Amends references to "research-based" to "evidence-based or "scientifically-based" • Focuses the legislation on PK-5 reading

	• Adds requirement for middle schools with high proportion of students scoring Does Not Meet Expectations to complete school reading plan
59-155-150	• Amends "readiness assessment" definition to focus on early language and literacy development, physical well-being, and cognitive development. • Allows districts to seek a waiver of 180 student day requirement for CERDEP classrooms to administer readiness assessments.
59-155-155	• Includes requirements currently in Proviso for the administration of formative assessments to students in grades K-5 • Limits the approval of formative assessments to 5 norm-referenced assessments
59-155-160	• Includes requirements currently in Proviso for the administration of formative assessments to students in grades K-5 • Adds an option for students to re-test on SCREADY at the conclusion of Summer Reading Camp to demonstrate successful completion • Adds an option for students to demonstrate successful completion of Summer Reading Camp by assessment on approved, norm-referenced formative assessment • Deletes the reading portfolio as a good cause exemption • Provides for intensive interventions for retained students • Provides for additional intervention services for students in grades K-2 who are not demonstrating reading proficiency • Provides for the inclusion of Grade 1-2 students in Summer Reading Camps
59-155-170	• Deletes reading and writing in the content area requirements and focuses professional development requirements on early childhood, elementary, and special education certified educators • Directs the Department to establish competencies for certification • Directs the Department to deliver professional development grounded in the science of reading and promoting student reading achievement • Provides that successful completion of the professional development satisfies the requirement for a literacy endorsement
59-155-180(C)	• Deletes phase-in period for reading/literacy coach requirements • Clarifies that the Board is authorized to approve professional development requirements

	• Adds a certification exam for initial certification focused on the foundations of reading • Provides an exemption for certified staff not serving in a school setting • Provides a process for approval of professional development course approval by the Department
59-155-200	• Deletes references to balanced literacy practices and required collaborations
59-155-210	• Directs the Department to translate the statutory requirements into guidance documents in collaboration with stakeholders having knowledge of the science of reading
59-155-310(D)	• Establishes a limit of five nationally-normed formative assessments • Codifies requirements for formative assessments to be administered three times per year in grades K-8 • Requires the Department to produce a report of the formative assessment data • Creates a cost to districts who do not comply with the requirement to provide data

APPENDIX B

SCDE LETRS Implementation Timeline									
		2021-2022 Year 1	2022-23 Year 2	2023-2024 Year 3	2024-2025 Year 4	2025-2026 Year 5	2026-2027 Year 6	2027-2028 Year 7	2028-2029 Year 8
Palmetto Literacy Project (PLP) Schools	Cohort 1	Learn Volume 1	Implement Volume 1	Shift in K-1 Instruction	Outcomes in K-1 Data	Outcomes in K-3 Data			
			Learn Volume 2	Implement Volume 2	Shift in 2-3 Instruction				
	Cohort 2		Learn Volume 1 (Fall Start)	Implement Volume 1	Shift in K-1 Instruction	Outcomes in K-1 Data	Outcomes in K-3 Data		
				Learn Volume 2	Implement Volume 2	Shift in 2-3 Instruction			
	Cohort 3		Learn Volume 1 (Spring Start)	Implement Volume 1	Shift in K-1 Instruction	Outcomes in K-1 Data	Outcomes in K-3 Data		
				Learn Volume 2	Implement Volume 2	Shift in 2-3 Instruction			
Statewide Implementation	Phase 1			Learn Volume 1 (Fall Start)	Implement Volume 1	Shift in K-1 Instruction	Outcomes in K-1 Data	Outcomes in K-3 Data	
					Learn Volume 2	Implement Volume 2	Shift in 2-3 Instruction		
	Phase 2			Learn Volume 1 (Spring Start)	Implement Volume 1	Shift in K-1 Instruction	Outcomes in K-1 Data	Outcomes in K-3 Data	
					Learn Volume 2	Implement Volume 2	Shift in 2-3 Instruction		
	Phase 3				Learn Volume 1	Implement Volume 1	Shift in K-1 Instruction	Outcomes in K-1 Data	Outcomes in K-3 Data
						Learn Volume 2	Implement Volume 2	Shift in 2-3 Instruction	

APPENDIX C

Table 3.3

Volume 1 Pre-assessment Descriptive Statistics

Volume 1 Pre-assessment Descriptive Statistics					
	Cohort			Statistic	Std. Error
Vol 1 Pretest	PLP 1	Mean		55.1768%	0.79132%
		95% Confidence Interval for Mean	Lower Bound	53.6204%	
			Upper Bound	56.7332%	
		5% Trimmed Mean		55.2053%	
		Median		56.0000%	
		Variance		216.036	
		Std. Deviation		14.69815%	
		Minimum		20.00%	
		Maximum		89.00%	
		Range		69.00%	
		Interquartile Range		23.00%	
		Skewness		-.003	.131
		Kurtosis		-.559	.262
	PLP 2	Mean		55.6535%	0.50555%
		95% Confidence Interval for Mean	Lower Bound	54.6613%	
			Upper Bound	56.6457%	
		5% Trimmed Mean		55.6269%	
		Median		56.0000%	
		Variance		233.092	
		Std. Deviation		15.26734%	
		Minimum		0.00%	
		Maximum		100.00%	
		Range		100.00%	
		Interquartile Range		17.00%	
		Skewness		-.013	.081
		Kurtosis		-.027	.162
	PLP 3	Mean		54.9419%	0.27336%
		95% Confidence Interval for Mean	Lower Bound	54.4059%	
			Upper Bound	55.4779%	
		5% Trimmed Mean		54.8259%	
		Median		56.0000%	
		Variance		281.651	
		Std. Deviation		16.78247%	
		Minimum		0.00%	
		Maximum		100.00%	

		Range		100.00%	
		Interquartile Range		23.00%	
		Skewness		.046	.040
		Kurtosis		-.024	.080
	Statewide	Mean		59.8508%	0.36909%
		95% Confidence Interval for Mean	Lower Bound	59.1270%	
			Upper Bound	60.5746%	
		5% Trimmed Mean		60.1940%	
		Median		60.0000%	
		Variance		322.313	
		Std. Deviation		17.95308%	
		Minimum		0.00%	
		Maximum		100.00%	
		Range		100.00%	
		Interquartile Range		22.00%	
		Skewness		-.365	.050
		Kurtosis		.700	.101

APPENDIX D

Table 3.4

Volume 1 Post-assessment Descriptive Statistics

Volume 1 Post-assessment Descriptive Statistics					
	Cohort			Statistic	Std. Error
Vol 1 Posttest	PLP 1	Mean		94.6188%	0.44703%
		95% Confidence Interval for Mean	Lower Bound	93.7392%	
			Upper Bound	95.4983%	
		5% Trimmed Mean		95.6528%	
		Median		98.0000%	
		Variance		63.948	
		Std. Deviation		7.99676%	
		Minimum		44.00%	
		Maximum		100.00%	
		Range		56.00%	
		Interquartile Range		8.50%	
		Skewness		-3.086	.136
		Kurtosis		13.938	.272
	PLP 2	Mean		95.9883%	0.24865%
		95% Confidence Interval for Mean	Lower Bound	95.5002%	
			Upper Bound	96.4764%	
		5% Trimmed Mean		96.8437%	
		Median		98.0000%	
		Variance		47.485	
		Std. Deviation		6.89093%	
		Minimum		0.00%	
		Maximum		100.00%	
		Range		100.00%	
		Interquartile Range		4.00%	
		Skewness		-6.551	.088
		Kurtosis		72.529	.176
	PLP 3	Mean		96.8958%	0.09807%
		95% Confidence Interval for Mean	Lower Bound	96.7035%	
			Upper Bound	97.0881%	
		5% Trimmed Mean		97.6098%	
		Median		98.0000%	
		Variance		32.317	
		Std. Deviation		5.68482%	
		Minimum		0.00%	
		Maximum		100.00%	

		Range		100.00%	
		Interquartile Range		4.00%	
		Skewness		-7.668	.042
		Kurtosis		109.758	.084
	Statewide	Mean		94.9254%	1.69434%
		95% Confidence Interval for Mean	Lower Bound	91.5425%	
			Upper Bound	98.3082%	
		5% Trimmed Mean		97.4179%	
		Median		98.0000%	
		Variance		192.343	
		Std. Deviation		13.86877%	
		Minimum		0.00%	
		Maximum		100.00%	
		Range		100.00%	
		Interquartile Range		4.00%	
		Skewness		-5.464	.293
		Kurtosis		34.502	.578