

PROJECT NARRATIVE

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Scaling a National Model of Reading Engagement (MORE) to Improve First to Fourth-Grade Students' Reading Comprehension

Introduction and Overall Aim

The Charlotte-Mecklenburg Schools (CMS) and Harvard University, through a long-term research-practice partnership, have co-designed a flexible content literacy intervention called Model of Reading Engagement (MORE). Elementary-grade teachers use MORE tools (lessons, digital app, formative assessments) to build students' background knowledge in science *and* their foundational word knowledge, with the ultimate goal of improving reading comprehension outcomes. To support the scaling of MORE within a district, professional development (PD) empowers classroom teachers to implement MORE with fidelity and flexibility, while ongoing systems-level support prepares leaders to maximize the depth, spread, sustainability, and reform ownership of MORE.

The purpose of this mid-phase Education Innovation and Research (EIR) grant is twofold: (1) to scale MORE regionally in partnership with the [REDACTED], the Center for Education Policy Research (CEPR), Groundswell Global Research (GCR) and the Strategic Education Research Partnership (SERP) through a 100 school randomized controlled trial involving approximately 10,000 students and (2) to create a national model for scaling MORE cost-effectively from Grade 1 to Grade 4. This proposal presents an *extraordinary opportunity*. Improving early reading comprehension outcomes represents one of the most vexing and pervasive challenges confronting educators. Few large-scale interventions have demonstrated positive impact. There is an unmet need for a proven intervention like MORE that can improve reading comprehension outcomes at scale.

Absolute And Invitational Priorities

This project aims to scale and rigorously evaluate an evidence-based, field-initiated innovation to improve literacy outcomes for high-needs students by addressing the following Absolute and Invitational Priorities articulated by the U. S. Department of Education:

Absolute Priority 1—Moderate Evidence: We have published two randomized controlled trials of MORE with positive and statistically significant impact on difficult to improve reading comprehension outcomes for first and second graders in moderate to high-poverty schools, providing unambiguous **moderate evidence** (Kim & Burkhauser et al., 2021; Kim & Burkhauser et al., 2022). In addition, a recent working paper that followed one cohort of randomized students through a third year of implementation found positive effects on end-of-grade state reading assessments (Kim, Rich, & Scherer, 2022). **Absolute Priority 2—Field-Initiated Innovations – General:** Harvard and CMS educators co-designed the MORE intervention through a research-practice partnership. Moreover, the studies cited above provide evidence that MORE improved student achievement outcomes in (1) moderate to high-poverty schools, which have enrolled a majority of (2) Black and Latinx students. **Competitive Preference Priority 2 – Addressing the Impact of COVID-19 on Students, Educators, and Faculty:** MORE will address this priority by providing all learners in moderate to high-poverty schools with access to a rigorous and novel approach to integrating science content during literacy instruction. These schools were most impacted by the pandemic.

Selection Criteria A: Significance

A.1 National Significance

The ability to comprehend grade-level texts proficiently by the end of third grade is arguably the most important milestone in a child’s educational career (Hernandez, 2011).

Children who read proficiently by third grade are more likely to graduate from high school, be prepared for college and a career, and contribute to our 21st century democracy. In 2019, however, only a third of US 4th graders were reading at a proficient level on the National Assessment of Educational Progress (NAEP), the Nation’s Report Card (National Center for Education Statistics, 2019). And despite significant investment in interventions designed to address this metric, our nation has seen little improvement. Over the past decade, data from the NAEP Long-Term suggests that US 9-year-olds have made no gains in reading comprehension overall. More troubling is the fact that the gap between lower- and higher-performing students is larger on comprehension tasks than on basic word-reading skills, suggesting that many students lack the ability to evaluate and learn from complex informational texts (D’Agostino & Rodgers, 2017; Fryer & Levitt, 2006).

COVID-19 has contributed to steep declines in overall reading scores and widening achievement gaps (Goldhaber et al., 2022). Contextual factors like concentrated poverty are amplifying the negative effects of the pandemic on students’ reading performance. In particular, there has been a steep decline in Grade 3 reading comprehension scores from 2019 to 2021 for children in high- and moderate-poverty schools (Lewis et al., 2021).

A.2 Promising Strategies

We have spent the last seven years working with CMS to design, improve, evaluate, and scale the MORE intervention in the early elementary grades. MORE is a promising innovation, with respect to the instructional strategy and the scaling strategy.

MORE: A Promising Instructional Strategy

In addition to basic word-reading skills, readers need background knowledge to successfully comprehend and learn from complex texts as they move through school and beyond

(Anderson & Pearson, 1984; Kintsch, 2009; Pearson et al., 2020). Content literacy interventions help students build rich and connected ideas about science and social studies topics while also attending to the literacy skills they will need to read, talk, and write about these topics. Such integrated interventions are rare, and they are particularly rare in the elementary grades.

MORE is a Tier I (whole-class, general education) content literacy intervention designed to improve reading comprehension outcomes for students in Grades 1 through 4 through attention to the development of mental schemas—or intellectual frameworks—that help students acquire, organize, and apply science knowledge (Alexander, 2003). For example, the Grade 1 MORE unit focuses on the topic “Arctic animal survival.” In addition to reading, talking, and writing about Arctic animals, students also begin to construct a schema for “animal survival” more broadly. They study the parts and meaning of words like *adaptation* and *environment* and discuss how these words relate to one another within the “animal survival” schema (e.g., animals have *adaptations* that help them *survive* in their *environment*). In Grade 2, students build on their understanding of animal survival through a unit on how paleontologists study pre-historic animals, including dinosaur mass extinctions (e.g., Why didn’t dinosaurs *survive*? Why weren’t these *animals* able to *adapt* to the changes in their *environment*? And how do *paleontologists* know?). The knowledge students acquire, organize, and apply in Grade 2 builds on their knowledge from the previous year, broadening and deepening their understanding of a science-related schema they will encounter again and again in trade books, textbooks, and on tests.

There is *moderate evidence* from two randomized controlled trials (RCTs) that MORE can generate replicable positive and statistically significant impacts on students’ reading comprehension outcomes in Title I schools that serve a majority of Black and Latinx students from low and middle-socioeconomic status communities. Prior **Study 1** (Kim & Burkhauser et

al., 2021): In an RCT involving 10 schools, 38 Grade 1 classrooms, and 674 students, MORE (delivered in 10, 1-hour lessons) improved first-graders' vocabulary knowledge (ES = 0.30), oral language ability (ES = 0.40), argumentative writing skills (ES = 0.25) and domain general, standardized reading comprehension outcomes (ES = 0.11). Prior **Study 2** (Kim & Burkhauser et al., 2022): In a systematic replication study involving 30 schools and 2,952 students, we expanded MORE to include both a first-grade science unit (topic: Arctic animal survival) and a second-grade science unit (topic: how paleontologists study pre-historic animals). We also increased the intensity and dosage of the intervention to 30-hours of instructional time per unit. Additionally, over the summer between first and second grade, MORE students and families were given access to a personalized literacy app and books related to the unit topic. We found that MORE led to a statistically significant impact on a science reading comprehension outcome (ES = 0.18). We followed this sample through third grade and found a statistically significant and positive impact on end-of-grade North Carolina reading and math tests (ES's > .10) and larger impacts for students from high-poverty schools in reading (ES = .13) and math (ES = .20).

These studies speak to the promise of MORE's schema-building approach to improve students' ability to read for understanding. Both studies not only demonstrate effects on reading comprehension, but also highlight a key mechanism: students' knowledge of topic-related words. Additionally, the formative assessment we developed for Study 2 allowed us to answer questions about a student's ability to "transfer" (or use) their topic-specific knowledge to comprehend a passage about a related, but unstudied, topic. We found that students who participated in MORE as first and second graders while also receiving access to the app and books during the summer between grades, were able to transfer knowledge of how paleontologists study pre-historic animals to understand a novel passage about how archaeologists study long-dead cities like

Pompeii. Our findings support the hypothesis that a multi-year, schema-building approach to content literacy can promote transfer to grade-level passages about unstudied topics that children must read without teacher assistance, such as high-stakes, end-of-grade state reading tests.

MORE: A Promising Scaling Strategy

MORE has also demonstrated promise with respect to its ability to scale within a district. Ten CMS schools participated in Study 1, 30 schools in Study 2, and this year MORE became part of the district’s science curriculum, expanding to all 114 of the district’s elementary schools. We attribute our ability to scale MORE within CMS to three core components:

(1) Flexible and user-friendly teacher tools: In developing the MORE teacher tools (lessons, digital app, assessments) we incorporated the principle of “replicable modularity in design and speed in iteration” to conduct social validity, usability, and feasibility tests (Flyvbjerg, 2021). What resulted is a relatively short, flexible intervention that eliminates the burden of adopting a long and cumbersome curriculum and accommodates many instructional schedules. MORE only requires schools to “spend” 30 hours of instructional time per grade on MORE lessons (i.e., one, 30-hour unit in Grade 1; one, 30-hour unit in Grade 2; etc.), and the digital app can—and has—been used during different parts of the school day as well as at home. Studies 1 and 2 further demonstrate the feasibility of MORE for teachers with varying levels of experience and skill. In both studies, teachers implemented MORE lessons with high fidelity (over 90% adherence). We attribute this, in part, to our user-friendly lesson design. In addition to written lesson plans, teachers have access to lesson slides that guide their facilitation of equitable and content-focused student discussions. These equitable discussion practices repeat week after week, allowing teachers to refine their implementation of these practices over time, and thereby giving both teachers and students the cognitive space to focus deeply on the evolving content.

Additionally, when CMS moved to remote learning during the pandemic, we created a single online platform for teachers that integrates with the digital app. The MORE app includes personalized games to build foundational word knowledge and incorporates principles for building evidence-based apps from a recent meta-analysis (Kim et al., 2021). The pandemic accelerated our efforts to develop a platform that can provide formative assessment data from the app to predict students' end-of-grade state reading test scores.

(2) PD to support structured teacher adaptations: Schools experienced more than the usual number of adaptive challenges during the 2020-21 school year. In response, we used a PD model validated in our previous i3 grant (Kim, Burkhauser et al., 2017) to support teachers' implementation of MORE across a wide variety of school and classroom contexts. Teachers participated in Team-Based Learning (TBL; Michaelson & Sweet, 2002) to help them (a) acquire and apply knowledge as they worked in teams to address a practical improvement goal (i.e., increasing students' engagement with the digital app) and (b) use knowledge, prior experience, and local data to extend or modify MORE for their students. We conducted an RCT (Kim, 2020) to compare this new PD model (Adaptive MORE) to a PD model focused on compliance and fidelity to lesson scripts (Core MORE). We found that teachers who received Adaptive MORE PD provided students with more lessons and opportunities to engage in discussions about the science schema (e.g., *animal survival*) and related vocabulary (e.g., *adaptations*) and that their students scored significantly higher on a domain-specific science reading test.

(3) Research-practice partnerships to scale teacher tools and PD: Our partnership with CMS was designed to build knowledge and solve a local problem in literacy—as well as to have broad impact on national literacy practices and stimulate local reforms (Donovan, Snow, & Huyghe, 2021). We developed this research-practice partnership over time through frequent

interactions with stakeholders at all levels of the system, and it has allowed for an ongoing series of continuous improvement cycles through which we have refined our teacher tools, professional development supports, and implementation strategy.

A.3 Potential Contribution to Increase Knowledge of Effective Strategies

First, there is an urgent need to determine an effective model of teacher PD and system-wide implementation strategy. Given the learning recovery needed in early literacy, numerous states such as North Carolina have increased in-service teacher PD requirements, sometimes mandating an investment of 80 hours over two years. Teachers must comply with external mandates that exacerbate burnout and reduce intrinsic motivation. Our prior work has demonstrated that more interactive and flexible forms of teacher PD and implementation approaches can enhance student outcomes. Specifically, we will validate our PD model that uses asynchronous and synchronous learning to support teachers' structured adaptations of MORE. More generally, the results will provide broad knowledge for the field as educators shift to a combination of online and in-person PD and seek guidance on how best to structure this support. Second, we will leverage principles surrounding how to maximize the take-up of new ideas as we continue to scale MORE within North Carolina and nationally. We will build on the strategies we implemented in CMS which enabled us to move from 10 schools in a tightly controlled efficacy study, to 114 schools and over 10,000 students. To facilitate scale, we will create a Summer Leadership Institute (SLI) to train teacher leaders and leaders across levels of the system about MORE, but also to learn about their workforce and context to empower them to implement a communication strategy that leverages innovations in behavioral science to accelerate diffusion. Coburn's (2003) conceptualization of scale also indicates that the MORE principles should be spread beyond the specific MORE lessons to other academic subjects, to

different grades within the building, across buildings, and among systems leaders within the district. This level of ownership at all levels increases sustainability of the program by allocating district resources to MORE and makes it less prone to being removed with leadership transitions.

Selection Criteria B. Strategy to Scale

B.1 How Strategies Address Barriers to Reaching Scale

We have had success scaling MORE within CMS, one of the twenty largest school districts in the nation. This success has depended on our ability to address four barriers to scale that plague many schools and district offices, as show in Table 1. EIR funding will ensure that we can replicate our prior success in different district contexts and at a lower cost. An EIR grant would also support a network of partners to scale MORE regionally and nationally.

Table 1: Barriers and Strategies for Scaling MORE

Barriers	Strategies
Crowded literacy ecosystem	<ul style="list-style-type: none"> • Develop flexible, modular lessons that are user-friendly • Create a spiral curriculum from Grades 1 through 4 to reduce implementation burdens • Extend learning and practice into summer months
Compliance focused teacher PD	<ul style="list-style-type: none"> • Develop PD that empowers teachers to make structured adaptations that facilitate implementation
High staff turnover	<ul style="list-style-type: none"> • Develop “head start” Summer Leadership Institute (SLI) to onboard leaders to prepare for MORE implementation • Develop “check-and-connect” integrated system of communication
Absence of long-term plan for scale	<ul style="list-style-type: none"> • Create a technology-enabled infrastructure to enhance reach and scale MORE regionally and nationally in the post-grant period

One barrier we have faced while scaling MORE within CMS is a **crowded literacy ecosystem**. For example, in SY 2018-19 the district implemented a new Tier I English language arts (ELA) curriculum, putting significant demands on teachers’ instructional time during the 2-hour ELA block. In addition, North Carolina mandated 80 hours of professional development for K-3 teachers over two years. To overcome this first barrier to scale, we developed teacher tools

to implement MORE (lessons, digital app, formative assessments) during **Tier I science content instruction**. To date, our strategy has been successful as we expanded MORE from 30 to all 114 elementary schools in CMS. With EIR funding, we will use a continuous improvement process to refine and expand teacher tools in the MORE spiral curriculum from Grades 1 through 4. Our modular lessons, digital app with personalized activities, and formative assessments can be flexibly implemented in the Tier I science block in 30 lesson hours between winter and spring, giving teachers autonomy over the “when” of implementation. As a spiral curriculum, no single grade level must implement a full-year, September-to-June intervention, which would be costly, time-intensive, and difficult to implement. MORE also goes beyond the crowded school day to the summer when students have opportunities to practice reading print and e-books about science topics learned in school. To expand the reach and impact of MORE, the EIR grant will enable us to refine the existing Grade 1 through 3 teacher tools, build new Grade 4 tools, and partner with both [REDACTED]—to create low-cost e-books—and the Strategic Education Research Partnership (SERP)—to make the teacher tools more easily and widely accessible online.

A second barrier is the emphasis on **compliance-focused teacher PD**. The adoption of a new Tier I ELA curriculum and additional external mandates to improve instruction and student outcomes have reinforced a compliance-focused mindset where teachers worry about fidelity. Even when implemented with high fidelity, however, evidence-based policies, practices, and programs often fail to demonstrate effects when replicated (Vaughn, Solis, et al., 2016). Educators may need support to adapt an intervention’s tools or processes to better align it with local initiatives and/or meet students’ needs. Furthermore, compliance-focused PD initiatives can undermine educators’ motivation to continue using externally developed curriculum after the conclusion of a study. In contrast to this emphasis on compliance and an exclusive focus on

fidelity of implementation, we aim to empower teachers to adapt MORE to their local context and to enhance their motivation to continue doing MORE after the grant period. This PD model was informed by prior work indicating that structured teacher adaptations may enhance rather than undermine the effectiveness of evidence-based literacy interventions (Kim et al., 2017). Using self-determination theory as a guide (Ryan & Deci, 2000), our approach to teacher PD focuses on helping teachers make structured adaptations to MORE. To promote structured teacher adaptations, we created novel PD and implementation plans in which teachers were (1) organized into grade-level teams around the practical improvement goal of using the MORE resources flexibly and (2) afforded structured opportunities to use their knowledge, experience, and local data to extend or modify core components for their students and classrooms. This strategy (i.e., Adaptive MORE PD) worked during the pandemic year (SY 20-21) (Kim et al., 2020). With EIR funding, we will build online modules so that more teachers can participate in professional development that uses TBL to support structured teacher adaptations to MORE.

The third barrier this grant will help address is **high staff turnover among systems and teacher leaders** particularly in moderate to high poverty schools and districts. In our partnership with CMS, we have worked with four separate superintendents, three chief academic officers, and teachers who left the system. Given the crowded literacy ecosystem and the need to comply with external mandates for improving teacher PD, district leaders have limited bandwidth to learn about MORE during the school year. To overcome these barriers to scale, our district partners have suggested onboarding new systems leaders through a “head start” in the summer and a “check and connect” communication plan to support MORE during the school year. With EIR funding, we will plan both (1) a “head start” MORE Summer Leadership Institute to equip all systems and teacher leaders with knowledge about MORE and provide tools to articulate

specific contextual features of their district to develop a personalized engagement process around MORE and (2) a “check-and-connect” communication plan to monitor and support implementation during the school year. We will create an integrated system that allows us to share daily information on the implementation of the MORE toolkit through a dashboard that enables systems leaders to send personalized communications to principals, teacher leaders, and teachers. Currently, research staff must do this work “by hand.” With EIR funding, we will build a dashboard that automatically provides updates to systems leaders and allows them to send personalized communications.

Finally, as we conclude our 10-year research-practice partnership with CMS, we have struggled to **build a long-term plan for scaling and sustaining MORE** beyond the life of a research grant. Therefore, we plan to overcome this obstacle by building a technology-enabled infrastructure to scale MORE regionally and nationally in the post-EIR grant period. In particular, we plan to (1) work with our NC DPI partners (led by [REDACTED]) to build a five-year partnership to recruit districts and schools for a replication study of MORE and to share findings to NC educators through the state’s web-based resource, Promising Practices Clearinghouse, (2) create an HGSE-led social media strategy to build a network of teacher and literacy coaches with MORE experience as well as broadly disseminate our findings, and (3) partner with SERP to make our tools easily accessible to educators. SERP has worked with over 1,200 teachers and administrators to solve problems of educational practice. To date, over 40,000 teachers are registered users of SERP’s validated products, with over 1M visitors.

B.2 Adequacy of Management Plan to Achieve Objectives

This management plan with its timeline and tracking of milestones will achieve the objectives on time and within budget. The timeline shown in Table 2 shows when each portion of the project will be conducted and completed.

Table 2: Management Plan, SMART Goals, Responsible Organizations, Timelines

Milestones	SP 0	SY1	SY2	SY3	SY4	Fall 5	Responsible
Objective 1: Iteratively Improve MORE’s Flexible and Friendly Teacher Tools & PD							
Create system leader platform	X	X					B&P, HGSE
Create async./sync. teacher PD	X	X					HGSE
Curriculum creation		X					HGSE
Refine platform, PD, and curriculum			X	X	X		B&P, HGSE
Objective 2: Implement a scalable model of MORE in new Districts							
Recruit districts and schools	X	X					HGSE, █████
Summer Leadership Institute			X	X			HGSE
Implement PD & Teacher Tools			X	X	X		HGSE
Objective 3: Rigorously Evaluate MORE’s Implementation, Impact, and Sustainability							
Random assignment		X					GGR
Prepare instruments		X					GGR, HGSE
Collect research data		X	X	X	X		HGSE
Measure implementation			X	X	X		GGR
Measure Impact			X	X	X		GGR, HGSE
Collect cost data and analysis				X	X		GGR, HGSE
Objective 4: Disseminate Findings and Develop Infrastructure to Scale MORE Nationally							
Design MORE network		X	X				HGSE
Results webinars & reports			X	X	X		HGSE, GGR
Refine and disseminate MORE tools			X	X	X		SERP, HGSE
Refine communications strategies				X	X	X	HGSE, SERP
Recruitment for national scale					X	X	HGSE, SERP

Key Institutions and Teams: lead in bold, HGSE - Harvard Graduate School of Education, B&P - Bits & Peace, LLC, █████, SERP - SERP Institute, GGR - Groundswell Global Research

B.3 Applicant's Capacity to Bring the Project to Scale on a National and Regional Level

The collaborating organizations in this project have an exemplary track record and capacity to bring the proposed project to scale regionally and nationally working directly with school districts and partners. As the lead organization, the Harvard Graduate School of Education (HGSE) is home to the Center for Education Policy Research (CEPR), the Reach

Every Reader (RER) initiative, and READS Lab. CEPR has led several multimillion-dollar research-practice partnerships funded by IES, NSF, the Gates Foundation, Walton Family Foundation, and other funders to evaluate and scale educational innovations. As part of these projects, CEPR has worked with more than 150 education agencies and more than 650 instructional leaders throughout the United States. RER, a \$30 million multi-institutional initiative, is creating pioneering literacy tools to improve early screening for reading difficulties, to improve Grade 1 through 3 reading comprehension, and to provide apps and tools that promote early language and literacy skills. Personnel roles, qualifications, and expertise include:

Project Director, HGSE, [REDACTED] will provide leadership for all aspects of this grant. He is an expert on literacy intervention and experimental design. He leads the READS Lab (Research Enhances Adaptations Designed for Scale in Literacy), a research-based collaborative initiative to identify and scale adaptive solutions for improving children’s literacy learning opportunities and outcomes. Previously, he successfully led a \$15M USDOE i3 validation grant for evaluating and scaling a low-cost summer reading intervention (READS) that met every project milestone and generated broad impact through a publication for practitioners produced by the Wallace Foundation (2018). He has also led evaluations of two IES funded efficacy studies that met the WWC standards without reservations, including the Pathway to Academic Success Project (WWC, 2021a) and the Strategic Adolescent Literacy Intervention (WWC, 2021b).

READS Lab Director, HGSE, [REDACTED] is an expert in rigorous analytic design and execution, creating integrated data systems, and educational technology in education. He has led the analytic design and execution for several multimillion-dollar projects across more than 20 education agencies covering topics like literacy, educational technology, social-

emotional learning, and continuous improvement cycles. For the RER project, he led the creation of the MORE data infrastructure, teacher portal, student app and all analytics.

Content and PD Specialist, HGSE, [REDACTED] brings to the team a deep knowledge of literacy development and teacher learning, as well as a wealth of experience developing and leading teacher PD, including her work with READS for Summer Learning (with [REDACTED], HGSE) and the Data Wise Project (with [REDACTED], HGSE). [REDACTED] has worked closely with CMS educators and district staff since 2016 on the development of the MORE lessons and associated PD and implementation supports. Over the last four years, she has trained roughly 1,000 educators to implement the MORE intervention.

At SERP, [REDACTED] is Project Director and co-PI for the Building Capacity to Support Struggling Adolescent Readers project. In this role, she draws on her significant experience working with adolescent readers to expand the reach of the Strategic Adolescent Reading Intervention (STARI). She has developed and led teacher training for an EIR mid-phase project designed to validate and scale STARI. [REDACTED] **serves as SERP's Assistant Director.** She joined SERP in May 2012 to support SERP initiatives, including AlgebraByExample, STARI, and Word Generation. She will support study management and review and edit curriculum materials. [REDACTED] **is SERP's Video Producer.** Before SERP, [REDACTED] operated his own media company, Group 5 Media, which produced video and other materials supporting professional development, curriculum, program dissemination, scale-up, and marketing for local and national educational organizations. [REDACTED] **serves as SERP's Creative Director.** [REDACTED] is a designer and educator focusing on user-centered design for teaching and learning.

CEO Bits & Peace, LLC [REDACTED]. Founded in 2008, Bits and Peace has built apps, websites, databases, and platforms for Fortune 20 corporations, small businesses, startups, non-profits, and universities. They specialize in delivering real-time, responsive user interfaces on top of enterprise-grade APIs and relational databases. [REDACTED] has over 25 years of experience designing and delivering software systems. For a decade he served as an enterprise architect in the health care industry (McKesson, RelayHealth) before founding Bits and Peace, LLC. He has since delivered end-to-end solutions for corporations such as RelayHealth, Xerox and Olo; small businesses such as Berkshire Homes and Infinity Cabinetry; startups such as Troppus Software and Colorado vNet; non-profits such as Bedtime Math Foundation and Wallace Foundation; and universities such as University of Chicago and Harvard University.

Vice-President, Co-Founder, Groundswell Global Research, [REDACTED].

[REDACTED] is Vice President, Co-Founder of Groundswell Global Research and Associate Professor at the University of Maryland College Park in the department of Teaching and Learning, Policy and Leadership. He also is the Faculty Director of the Maryland Equity Project, an Affiliate Assistant Professor at the School of Public Policy, and an Affiliate at the Maryland Population Research Center. He serves as (Co) Principal Investigator on several large-scale randomized controlled trials (RCT), including an RCT to evaluate the impact of micro-credentialing courses for teachers, an RCT of the impact of an equity-oriented professional learning model, and an RCT of the effect of individual coaches on teachers' outcomes.

B.4 Mechanisms to Broadly Disseminate Information and Support Replication

We will develop several tools to broadly disseminate information about MORE and to support replication and expansion. First, we will create an **integrated communication toolkit** for presentations with influential policy and practice audiences. The toolkit includes

infographics, PowerPoint presentations, podcasts, and YouTube videos that will enable our team to share findings broadly to regional and national audiences, such as the Campaign for Grade-Level Reading (CGLR), professional educator organizations such as Phi Delta Kappan (PDK), and state policymakers ([REDACTED], Council of Chief State School Officers). We have a strong track record reaching all of these audiences and have already established partnership with the CGLR affiliate in Charlotte, published our work in PDK (Kim & Burkhauser, 2022), and created briefs for state and local education leaders (Kim & Wei, 2022).

Second, the SERP team will create an **online teacher toolkit** that replicates the web-based infrastructure that already exist for evidence-based literacy programs. The online teacher toolkit will support further replication and implementation of MORE by systems leaders, principals, coaches, and teachers by providing access to lessons, a digital app, and formative assessment. Also, our partner [REDACTED] will house e-books on the website to support the school year and summer activities.

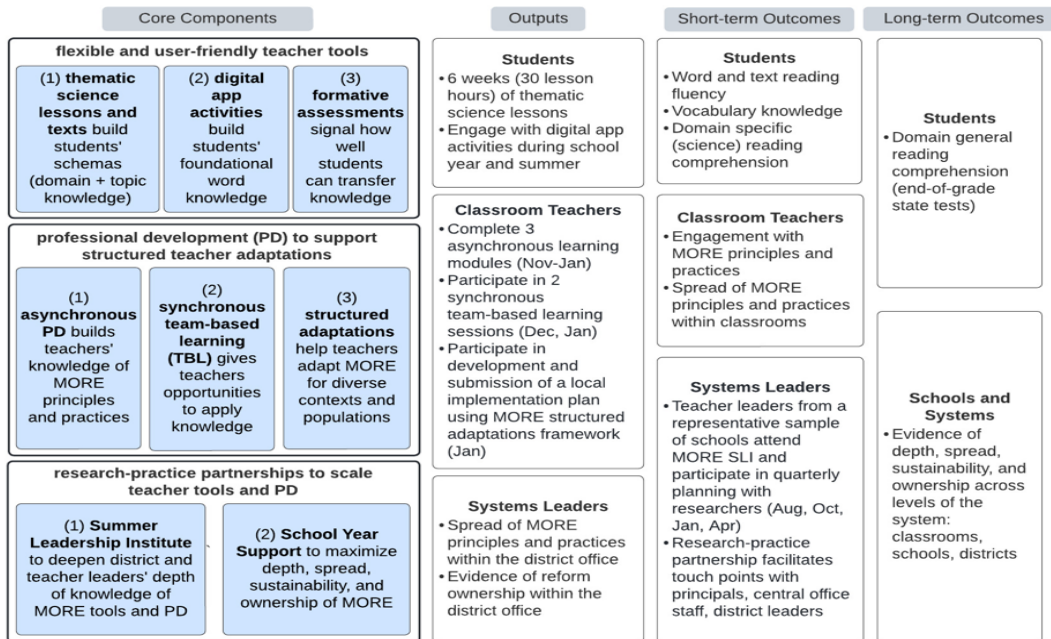
Finally, we will leverage the in-house expertise at the Harvard University, Graduate School of Education to disseminate findings and support replication. HGSE publishes online articles through its Usable Knowledge website and convenes educators through its Education Now series, enabling us to share findings with thousands of educators. The HGSE EdLD program trains K-12 education leaders and the first director of that program will communicate our findings to over 100 systems leaders in urban, rural, and suburban districts. Since this project was started as part of the RER initiative, we will leverage the RER network and internal experts with experience in scale, publishing, and research translation to scale MORE.

Selection Criterion C. Quality of the Project Design

C.1. Conceptual Framework for the Proposed Research

Figure 1 describes the MORE research-based theory of change. MORE ultimately drives a system toward two long-term outcomes: (LT Outcome 1) improvements in students’ domain general reading comprehension, as measured by end-of-grade state tests and (LT Outcome 2) evidence of scale across all levels of the system (classrooms, schools, districts). Specifically, our theory of change emphasizes four dimensions of scale for schools and systems (Coburn, 2003): depth (i.e., teachers are knowledgeable about the foundational principles underlying MORE), spread (i.e., MORE principles and practices can be found within classrooms, across schools, and embedded across the district), sustainability (e.g., teachers and leaders across the system perceive the effectiveness of MORE and sustain it), and reform ownership (e.g., PD led by districts).

Figure 1: MORE Theory of Change



Three types of core component comprise MORE: (1) flexible and user-friendly teacher tools, (2) PD that supports structured teacher adaptations, and (3) research-practice partnerships

to scale teacher tools and PD. Results from our published experimental studies suggest that MORE increases students' reading comprehension scores by way of improving their ability to build and leverage schemas of knowledge when reading texts across a variety of topics (Kim, Burkhauser et al., 2021, 2022). Specifically, students engage with **MORE's flexible and user-friendly teacher tools**: (a) thematic science lessons and texts, which build domain and topic knowledge within a particular schema; (b) digital app activities, which build foundational word knowledge and provide additional exposures to vocabulary related to the focal science topic; and (c) the formative assessment, which indicates how well students are able to transfer knowledge of the focal topic to different topics within the same schema. The better students are able to transfer knowledge from one topic to another, the better their ability to comprehend passages on domain specific (science) passages and domain general (science, social studies, literature, math) passages on end-of-grade state tests. **Teacher professional development** activities are grounded in research on team-based learning (Michaelsen & Sweet, 2008) as well as work that our lab has conducted on the effectiveness of structured adaptations, both to improve student outcomes and increase the scalability of an intervention (Kim, Burkhauser et al., 2017).

Finally, the **research-practice partnerships to scale teacher tools and PD** focus on two levers of change: the Summer Learning Institute and integrated data systems. First, the Summer Leadership Institute will provide both system and teacher leaders who work across schools with opportunities to *assess* their literacy ecosystem, *understand* the key principles and practices of MORE and how they relate to the literacy ecosystem, and *develop* a system-wide implementation and communication plan informed by their local context. Teacher leaders will also be prepared to supervise and support school-level coaches and teachers during MORE implementation. During the school year, system and teacher leaders will utilize the implementation and communication

plan in coordination with the real-time data collected by the digital app and teacher portal to identify and monitor benchmarks and adjust over the course of the year.

C.2 Goals, Objectives, and Outcomes are Clearly Specified and Measurable

Table 4: Specified Goals, Objectives, and Outcomes

LT Outcome	Measurable Objectives	Related ST Outcomes
<p>(1) Improvements in students’ domain general reading comprehension</p> <p>Measure: state end-of-grade reading and math assessments</p>	<p>Objective 1. Students utilize teacher tools</p> <ul style="list-style-type: none"> • 90% of students log onto the digital app • 70% of students complete literacy activities in the app for at least two books • 80% of students complete the formative assessment • 95% of students take the state assessment 	<p>Word and text reading fluency (NC admin data), vocabulary knowledge, domain specific science reading comprehension (formative assessments)</p>
	<p>(2) Evidence of scale (depth, spread, sustainability, reform ownership) across classrooms and schools, and districts</p> <p>Measure: district and teacher surveys, implementation and communication log data from the teacher and district portal</p>	<p>Objective 2. Teachers engage with professional development and apply learning toward structured adaptations</p> <ul style="list-style-type: none"> • 80% of teachers complete asynchronous modules • 80% of teachers participate in synchronous team-based learning sessions • 80% performance on teacher quizzes within the asynchronous modules • At least 1 non-designated MORE teacher logs into the teacher portal at 80% of the schools • 90% of schools submit a local implementation plan • Average response on using MORE principles in other subjects is “characteristic.”
<p>Objective 3. System and teacher leaders create and utilize the system’s implementation and communication plan to monitor implementation of teacher tools and professional development</p> <ul style="list-style-type: none"> • District staff and at least 1 of every 20 elementary schools in the district attend the Summer Leadership Institute • Teacher and/or system leaders send 6 reminder notes, two broad-based and one targeted communication to schools 		<p>Teacher and district leaders across the system utilize the communication plan and integrated data</p>

	every year to inform and promote teacher tools & PD <ul style="list-style-type: none"> • Quarterly planning meetings 	system to scale MORE tools & PD
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C.3 Design of the Project Addresses Needs of the Target Population

This study will target students in moderate to high-poverty schools, which in previous studies have enrolled a majority of Black and Latinx students. Particularly in the context of the COVID-19 pandemic, students need access to rigorous coursework in subjects like science and, at the same time, activities that build their foundational word knowledge in the early elementary grades. MORE is a Tier-1 intervention that provides teacher with tools to accomplish these goals and ultimately to improve reading comprehension for all learners (Kim & Burkhauser et al., 2021, 2022).

In addition, COVID-19 has placed a huge demand on teachers working in moderate to high-poverty schools where students have fallen behind in reading. As a result, external mandates are being place on teachers to comply with new PD efforts to remediate students’ learning losses in reading, further exacerbating teacher exhaustion. To address this challenge, we developed teacher PD that empowers teachers to work together in teams to make structured adaptations to MORE by using their knowledge to extend or modify core components in acceptable ways for their students.

Finally, COVID-19 has placed enormous pressure on systems leaders working in moderate to high poverty schools in which students have experienced major losses in reading (and math). In this crowded ecosystem of new reforms and accountability mandates, it is challenging for systems leaders serving high-needs schools to communicate their vision for how MORE can be implemented during the initial implementation and in the future. MORE addresses the needs of our target population with the “head start” MORE Summer Leadership Institute and

the “check-and-connect” communication plan. EIR funding would support both efforts to help maximize the depth, spread, sustainability, and ownership of MORE across a whole system, and thus dramatically accelerate reading comprehension outcomes for high-needs students in moderate to high-poverty schools.

Selection Criterion D. Quality of the Project Evaluation

D.1 Methods to Meet the What Works Clearinghouse Standards Without Reservations

Groundswell Global Research will conduct an independent evaluation to address the following six research questions that are aligned to MORE’s logic model in Figure 1. First, what is the **intent-to-treat impact** estimate of MORE on first, second, third, and fourth grade students’ reading comprehension? Second, is there a **dose-impact relationship** where the dosage, as measured by the number of years students receive MORE, mediate the impact of MORE on reading comprehension outcomes? Third, how do **moderators** like students’ racial and ethnic backgrounds and school poverty levels moderate impacts on targeted student outcomes? Fourth, what is the relationship between **fidelity of implementation thresholds** of the teacher tools and teacher PD to improve students’ reading comprehension? Fifth, what is the per pupil **cost and cost-effectiveness** of MORE compared to other Tier I early elementary literacy programs? Sixth, how well does the project **scale MORE**?

What Works Clearinghouse Standards for Randomized Experimental Design.

We will recruit 100 schools to participate in multi-district, school-level experimental study to test the impact of MORE. The schools will be sampled from a geographically diverse population of at least five districts operating moderate- and high-poverty schools. We will use a blocked cluster-randomized trial, where participating schools will be blocked on district, school average 3rd grade EOG reading scores from the previous three years, and school poverty-level

(see App J.6). Each participating school will receive MORE for two consecutive years and we will assess impact at the end of each year as well as cumulatively. Within each block, half of the elementary schools will be randomly assigned to Group A where a grade 1 to grade 2 cohort will be in the MORE condition and a grade 3 to grade 4 cohort will be in the business-as-usual control condition. The other half of the schools will be assigned to Group B where a grade 3-grade 4 cohort will be in the MORE condition and a grade 1-grade 2 cohort will be in the control condition.

By offering the MORE intervention to half of the students at each participating school, the proposed design improves cluster-level recruitment and lowers attrition in the study. In addition, because we will be able to access state data, if students leave the district but remain in the state, we will be able to obtain their administrative student outcome data, thus reducing the risk of missing outcome data in our analysis. In our previous i3 validation grant of READS (Kim et al., 2016), we were able to follow children who remained in the state and had attrition rates less than 9% per year on the North Carolina EOG test and there was no statistically significant difference in attrition for the treatment (8.4%) and control groups (8.7%). At the end of the second school year, schools will be given the option to expand MORE into a new grade-level. For example, Group A will have the option to expand MORE into 3rd grade and Group B could expand to 1st grade allowing us to test the willingness to spread MORE in other grades as well as compare effects of MORE for differing years of implementation.

We will work with district leadership to finalize school recruitment. The teacher leaders (MORE trainers) who will work across schools and district leaders will attend the MORE Summer Leadership Institute (SLI) for each district. Teachers and teacher leaders already employed by the school will participate in the professional development supported by the teacher

and district leaders who attended the SLI. MORE teachers will implement the 30 hours of lessons flexibly to accommodate the constraints they face. In the control condition, students will continue their regular classroom learning, but will have access to the digital app and the MORE formative assessment. Students who join schools after randomization (after October 2024) will be excluded from the evaluation sample.

Power Calculations. A power analysis was conducted using Optimal Design software (Spybrook et al., 2009) for a 3-level multisite cluster randomized trial with treatment at Level 2. In this case students (Level 1) are nested within schools (Level 2) who are nested with districts (Level 3) and we block on district, school size, 3rd grade EOG reading scores and poverty-level. Assuming an average of four classrooms with 25 students per classroom, the estimated size of the study is 10,000 students and the proposed study has sufficient power to detect effects of 0.11 standard deviations on student achievement (see App. J.2 for justification).

Data Analysis Plan. The independent evaluator will first conduct an intention-to-treat impact analysis. Because the study design is a cluster-randomized trial, a three-level hierarchical linear model will be used to analyze the treatment effect. To assess the impact of MORE, our student outcomes will include: MORE's science vocabulary and reading comprehension assessment to provide formative feedback, K-3 literacy assessment (mCLASS DIBELS), and end-of-grade state test scores in 3rd and 4th grade (see detail description in App J.1). To improve precision of the impact estimates, each model will condition on randomization blocks, baseline test scores, student grade-level, and other school-level characteristics. Second, the evaluator will conduct a dose-impact analysis using instrumental variables estimation (IVE). Under the assumption that random assignment to MORE only affects student outcomes to the extent that students actually receive the MORE intervention, by using the random assignment as an

instrument for years of MORE received, IVE will recover the causal effect of each year of MORE instruction (i.e., the complier average causal effect). Third, the evaluator will interact the MORE treatment variable with student and school characteristics to identify for whom and in what school contexts the program works best (see further details in App J.3). Fourth, to address two components of the IES Standards for Excellence in Education Research (SEER), we will assess the generalizability of the impacts by using procedures outlined by Tipton et al. (2022) (see further detail in App J.4). Finally, using the ingredients method (Levin & McEwan, 2001) we will conduct a cost-effectiveness analysis (see App J.5 for further details)

D.2 Evaluation Provides Guidance About Strategies for Replication

Answers to the six research questions will provide guidance to educators on how to effectively replicate and scale MORE in their contexts: **Question 1, 2, 3: Impact, dose-impact, and moderator analysis.** Our results will shed light on the main effects of MORE, the relationship between dosage and impact, and key student and school moderators (see App J.3 for specific moderators). Thus, these findings will help future educators target MORE for specific grades and demographic subgroups and highlight the relationship between dosage and impact on student outcomes.

Question 4: Implementation analysis. We will analyze implementation of MORE using multiple sources of data including student engagement and performance using our detailed log data on logins and accuracy on the app and formative assessment, teacher engagement as measured by the completion of the modules and surveys, audio recording of Team-Based Learning, and completion of a local school implementation plans, and system level fidelity as measures by participation in Summer Learning Institute, development of a district-wide

implementation and communication plan and any adjustment made to the plan based upon the district context and learnings over time (see a list of implementation outcome in App J.1).

Question 5: Cost and cost-effectiveness analysis. Policymakers need information on the cost effectiveness of programs to assess whether they should have implemented a different program. To provide information whether MORE is more cost-effective than other literacy programs, GGR and HGSE will use the ingredients method (Levin & McEwan, 2001) to collect and analyze data on per pupil costs for MORE. Using detailed budgets, we will be able to compare the cost and cost-effectiveness to other Tier I literacy programs.

Question 6: Describing the impact of MORE at scale. To assess the depth, spread, sustainability and ownership of MORE throughout the school system we will measure the following outcomes: Participation in SLI, completion of SLI communication plans, surveys of teachers and district leaders, whether schools and systems sustain MORE and the SLI. We will also conduct qualitative analyses of the documents from the SLI using them to describe the district's organizational structure and literacy priorities, student and teacher's learning context, literacy, science, and social studies curriculums as well as an educational technology that complement these curricula, current demands on teachers and communication strategies hypothesized to work in their context.

D.3 Components, Mediators, Outcomes, and Threshold for Acceptable Implementation

The design of the evaluation plan is informed by the key components and student mediators as illustrated by the MORE logic model in Figure 1.

(1) Teacher Tools. The teacher tools include the lessons and books, app, and formative assessment. These tools together help students build rich and connected ideas about science (lesson), provide students with an opportunity to practice foundation literacy skills using words

from the lesson books (app), and a formative assessment to measure students' ability to transfer comprehension of passages using words and topics directly taught during the lesson to novel words and topics. We have been establishing realistic thresholds for fidelity for the lessons, digital app, and formative assessments based on our recent work of scaling MORE. Thus, our thresholds are both empirically grounded and realistic (what schools have actually achieved during the pandemic). We recommend that student spend a total of about 30 minutes per week on the app and expect that 90% of students will log onto the app at least once. In our data, the lowest performing students can complete two app lesson book over four weeks using the app 30 mins per week. District-wide, we expect 70% of students to meet the two lesson book benchmark. In addition, we expect teachers to help 80% of students to complete the MORE formative assessment to provide systems and teacher leaders, principals, and classroom teachers with useful information to adapt implementation.

(2) **Professional Development.** The PD supports teachers' development through a novel form of teacher professional development that helps teachers acquire and apply knowledge as they work in teams to addresses practical improvement goals (e.g., improved usage of the MORE App) and use their knowledge, prior experience, and local data to extend or modify MORE. Using our data platform, we will be able to track the proportion of teachers that complete the asynchronous modules and the time they spent on the modules (e.g., did they just click through quickly). We expect 80% of teachers to complete the asynchronous modules. Then each school is expected to hold two synchronous team-based learning sessions, which will be audio recorded. Finally, the product of these sessions is that each school will work as a team to create local implementation plan. We expect 90% of schools to document the plan and submit it on the portal.

(3) **Research-practice Partnerships.** To start MORE, teacher and system leaders (e.g., chief academic officer, elementary superintendents, English language acquisition) designated to help lead the initiative across schools will attend the Summer Leadership Institute (SLI) to bring coherence to MORE's role in the district and establish a clear set of communications and local benchmarks for implementing MORE. From the SLI we expect a clear plan to implement MORE including when and who should be involved in each stage, communication strategies to reach early adopters as well as those who are more skeptical, and data benchmarks and follow-up procedures. Participants will document the plan in the portal and then messaging and follow-up will utilize the integrated system records (e.g., student app logins, assessment completion, teacher module completion) to provide broad and targeted follow-up (e.g., messages from leadership, targeted data informed emails to teachers, regular school observations that can be informed by low engagement rates). We expect a minimum of six reminders of activities throughout the program, two broad-based communications from system leaders, and at least one targeted communication to school-teams on implementation progress. Members who attended the SLI are also expected to attend quarterly meetings to assess and adjust benchmarks and goals as well as discuss logistical deadlines.

The key **outcomes** of MORE are: **(1) Students:** Students need to take the formative assessment and the state assessments. We expect 80% of students to complete the formative assessment and 95% of students to take the state assessments. **(2) Teachers:** we will utilize teacher performance on activity in the modules to measure depth of knowledge with the expectation that teacher respond with 80% accuracy on the MORE core principles to measure their depth of knowledge. Surveys in the portal will indicate that teachers plan to utilize MORE concepts in other parts of the school year, in other subjects they teach, and also believe MORE is

an effective program. **(3) Schools:** All teachers within the school will be granted access to the MORE portal after year two. In 50% of the schools at least one non-MORE teachers (e.g., different grade, subject) will use at least one portal related resource (e.g., app, modules). To establish ownership by a school, at least 60% of the school adopt and adjust local implementation plans annually. **(4) Districts:** To assess the spread of MORE in the District we will assess key communications from the district and assess whether MORE principles as outlined above have been incorporated in any broadly disseminated information (e.g., ELA instruction, equitable teacher practices). We also expect at least 50% of the districts to sustain MORE and independently implement their SLI.

D.4 Methods of Evaluation Provide Performance Feedback

MORE's theory of change in combination with its real-time data system facilitates and encourages district, schools, and teachers to set clear benchmarks of success and to own their formative and summative goals. MORE accomplishes this by investing in the capacity of district leaders during the Summer Leadership Institute (SLI) and in schools and teacher through professional development to not only have a shared vision of MORE and how it complements the district's goals, but also helping to set clear benchmarks of success for themselves while also encouraging common sense adjustments to their implementation strategies to adaptively meet these benchmarks. For example, within a year of implementation, districts are encouraged to adapt strategies of communication and target their own limited resources (e.g., school visits) based upon comparing benchmarks to real-time data. The MORE reports also provide formative feedback to teachers on student accuracy on the app activities as well as our assessment to help teachers understand how well students can transfer the lesson content to novel topics.

Because of these up-to-date data systems, GGR will be able to produce both interim implementation and summative assessment results prior to the SLI in the second year of implementation. The goal of sharing these results quickly is that it will allow all the systems, to celebrate the successes of the prior year, but also make larger adjustments to the model that could not be made within the year to improve the program. Furthermore, while HGSE will support implementation and GGR will continue to provide interim findings the subsequent summer, the second year of implementation will transition more ownership of the continuous improvement process to the district. The level of transition will be directly informed by the success (or failure) on making progress toward the implementation and outcome goals. An advantage of working across multiple districts is that the cross-site knowledge within our network of districts will accelerate the learning of what is working. At the end of the second year, we will share interim findings as well as cross-site learning with the goal of transferring most or all the ownership of MORE to the district sites for the third year of implementation. In doing so, we will be able expand the impact and reach of MORE many years after the conclusion of this EIR grant.