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A. Significance

A1. Overview

Mountain View Birch Tree School District (LEA), the Curators of the University of Missouri, and eMINTS National Center at the University of Missouri propose *Talk to Read: A Culturally Responsive Approach to Literacy Recovery* to address **Absolute Priority 1 (Demonstrates a Rationale), Absolute Priority 2 (General--Create entrepreneurial, evidence-based, field-initiated innovations to improve student achievement and attainment), Competitive Preference Priority 2 (Focus on Underserved: Impact of Covid, Rural),** and **Competitive Preference Priority 3 (Promote Equity: Culturally and linguistically responsive).** The project is designed to improve literacy learning achievement of high needs students and promote equity in primarily **high-poverty, rural schools**.

Covid-19 reduced children's learning opportunities with likely impact on early literacy development and equity. Language Experience (LE) is an instructional approach that has been effectively used for decades to promote literacy development and equity. However, there are critical barriers to implementing LE in classrooms. Using speech recognition technologies (SR), our MU partner conducted field-based pilot studies to explore the potential of *Talk to Read* (see Baker 2017; 2019; Baker & Dorman, 2019)—a program that uses SR to mitigate barriers and harness the potential of LE thus promoting learning recovery and equity. This project will provide collaborative professional development that fosters teacher competency for implementing *Talk to Read* in primarily rural, underserved classrooms.

A2. National Significance of the Proposed Project

The pandemic reduced children's learning opportunities with likely impact on early literacy development and notable impact on rural and underserved students (Chandasiri, 2020;

Gazmararian et al, 2021; U.S. Office of Civil Rights, 2021). In the spring of 2020, a Stanford study found that the development of reading fluency in grades 1-3 largely stopped during COVID (Dominique et al., 2021). The ability to read is pre-requisite to successful completion of a high school education, college education, and securing gainful employment. Children who lack reading proficiencies in third-grade face a wide range of challenges in later grades, are four times more likely to not graduate from high-school (Casey Foundation, 2013; Hernandez, 2011; Lesnick, 2010) and have an increased likelihood of a range of social challenges including joblessness and incarceration (Greenberg, 2007; NAEP, 2011). Illiteracy is a major contributor to poverty, the spread of disease, and political instability (U.S. AID, 2014). Early literacy recovery has the potential to dissipate a wide range of academic, social, emotional, and economic challenges. In response, by 2021, 45 states had adopted policies to increase children's reading proficiencies by the end of third grade (Cummings, 2021). This project will therefore focus on literacy recovery in second grade. Early literacy development was paramount before the pandemic. There is increased urgency as we emerge from the pandemic.

A2i. Sight Vocabulary Promotes Early Literacy Learning.

Given that the ability to read words impacts fluency, the ability to use context clues and ultimately, comprehension (Catts et al., 2005; Ehri, 2005; Hock et al., 2009; Snow et al., 1998) one goal of early literacy pedagogy is to support sight word acquisition. Sight words are words that a reader is able to recognize instantly, without using the support of surrounding words. Rinder (1994) claimed that instant word recognition is one of the skills found to be important to a 'successful readiness program' (p. 12). Robust proficiency with sight words allows readers to focus on comprehending the text (Ehri, 2005; Rinder, 1994). Sight words are important when students encounter unknown words. If they are able to rely on context clues and identify the

meaning of the words surrounding an unknown word, they can attempt to figure out the meaning of the unknown word (Duke and Mesmer, 2016; Ehri, 2005; Rinder, 1994).

Another goal of early literacy pedagogy is to support sight vocabulary acquisition (Ehri, 2005; Rasinski et al., 2011; Snow et al., 1998). Sight vocabulary includes both the ability to recognize written words effortlessly without the benefit of surrounding words as well as understand word meaning (Ehri, 2005; Kame'enui & Baumann, 2012). Sight vocabulary allows students to read more fluently because they can read a passage continuously without stopping to analyze every word (Biemiller, 2009; Hiebert et al., 2017; Rinder, 1994). When students read fluently, they are also able to comprehend texts more easily. Because word meanings are derived from learners' personal experiences, children with **diverse backgrounds** are put at a disadvantage when schools use texts that are mismatched to their rich linguistic and cultural heritage. **This mismatch creates inequity to sight vocabulary acquisition** (Ashton-Warner, 1963; Baker, 2017; Nelson & Linek, 1999).

A2ii. Language Experience Promotes Equity.

In the 1960s, Ashton-Warner successfully used Language Experience (LE) to support reading acquisition among the Maori of New Zealand (Ashton-Warner, 1963). At the time, there were limited texts available in the Maori language. Ashton-Warner overcame this challenge by asking Maori to share their experiences with her. She took dictation and created texts based on Maori experiences using Maori language. Hence, the name: Language Experience (LE). In the ensuring years, LE has been successfully used with preschoolers, early elementary students, rural students, ELL students, special needs middle schoolers, high schoolers, and adults to **promote equity by embracing the cultural and linguistic diversity** of multilingual, multinational students as well as students who have dropped behind (e.g., Asplund & Sunal, 1976; Baker, 2019; Hoffner, 2003;

Huang, 2013; Peterson & Montfort, 2004; Strickland et al., 2010).

A2iii. Language Experience Promotes Literacy Learning.

Children's oral lexicons are larger than their sight vocabularies. LE is noted for **closing the gap between oral lexicons and sight vocabulary** (Ashton-Warner, 1963; Asplund and Sunal, 1976; Copp et al., 2016; Nelson & Linek, 1999; Strickland et al., 2010). The goal of LE is to give learners ample opportunities to make matches between oral and written words. LE is typically operationalized when a teacher engages a student in a conversation about his or her personal experiences. For example, a young student might share his experiences of Halloween or a birthday party. Next, teachers invite students to dictate a story about this personal experience. The teacher transcribes verbatim what the student dictates. The student is then asked to read the transcription. Students are readily able to read their transcribed stories not only because they just told the story but also because their oral lexicon, derived from personally meaningful experiences, is expressed. These transcripts become students' reading materials.

Cognitive studies indicate that human learning is highly contextualized (Bransford & Schwartz, 1999; Brown, Collins & Duguid, 1989). Specifically, the human mind struggles to transfer learning from one context to another. This includes literacy learning which may explain why some children struggle to transfer literacy skills from passive drill-and-practice worksheets to active engagement with children's books. During LE, teachers think aloud about how they use phonics, vocabulary, and comprehsnions skills when they write their own stories and when they transcribe students' stories. They help students revisit their own LE stories to identify examples of phonics, vocabulary, and comprehension skills. These LE activities provide contextualized literacy leraning with promising results.

For example, Van Allen (1999) discovered that emergent readers involved in LE "view

phonics as a natural, normal language experience" (p. 46). Asplund and Sunal (1976) compared sight vocabulary acquisition among second-graders who received commercially-published instruction only or commercially-published as well as LE instruction. They found that the students who had commercially-published as well as LE instruction had 10% **greater sight vocabulary** than the students who had commercially-published-instruction-only. During investigations with middle school remedial readers involved in LE, Sharp (1989) found **increased participation** and **word recognition**. Hoffner (2003) worked with middle school students who received special accommodations for learning disabilities. She implemented LE by inviting students to write scripts for movies they watched (e.g. Indiana Jones). She found that these middle school students **developed audience awareness and positive self-efficacy towards reading and writing,** as well as **improved sight vocabulary, fluency and comprehension**. Huang (2013) described the challenges of finding appropriate reading materials for adult ELLs with limited literacy proficiency. Using LE, Huang reported that adult learners **could leverage their life experience and linguistic proficiency** while making meaning out of text that could then be **analysed for phonemes, sight words and vocabulary**. In summary, LE has an established history of effectively supporting literacy learning across a wide range of ages, academic abilities, languages, and cultures.

A2iv. LE Promotes Self-Efficacy, Peer, and Classroom Relationships.

LE diverges from other approaches to literacy learning by using students' language and experiences as the basis for creating texts that students use to advance their literacy skills. █████ (2017; 2019) found that early elementary students who participated in *Talk to Read* pilot studies expressed self-efficacy by spontaneously making such comments as, "I like doing this," "I wish I could write every day" and "I hope you brought that [SR] because I got a bunch of words!"

Similarly, Strickland et al. (2010) found that immigrant preschool children who took photographs and then described them to their teachers were given space to share their linguistic and cultural backgrounds, which created connections between the students and teachers as well as between the teachers and the children's parents (see also Hoffner, 2003; Sharp, 1989). This project seeks to conduct additional research to examine the impact of *Talk to Read* on children's self-efficacy in reading as well as peer and classroom relationships.

A2v. Critical Barriers of Language Experience.

However, **there are critical barriers to classroom implementation of LE**. 1) LE is labor-intensive. It requires sustained 1:1 interactions between teachers and learners. Due to this barrier, LE is commonly dismissed or relegated to group dictation which results in amalgamated stories stripped of personally meaningful vocabulary, experiences, and grammar thus rendering it less effective for learning recovery. 2) LE is criticized for teacher dominance because when teachers take dictation, they control the pencil (Baker, 2017; Hoffman & Roser, 2012).

A2vi. Speech Recognition Technologies Mitigates LE Barriers.

In field-based studies, ███ and colleagues (Baker, 2017; 2019; Baker & Dorman, 2019) found that speech recognition (SR) technologies can be used to harness the benefits while addressing the barriers to using LE in classrooms. A range of SR technologies have been developed to support word recognition, sight vocabulary, fluency, and comprehension. Some focus on SR's ability to listen to children read predetermined text, highlight oral reading errors, and provide scaffolded prompts to help readers with oral fluency (e.g. READ 180, System 44). Some SRs are computer-based, not mobile device-based, and require extensive training, which is prohibitive for young readers (e.g. Dragon Dictate). Others specialize in predicting what the author will dictate and providing word choices to support SR accuracy (e.g. Co-writer). Additional technologies

focus on text-to-speech technologies (e.g. Kurzweil Firefly) which read digitized text to users. The focus of this project is on speech recognition apps such as *Siri, Alexa* and *Hey Google* which are available for free on mobile devices, and require no training, no setup, no subscription, and no predetermined texts.

When using SR for speech-to-text, we commonly think of SR as an online assistant that we can ask such questions as, *Hey Siri, Hey Alexa, Hey Google, what's the weather* or *who is winning the game?* However, SR can also take dictation. Instead of waiting for a teacher, learners can talk to Siri, Alexa or Hey Google and watch their personally meaningful experiences magically appear on the screen in the own vernacular. However, **SR is notoriously inaccurate**. You may ask, *Hey Alexa, call Tom* and she responds, *OK, calling mom*.

██████ and colleagues (Baker 2017; 2019; Baker & Dorman, 2019) conducted field-based pilot studies to examine whether SR inaccuracies would render SR useless for mitigating the barriers encountered during LE. They found that early elementary SR-users (who exhibited a range of dialects and speech articulation capabilities), despite SR inaccuracies, adopted inaccuracies 0% of the time thus **abating some concerns**. They also found that early elementary students developed over 97% sight word accuracy which indicated that **some students' struggles may be unrelated to their capabilities**. Over 50% of the words that users incorporated appeared on grades 3-9 high frequency words which **indicated increased preparedness to encounter literature and textbooks**. Conversely, nearly 50% of the words that users incorporated were absent from grades 3-9 high frequency words which indicated LE supported students' efforts to incorporate words that were **personally meaningful and derived from their rich linguistic and cultural experiences**.

A2vii. *Talk to Read* Field Pilot Study Revealed Pedagogical Insights.

While piloting SR feasibility in early elementary classrooms, ▮ (2017; 2019) identified pedagogical insights that will be incorporated in this project. For example, she recommends that teachers embrace SR inaccuracies as opportunities to contextualize the English Language Arts Missouri Learning Standards (ELA MLS) for second grade by thinking aloud how they use phonics (ELA MLS 3A) and vocabulary knowledge (ELA MLS 1B) to dictate their own personally meaningful stories and transcribe students' stories. Similarly, ▮ recommends that teachers explicitly highlight, and thereby contextualize, ELA MLS phonics, vocabulary and comprehension skills when students incorporate them into their personally meaning LE stories (see Appendix J3: How ELA MLS Align with *Talk to Read*). As students transition to independently using SR, she recommends that teachers help students examine the affordances of SR within the broader classroom context of composing their own stories. For example, SR may be best used to brainstorm and draft. In addition, SR should be valued as one strategy among a variety of strategies (e.g., environmental print, invented spellings) that students use to encode oral language. In addition, teachers can foster a positive classroom environment by establishing classroom norms for how to help one another evaluate SR accuracy while celebrating one another's personal stories. Finally, she describes pedagogical strategies to consider when SR encodes inappropriate language, text editors are user-unfriendly, and students are ready to transition their work from drafts to final products (e.g., child appropriate email, social media posts, eBooks, printed mini-books) so they can share and celebrate their compositions with an audience.

A3. Foundational Work

Our partner, the eMINTS National Center, has a 20-year history of delivering PD for technology-rich, experience-based classrooms. The **eMINTS PD program has a What Works Clearinghouse endorsement of "Strong Evidence" for increasing student achievement,** as well as increasing teachers' use of inquiry-based instruction, integration of technology, and construction of communities of learners in a large study (Meyers, Molefe, Dhillon, & Zhu, 2015). Other evaluations of eMINTS have also documented significant increased achievement, including among high-need students based on special education status, F/RPL, and race/ethnicity (Meyers & Brandt, 2010).

While eMINTS has demonstrated success in helping teachers develop authentic, inquiry-based lessons supported by technology, struggling readers in eMINTS classrooms often need more scaffolding and support from teachers and peers. Thus, in *Talk to Read* Classrooms, eMINTS will provide training on integrating and managing technology rich learning experiences using SR to support LE reading strategies. Our MU faculty partner has conducted field-based pilot research to explore the feasibility of using *Talk to Read* in early elementary classrooms, ascertain literacy development, and identify pedagogical insights (e.g., Baker 2017; 2019; Baker & Dorman, 2019). This field-initiated project will **improve and expand on these pilot studies by using (1) an iteratively designed, more intensive intervention, (2) a stronger research design (randomized controlled study), (3) a larger sample, and (4) an older age group**.

A4. Logic Model

A4i. Promising New Strategies.

Using a sustained, intensive, collaborative, job-embedded, data-driven, and classroom-focused model, Figure 1 depicts the Logic Model for how *Talk to Read* will provide classroom teachers

with the knowledge and skills necessary to enable students to succeed in meeting Missouri

Learning Standards as well as promote equity.

A4ii. Rationale and Research Base for Logic Model.

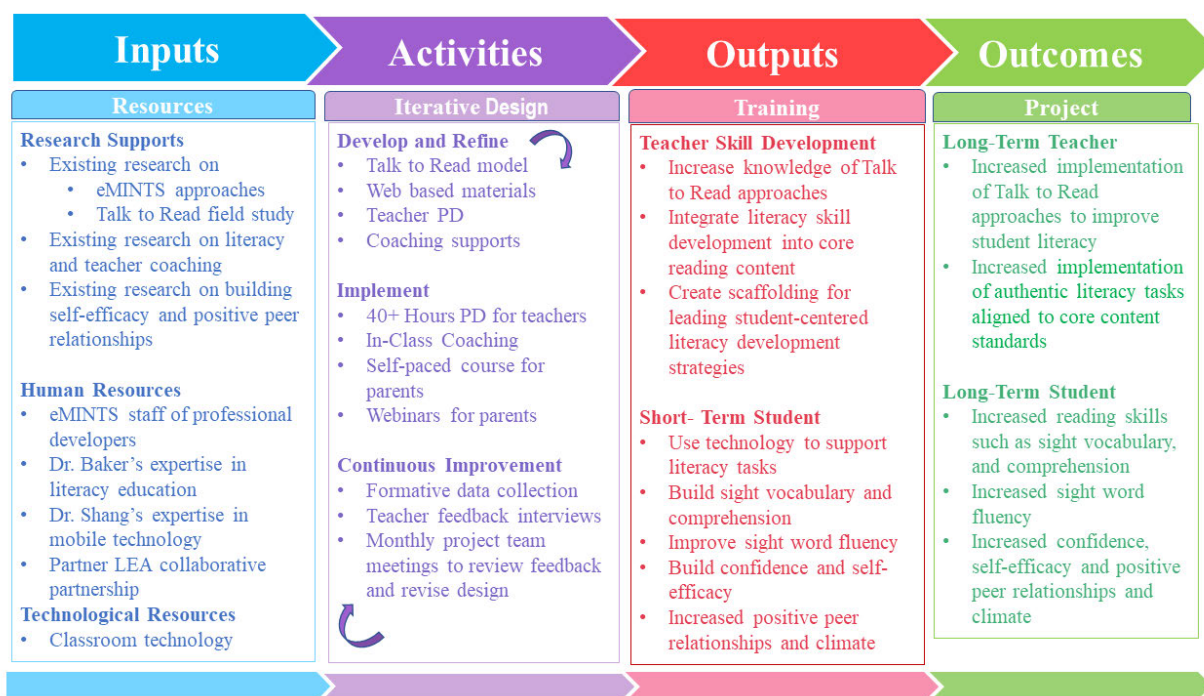*Talk to Read* provides a unique combination of LE, SR and eMINTS PD. This combination

Figure 1. *Talk to Read* Logic Model

provides an exceptional approach for the development and implementation of an innovative,

evidence-based, field-initiated approach to improve student achievement of high-need students

for the following reasons:

1. LE promotes literacy learning (e.g., sight words, sight vocabulary, fluency, comprehension)

and equity (uses students' culturally relevant language and experiences to create texts for reading

instruction). (See research in Sections A2i-A2iv.)

2. SR mitigates barriers that teachers encounter when they use LE in classrooms. Specifically,

students no longer must wait for a teacher to take dictation. Independent of teachers, students can

pick up most mobile devices, activate SR, dictate their personally meaningful stories, and watch as their <u>robust oral vernacular</u> and <u>rich cultural experiences</u> magically appear on the screen. (See research in Sections A2v-vi.)

3. Teaching strategies that <u>emerged during field-testing</u> will be used to support teachers so they can harness the potential of LE by using SR. (See research in Section A2vii.)

4. eMINTS PD (which is "strongly endorsed" by WWC) will enhance opportunities for teachers' professional growth by delivering <u>collaborative, job-embedded, and sustained</u> professional development (see Section B, Project Design & Management).

This project will contribute to greater understanding of how SR can be used to overcome critical barriers to using LE in the classroom while promoting culturally responsive literacy recovery for underserved and rural students. Robust evaluation (see Section C, Project Evaluation) will make *Talk to Read* readily scalable because it does not add to the curriculum and because eMINTS already has a network of PD providers across the nation.

B. Quality of Project Design & Management

B1. Goals, Objectives, and Measures

Phase 1 - Development and Refine Talk to Read Model (Years 1-3)	
Goal 1 – Develop a Replicable PD Model for Talk to Read	
Objectives	**Measures***
1.1 Develop project processes and PD materials to guide teachers to incorporate Talk to Read strategies into core classroom curriculum 1.2 Prepare and implement a successful pilot study. 1.3 Use evaluation input to inform iterative improvement of Talk to Read PD and coaching 1.4 Create fidelity measures for Talk to Read	Project records & coach logs Teacher and coach interviews Teacher survey Classroom observations
Efficacy Study Phase (Years 3-5)	
Goal 2 – Increase teacher efficacy and effectiveness in implementing Talk to Read strategies into core curriculum	
2.1 Intervention teachers increase their use of strategies that integrate Talk to Read	Teacher survey K-3 CLASS
2.2 Intervention teachers increase teacher efficacy in	K-3 CLASS

student-centered and Talk to Read instructional strategies	
Goal 3 – Increase student sight vocabulary, sight word fluency and reading comprehension	
3.1 Intervention increase students sight vocabulary	GRADE™
3.2 Intervention students increase sight word	GRADE™
3.3 Intervention students increase reading comprehension	GRADE™
Goal 4 – Increase student self-efficacy in reading	
4.1 Intervention students report increased self-efficacy	Self-Efficacy Questionnaire
Goal 5 – Increase positive student peer relationships and classroom climate	
5.1 Intervention teachers report increased positive student peer relationships	ECLS
5.2 Intervention classrooms show increased positive classroom climate	K-3 CLASS

For details on measures see Evaluation Plan (Section C) and Appendix J3 (MLS for ELA)

B2. Description of Intervention

Teachers will learn *Talk to Read* instructional strategies and technology integration through 40 hours of professional development with eMINTS and 4 hours of technology training and support with KCAV. eMINTS will also provide a minimum of 6 coaching visits that will occur virtually and onsite.

B2i. PD and Coaching Structure.

eMINTS uses intense, sustained, research-based best practices where teachers are actively engaged and experience strategies in the way in which we would like to see transferred to their own contexts. Each PD session includes opportunities for collegial sharing which helps teachers make sense of their learning, interpret experiences, and share ideas (Mezirow, 1997; Selkrig & Keamy, 2015). Reflection on practice, both during PD and in coaching visits is a key element as well. Activities to build community and positive peer relationships are also infused throughout PD sessions.

A key element to all eMINTS programs is the coaching that is provided for teachers to help them reflect on their practice and become self-sustaining decision makers (Smith-Maddox, 1999). Experienced and trained eMINTS instructional specialists help teachers transfer to practice by engaging in planning, reflection, and problem-resolving conversations to build sef-efficacy (Costa & Garmston, 2002), rather than giving evaluative, direct feedback (Foltos, 2007). Combining PD and in-class coaching is effective in changing teacher practice (Koh & Neuman, 2009; Swan & Dixon, 2006).

PD and coaching will take place during the school year beginning in August/September and finishing in April. Teacher cohorts will have the option of deciding as a group if they would like the PD to take place exclusively in-person or through a hybrid model of in-person, and self-paced learning.

B3. Participant Recruitment

For Years 2-3, six rural, high-poverty schools, including these districts will participate in the development phase pilot: Mountain View Birch Tree R-III (lead LEA), Bronaugh R-VII, Hartville R-II and New Franklin R-I. Three of these schools are from some of the 100 lowest-income counties in the nation (i.e., Missouri's Ozark Region) with 83%, 80% and 75% of students eligible for free and reduced-price lunch (FRPL) as reported by the National Center for Education Statistics (NCES). The district locale codes are 43, 42, 43, and 32, respectively according to the NCES.

For Years 3-5, during the efficacy phase, we will recruit 40 additional schools. Over 70% will be rural (as defined by NCES locale codes) Title I schools with 40% or more students eligible for FRPL. Two grade 2 teachers will be recruited from each school. Some schools may

have previous experience with eMINTS, but none of the teachers will have participated in any eMINTS professional development.

B4. Management Plan and Timeline

A management team of representatives from Mountain View Birch Tree R-II (LEA), eMINTS, the University of Missouri faculty, and the American Institutes of Research (AIR), will oversee project implementation, the iterative design process, and data collection. (See Appendix B for project members' resumes.) Mountain View Birch Tree serves 145 students; 75% are F/RLP eligible. The eMINTS National Center, a unit of the University of Missouri created in 2001, has managed over $47 million in grants and contracts including a $12.5 million grant serving over 15,000 students that led to a What Works Clearinghouse endorsement of "Strong Evidence of Effectiveness" (Section A4). eMINTS has a network of more than 400 affiliate PD specialists across 10 states certified to implement the eMINTS PD and coaching model; they have trained over 5,000 teachers. We will draw on this extensive network to recruit project coaches.

███████, our MU faculty lead and Past President of the Literacy Research Association, has conducted research focused on the integration of literacy and technology for over 25 years. She has secured funding for this work from USED/FIPSE, Verizon, Kauffman Foundation, the Literacy Research Association, and the University of Missouri. Her research has garnered international recognition from the International Literacy Association and the Literacy Research Association. ███████, MU faculty advisor and Professor of Engineering with expertise in speech recognition technologies, over 200 publications, and featured among the World's Top 2% Scientists, will provide technical expertise for evaluating and selecting appropriate SR options for children. AIR has 65 years of experience evaluating education interventions for LEAs, the

U.S. Department of Education, and other agencies. All these partners have worked together successfully for several years. In addition, Kansas City Audio-Visual is serving as a corporate partner having **already secured most of the 10% match for all five years of the grant** (see Appendix H for letter of commitment).

The project will occur over five calendar years. This allows for a planning period, two development cohorts, and two efficacy cohorts, as outlined in Table 1. The number of students served each year is specified in Table 1; in total approximately 92 teachers and 1840 students will be served during the grant period. Table 2 outlines the timeline, objectives, and major activities across the five years.

Table 1. Project Timeline

Talk to Read Timeline									
Year 1		Year 2		Year 3		Year 4		Year 5	
Jan-June 2022	July – Dec 2022	Jan – June 2023	July – Dec 2023	Jan – June 2024	July – Dec 2024	Jan – June 2025	Aug – July 2025	Jan – June 2026	July – Dec 2026
Plan, Develop, Recruit		Pilot Cohort A & B			Treatment Cohort C				Control Cohort D
Planning and Development		6 Schools 12 Teachers 240 Students 240 Parents/Guardians			20 Schools 40 Teachers 800 Students 800 Parents/Guardians		Efficacy Study Phase		20 Schools 40 Teachers 800 Students 800 Parents/ Guardians
		Ongoing Iterative Design (design, pilot, test refine)			Data Collection & Analysis Schools Randomly Assigned to Cohorts				

Note. Grant years are noted in Years 1-5 and fiscal years are noted in monthly segments

The project will be implemented in two phases, an Early Phase and an Efficacy Study Phase with corresponding management activities (see Table 2).

Table 2. Project Management Plan and Timeline for Tasks

Years 1-3 – Early Phase Activities	Years 3-5 – Efficacy Study Phase Activities

• IRB approval • planning and implementing grant activities • creating a project website, professional development materials, a self-paced course and webinars • recurring team meetings • pilot school onboarding and processing of paperwork • delivery of 40 hours of PD and coaching support for 12 teachers in pilot schools • data collection and analysis • website, materials and course management and revisions • fiscal management • school recruitment for Phase 2 • completing U.S. Department of Education grant compliance and reports	• recurring team meetings • planning and implementing grant activities • website, materials and course management and revisions • treatment and control school onboarding and processing of paperwork • delivery of 40 hours of PD and coaching support to 80 teachers in treatment and control schools • fiscal management • data collection and analysis • completing U.S. Department of Education grant compliance and reports • dissemination

For a detailed and more comprehensive list of management activities and dates, see Appendix J4

B5. Feedback and Continuous Improvement

The management team will use an iterative process design to collect feedback to make continuous improvements. During the first year, the team will work with field experts to design and create PD materials, a website, a self-paced course and webinars. Then we will field test those components with 3 pilot schools (Cohort A) during the spring of project year 2. We will collect and analyze data and feedback from project records, surveys, interviews and classroom observations to make revisions and improvements. We will repeat the process with another 3 pilot schools (Cohort B) during the fall of year 2 and early spring of year 3. Results of the analyzed data and feedback will inform further revisions and improvements for the Efficacy Study phase which occur during the fall of project year 3 through the spring of project year 5. It will include 92 teachers from 40 schools. The treatment schools (Cohort C) will receive *Talk to Read* PD and classroom coaching. The control schools (Cohort D) will conduct business as

usual until data collection is complete in the spring of project year 5. Formative data will continue to be collected throughout this phase and will be reviewed monthly.

B6. Broad Dissemination

Dissemination will include a variety of media including a project website, the eMINTS' Facebook community (with over 700 members), Twitter (MU Education, eMINTS and the management team and staff have over 10,000 followers), and LinkedIn. The MU College of Education and Human Development communications office will disseminate news releases as well as make direct contacts to state education agencies. While we will continuously seek opportunities to publish articles, the following key national and professional journals will be targeted: *Journal of Literacy Research, Reading Research Quarterly*, *Journal of Early Childhood Literacy, Literacy Research: Teaching, Methods, and Practice, Journal of Technology and Teacher Education, Journal of Educational Multimedia and Hypermedia, Language Arts, Reading Teacher, EdWeek, and Edutopia.* The management team members are regular contributors to state and national conferences including AERA, LRA, ISTE, MOREnet, MARE, GRITC and i2.

C. Quality of the Project Evaluation

American Institutes for Research (AIR) will evaluate the *Talk To Read* program in two phases. During the development phase, the evaluation will provide formative feedback for program improvement and evidence on fidelity of implementation in two cohorts. During the efficacy phase, the evaluation will provide causal evidence of full-scale implementation on teacher practice and student outcomes using a 2-year randomized controlled trial in 40 schools with 80 second grade teachers. At least 50% of participating schools will be high-need, rural schools. The efficacy phase study is designed to receive a What Works Clearinghouse (WWC)

rating of *Meets WWC Standards Without Reservations*. Collectively, the proposed evaluation activities will generate novel evidence and recommendations for policymakers, practitioners, and literacy researchers who are eager to improve the educational outcomes of struggling readers.

C1. Development Phase Evaluation

C1i. Design Overview.

AIR will examine implementation of *Talk To Read* in two second grade teacher cohorts. Cohort A will implement the program during the development phase for half an academic year (spring 2023; 3 schools, 6 teachers) and Cohort B for one full academic year (2023–24; 3 schools, 6 teachers). Mixed methods will be used to address the following research questions:

1. Does *Talk To Read* deliver services as planned, and in a way that is useful?

2. Do teachers participate in *Talk To Read* activities as intended?

3. Do teachers incorporate *Talk To Read* strategies in the classroom as intended?

4. How does implementation and teacher experience vary across schools and contexts?

C1ii. Sampling Plan.

AIR will work closely with eMINTS to identify the six schools that will participate in the development phase. Schools must include at least one second grade classroom and schools serving high needs students in rural areas will be prioritized. AIR will collect annual project records for all participants and biannual teacher survey data from eMINTS. For participant experience feedback, in each year, AIR will interview all teachers in Cohorts A and B and their coaches. For classroom practice, AIR will conduct annual observations for each teacher in Cohorts A and B in the development phase.

C1iii. Measures.

Measures of implementation of PD activities and classroom practice are included in this phase of

the evaluation. (See Appendix J5 for details.)

C1iiia. Measures of Implementation of PD Activities. For Research Questions 1 and 2, AIR will use two key sources for measures: (1) **Project Records**. eMINTS will record the number of *Talk To Read* modules delivered, activities conducted, PD hours provided to teachers, and support provided to parents or guardians. Coaching visits are documented using a validated log instrument (Martin et al., 2008; Meyers et al., 2015), which includes measures of time spent modeling instruction, lesson planning, technology assistance, reflective practice, and problem solving. Surveys administered by eMINTS will provide teacher feedback on participation and perceived quality of training and supports. (2) **Teacher, Parent, and Coach Interviews**. AIR will develop protocols to elicit input from teachers, parents and guardians, and coaches about their implementation experiences, including facilitators and barriers, that will inform areas for improvement. These protocols will elicit responses about the quality and utility of training and supports provided, in addition to responses about implementation of core practices.

C1iiib. Measures of Teacher/Classroom Practice. For Research Questions 3 and 4, AIR will conduct **Classroom Observations**. AIR will use the Classroom Assessment Scoring System–Kindergarten to Third Grade (K-3 CLASS; Pianta, La Paro, & Hamre, 2008). AIR will supplement the K-3 CLASS with a checklist of additional observation items that measure the extent to which teachers implement core instructional strategies aligned with *Talk To Read* such as fostering student's cultural and linguistic vocabulary by engaging students in talking, writing and sharing their personal experiences and using SR technology to aid this process. Following standard procedures for K-3 CLASS, certified observers will conduct two 30-minute cycles per observation. AIR will incorporate a SR technology and a *Talk To Read* classroom strategies checklist to capture teacher practices that are not included in the K-3 CLASS. AIR will adapt an

existing checklist protocol used successfully in a prior evaluation (Martin et al., 2008; Meyers et al., 2015) and pilot-test it prior to full-scale use in the efficacy phase.

C1iv. Data Analysis and Periodic Performance Feedback.

AIR will use a mixed-methods, multistep approach to identify specific indicators and thresholds for components of the logic model. For Research Questions 1 and 2, AIR will analyze multiple indicators of the degree to which *Talk To Read* activities and expected conditions are in place. AIR will aggregate these indicators across classrooms and schools to provide frequency estimates of project activity implementation, creating an objective fidelity of implementation rubric that will also be used for the efficacy phase. As part of this exercise, AIR will calculate dosage for each teacher (eMINTS considers 80% participation in project activities necessary for effective implementation). For Research Question 3, AIR will conduct descriptive analyses of classroom observation data that reflect implementation of core instructional strategies, summarizing the frequency and quality with which teachers used core *Talk To Read* strategies. This information will help the eMINTS program team identify strategies that are more difficult to translate into practice and may require additional support. For Research Question 4, AIR will use descriptive methods to examine how implementation varies across teachers and schools. These analyses will provide formative feedback of early implementation of project activities and uptake of teaching practices to inform adjustments to project development and delivery. The results of this analysis will inform the program team about the scalability of their training and teacher supports for the efficacy phase, and the degree to which certain strategies need additional tailoring for different contexts.

During the development phase, AIR will provide eMINTS with iterative formative feedback. AIR will collect and analyze implementation data from pilot teachers through

interviews and observations to provide feedback to inform eMINTS' continuous improvement activities. AIR will also develop and refine measures such as teacher surveys, a SR technology and *Talk to Read* observation checklist to prepare for data-collection activities in the efficacy phase. AIR will summarize findings in research briefs at the end of each academic year, with clear recommendations for program modifications that are grounded in the implementation data.

C2. Efficacy Phase Evaluation

C2i. Design Overview.

To examine the efficacy of *Talk To Read* on teacher and student outcomes, AIR will randomly assign 20 schools within districts to treatment (*Talk To Read classrooms*; Cohort C) and 20 schools to a waitlist control (business as usual; Cohort D). Participants will be second grade teachers and their students. (Teachers and schools from the development phase are ineligible to be part of the randomized experiment in the efficacy phase.) The efficacy evaluation is designed to receive a WWC rating of *Meets WWC Standards Without Reservations*. AIR will address these research questions:

1. Do schools and teachers assigned to *Talk To Read* implement it with fidelity?

2. What is the effect of *Talk To Read* on teacher/classroom practices, including use of core *Talk To Read* strategies and the quality of teacher interactions with students?

3. What is the effect of *Talk To Read* on students' (a) vocabulary (b) reading comprehension, (c) reading fluency, (d) peer relationships and (e) self-efficacy in literacy? And, do these effects vary by subgroup of high-need students?

Because AIR is using school-level assignment, minimal risks from contamination or other treatment crossover effects is expected. Regarding potential risk of bias from joiners, there is little or no reason to believe that the *Talk To Read* will influence students joining study

schools. As a precaution, however, after randomization AIR will ask participating schools and teachers not to share their treatment status with others outside of the study, minimizing student mobility that is related to treatment status. Additionally, eMINTS has a history of implementing programs with low or no attrition. As such, minimal student and school-level attrition is expected. In the event that the evaluation experiences high and or differential attrition, the evaluation is eligible for a rating of *Meets WWC Standards With Reservations* through two pathways (in priority order): (1) using an acceptable missing data strategy, such as multiple imputation by chained equations for the fully randomized sample (e.g., Rubin, 1987), and demonstrating that outcome imputation bias is within .05 standard deviations; (2) matching the non-attrition schools and students to ensure that baseline differences on outcome measures are within .25 standard deviations and adjusting for those differences in the outcomes analysis.

C2ii. Sampling Plan.

For Research Questions 5–7, AIR will randomly assign 40 schools (20 treatment and 20 control) across 10 to 15 districts (blocks) and evaluate impacts on student outcomes across two student cohorts spanning two consecutive academic years (2024–25 and 2025–26). Two or more districts may be condensed into one block for randomization in small, rural districts with fewer than four schools. Assuming two teachers per school (n = 80 teachers) and 20 students per teacher, the efficacy sample will include about 1,600 students across two student cohorts. A power analysis estimated that the minimum detectable effect size (MDES) is 0.27 for student outcomes and .34 for teacher outcomes, which assume four outcome observations per teacher across the two years of implementation (see Appendix J5 for additional details on the power analysis). This estimated MDES is comparable to results from research syntheses of elementary interventions using standardized achievement measures (Hill, Bloom, Black, & Lipsey, 2008). Additionally, recent

meta-analytic results from a large review of elementary language comprehension interventions for vocabulary outcomes indicates that the average intervention effect is approximately .85 standard deviations (Silverman et al., 2020), which indicates that this student population is especially responsive to intervention services.

C2iii. Measures.

AIR will measure fidelity of implementation in treatment schools and student and teacher outcomes in both treatment and control schools.

C2iiia. Measures of Implementation Fidelity. To answer RQ5, AIR will examine **Fidelity of Implementation** in Cohort C (2024–25 and 2025–26) using mixed methods and data sources: project records, teacher surveys that reflect perceptions about utility about training and supports, interviews with 20 teachers from the treatment schools (one teacher chosen randomly from each), interviews with parents or guardians about implementation of *Talk To Read Practices* at home (10 parents or guardians selected at random from 10 different treatment schools) and classroom observations using the *Talk To Read* observation checklist created in the development phase. AIR will use the same fidelity of implementation rubric created in the development phase to quantify the level implementation of core *Talk To Read* instructional strategies throughout the RCT, which will be collected twice each spring of the efficacy phase.

C2iiib. Measures of Teacher/Classroom Outcomes. To answer RQ6, trained observers will rate the **Quality of Student and Teacher Social Interactions**. including positive climate, negative climate, teacher sensitivity, behavior management, productivity, instructional learning formats, concept development, quality of feedback, and language modeling using the K-3 CLASS observation rubric (Pianta, La Paro, & Hamre, 2008). Two rounds of observations will be conducted in the fall of 2024 (baseline), spring of 2025 (first-year outcomes), and spring of

2026 (second-year outcomes). Additionally, AIR will measure the **Service Contrast** between treatment and control schools, the same trained observers will score the implementation of core *Talk To Read* core strategies using the same rubric created in the development phase and used to measure aspects of implementation fidelity during the efficacy phase. (See Appendix J5 for details on timing of assessments and estimates of reliability where applicable.)

C2iiic. Measures of Student Outcomes. Four student outcomes in the *Talk To Read* logic model will be measured in Cohort C (treatment) and Cohort D (control) over 2 years (2024–25 and 2025–26) to answer RQ7: (1) **Literacy**. Students will complete assessments that measure sight vocabulary, reading comprehension, reading fluency, and word decoding using the Group Reading Assessment and Diagnostic Evaluation (GRADE; Pearson, 2010). (2) **Social Skills With Peers and Classroom Behavior**. Teachers will rate the quality of their students' social skills with their peers and their classroom behavior using the Early Childhood Longitudinal Study Reading and Language Arts Questionnaire for Teachers (Najarian et al., 2020). (3) **Self-Efficacy in Literacy**. Students will respond to a set of questions that ask them to reflect on how well they believe they can perform various reading tasks. The item wording is grade and age specific (Caroll & Fox, 2017). (See Appendix J5 for details on timing of assessments and estimates of reliability where applicable.)

C2iv. Data Analysis and Periodic Performance Feedback.

Consistent with the analysis of implementation data in the development phase, AIR will use a mixed-methods approach. AIR will triangulate the multiple measures to identify which schools are effectively implementing *Talk to Read*. This information will be used for continuous improvement of the project. AIR will use four-level regression models to estimate the impact of *Talk To Read* on student and teacher outcomes, adjusting for baseline measures of outcomes as

well as the demographic composition of the students in the analytic sample (See Appendix J5 for additional details and our analytic model).

AIR will summarize the findings of the efficacy evaluation activities for the program team annually. The first-year findings from the efficacy phase (2024–25) will provide insights from teachers in the treatment schools about facilitators and barriers to implementation at scale. Paired with qualitative feedback from teachers, and initial estimates of impacts on student outcomes, this formative feedback will provide the program team with an additional opportunity to optimize training and program supports for the final year of the efficacy phase (2025–26).

AIR will summarize the full set of evaluation findings for the program team in a final evaluation report. This report will document impacts on student learning, implementation fidelity at scale, and a description of the instructional practice differences used across treatment and control schools. AIR will present these findings to researchers and practitioners who concentrate on elementary literacy as part of a national conference presentation and will submit the findings for journal publication. The novelty of the program, the evaluation design, and the rural school setting with a concentration of high-need learners will add important evidence to the knowledge base and future directions for developing programs for struggling readers.