

SMILE: Supportive Missions Improve Literacy Education

Northeastern Utah Educational Services, Mission.io, and [REDACTED] Evaluation propose a Mid-phase EIR project to enhance, scale, and perform a randomized controlled trial (RCT) of Mission.io's evidence-based cross-curricular literacy program. The program uses a mission-driven, collaborative learning platform designed to improve literacy outcomes, which will help rural and high-need students across the state of Utah, such as those in the lowest achievement quartile and students from low-income backgrounds.

Northeastern Utah Educational Services (NUES) is one of Utah's four Regional Education Service Agencies (RESAs) which assist rural school districts in providing cost-effective services and programs for students in nine districts. Among our guiding principles is to provide cooperative services and assist rural school districts in delivering efficient and quality educational programs that empower educators to increase student achievement and learning. NUES embraces the advantages of using technology, particularly in providing programs that empower student learning. We believe Mission.io Literacy is aligned with our other guiding principles and will positively impact our students.

This project addresses Absolute Priority 1 and Competitive Preference Priority 1. To address Competitive Preference Priority 1, our regional services organization will prime and we are partnering with **each of the other three RESAs** (see Appendix C) in the state of Utah to ensure the entire state is involved in each phase of this project. RESA input will benefit program contextualization, recommended implementation, and associated educator supports such as curriculum integration, pacing, and alignment of each literacy mission.

The project will engage 255 teachers and 6,375 students in 85 elementary schools in rural Utah across the implementation research and summative study. It will evaluate the impact of

Mission.io Literacy which can increase students' enjoyment of reading, self-efficacy, literacy skills, and ultimately end-of-year 5th grade state literacy assessment scores.

Section A: Significance

The lingering impacts of the COVID-19 pandemic have significantly disrupted students' literacy development. Despite historic federal investments and the dedication of educators and policymakers, recent national data reveal that reading achievement continues to decline.

According to the 2024 National Assessment of Educational Progress (NAEP) results, average reading scores for both 4th and 8th graders fell by two points compared to 2022—a continuation of a downward trajectory in reading over the past decade (National Assessment Governing Board [NAGB], 2024). Alarming, no state experienced reading gains at either grade level (NAGB, 2024). These national trends confirm that existing strategies have not been sufficient to reverse reading losses, especially among struggling students (Lewis & Kuhfeld, 2023).

In Utah, the NAEP results paint a mixed but concerning picture. In 2024, Utah's 8th-grade reading scores dropped by four points compared to 2022, making Utah one of only eight states to see such a decline (Utah State Board of Education [USBE], 2025a). These results highlight a troubling stagnation and raise warning signs about students' readiness for middle school and beyond. State assessment data mirror these findings. On the Utah RISE English Language Arts assessment, only 45% of 5th graders met or exceeded proficiency standards in 2024, down from 52 percent before the pandemic (USBE, 2025b). The gap is far greater in rural and high-need districts served by the state's Regional Education Service Agencies (RESAs), where fewer than 40 percent of 5th-grade students achieved proficiency in reading.

Reading achievement matters deeply—especially in Grade 5, when students continue the shift from *learning to read* to *reading to learn*. Students who fail to reach grade-level proficiency

by this stage are four times more likely to experience later academic struggles, grade retention, and reduced postsecondary success (Hernandez, 2012). As the What Works Clearinghouse (WWC) Practice Guide for Grades 4–9 emphasizes, upper-elementary and middle-grade texts demand that students apply increasingly sophisticated decoding, fluency, and comprehension skills to make sense of complex, multisyllabic words and challenging informational passages (Vaughn et al., 2022). Students with reading difficulties often lack automaticity in word recognition, which hinders comprehension and reduces motivation to read. Evidence from more than 30 studies summarized in the WWC guide demonstrates that explicit instruction in decoding multisyllabic words, fluency-building practice, and comprehension routines—such as teaching students to generate the gist and monitor understanding—can significantly improve reading outcomes for students in grades 4–9. Strong reading comprehension underpins success in every content area and predicts long-term educational, economic, and civic outcomes.

At the same time, the pandemic transformed how students learn, creating both new challenges and new opportunities for literacy education. The rapid shift to remote learning accelerated students’ exposure to digital tools, platforms, and modes of self-directed learning (Dhawan, 2020). Yet while students gained technological proficiency, they often lost opportunities for *collaborative learning*—peer interaction that fosters engagement, dialogue, and shared meaning-making. Collaborative learning harnesses the power of collective intellectual engagement, fostering deeper comprehension through shared experiences and diverse perspectives. Research shows that peer collaboration increases reading motivation and classroom connectedness, particularly when facilitated through digital environments (Cheung et al., 2013; Ginner Hau et al., 2021; Hrastinski, 2009; Kiryakova et al., 2014). Digital collaboration not only enhances critical thinking and problem-solving skills but also builds communication and

teamwork—skills essential for the modern workforce (Laal & Ghodsi, 2012). Moreover, accessible, technology-enabled platforms can make such opportunities more distributed, bridging geographic and resource gaps that persist in rural and underserved regions (Israel et al., 2023).

SMILE builds on this opportunity. By combining the motivational power of digital missions with structured peer collaboration, SMILE leverages Utah’s existing digital infrastructure to foster reading engagement, self-efficacy, and comprehension. Partnering with all four Utah RESAs, the project seeks to recover lost ground and to transform post-pandemic learning into a statewide model of technology-supported, collaborative literacy growth.

The Innovation. Mission.io is a thrilling new innovation designed to capitalize on students’ capacity to engage and learn in a blended digital environment, while focusing on the power of collaborative learning with peers. In the Mission.io classroom experience, teachers connect and display their chosen, standards-aligned, story-driven *Mission* through their main screen and classroom audio system, while students sit in teams, engaging collaboratively in the dynamic problem-solving Mission, which is set in a series of scenarios like outer space or historical timelines. To navigate the Mission, students must investigate, analyze, and synthesize data to solve challenges. They can use their devices to access several integrated tools, such as data display formats. The interactive storyline fosters inquiry, collaboration, critical thinking, and creativity, with teachers monitoring and facilitating in real-time using management tools to provide immediate feedback (see Appendix J.1 for screenshots). This immersive setup not only boosts engagement but also seamlessly integrates collaborative, interactive learning into the classroom environment. Mission.io is designed to increase student engagement—a critical driver of literacy achievement that strengthens comprehension, retention, and motivation (Finn et al., 2012; Fredricks et al., 2004; Nadeem et al., 2023). Engaged students participate more actively,

seek help when needed, and develop positive attitudes toward learning that foster long-term academic growth.

The *WWC Practice Guide for Providing Reading Interventions in Grades 4–9* (Vaughn et al., 2022) underscores that improving literacy outcomes requires comprehension-building strategies delivered through structured, motivating contexts. Mission.io operationalizes this recommendation through gamified, full-class literacy simulations where students collaborate in small teams to complete standards-aligned “missions.” In these simulations, teachers can monitor student progress and provide real-time feedback, ensuring both engagement and instructional alignment. This collaborative, mission-based model reflects best practices, promoting comprehension through active discussion, and giving students opportunities to engage with increasingly complex texts (Vaughn et al., 2022). Gamified environments amplify these practices by integrating narrative challenge, immediate feedback, and peer collaboration—factors shown to increase motivation, persistence, and achievement (Alshammari, 2020; Dicheva et al., 2015; Hamari et al., 2014, 2016). A meta-analysis of 69 studies found that students using digital games achieved significantly higher outcomes than those who did not ($d = .33$; Clark et al., 2016).

By embedding evidence-based literacy instruction within interactive, standards-aligned missions, **Mission.io Literacy** addresses the dual challenge of engagement and building students’ reading, writing, and listening skills. The platform integrates academic competencies with 21st-century skills—collaboration, critical thinking, and resilience—to foster deep, sustained literacy growth. All content aligns with the Common Core and Utah English Language Arts Standards, transforming literacy learning from a passive task into an active, collaborative experience grounded in the science of reading and the WWC evidence base.

Mission.io has received funding from the NSF and the IES to develop and expand high-quality, supplemental, gamified, standards-aligned missions to help all students be successful and actualize their potential. Mission.io has an established base of evidence and earned ESSA Level IV, validated by a third-party research organization (Wilson, 2024). In a recent study, [REDACTED] found that treatment teachers reported higher student interest in motivation to learn (+34%), participation (+55%), and whole-class engagement (+64%) during Missions compared to “normal” classroom conditions. Research with **115 schools** found that students who utilized the program at least once per week saw the following mean increases by end of year: knowledge (+26%), collaboration (+80%), critical thinking (+44%), initiative (+26%), and resilience (+13%) (Langford, 2023). An analysis of program data from the 2020-2021 school year, using **380 schools**, showed growth in students' mean value collaboration (+.10) and critical thinking (+.42).

Evidence from multiple studies demonstrates that Mission.io’s collaborative learning approach improves both engagement and academic performance across content areas. In a three-year analysis involving 63 elementary schools, Mission.io found a positive correlation between student engagement with its interactive missions and year-end science proficiency ($r = .33$). Schools with higher teacher adoption and usage rates experienced double the gains in academic achievement compared to lower-usage schools—12.05% vs. 6.13% improvement in science proficiency. These findings highlight the program’s capacity to translate engagement into measurable learning outcomes at scale.

Building on this evidence, [REDACTED] found similar effects for Mission.io Literacy. In a mixed-methods study of 240 students in Grades 3–5, treatment group students demonstrated statistically significant gains in reading and data analysis, particularly in Grades 3

and 5. Teachers reported that the program aligns closely with standards, reinforces existing curriculum content, and enhances student persistence and resilience. Together, these findings indicate that Mission.io’s mission-based, collaborative design boosts academic outcomes and cultivates the motivation and perseverance essential for sustained literacy growth.

Although Mission.io is widely implemented and a number of small-scale evaluation studies have shown positive outcomes, there have been **no large-scale experimental studies** to date. *SMILE: Supportive Missions Improve Literacy Education* will provide experimental evidence in the form of a large-scale RCT and will include mediating and moderating effects and a detailed cost analysis. This project will lead to improved Missions, greater impact, and rigorous evidence demonstrating how Mission.io Literacy can increase 21st century skills and literacy achievement.

Section B: Strategy to Scale

B.1 Unmet Demand for Broader Implementation

The need for high-quality, evidence-based programs to support reading development is clear given the most recent release of national NAEP scores in August, which showed that 12th-grade students had reading skills which were the lowest in 30 years (NAEP, 2025). Mission.io wants to support students earlier in education to help curb that decline. Utah districts have noticed this decline as well, and the demand to offer Mission.io to support literacy has been increasing. Utah's RESAs wish to respond to the districts’ increased demand by researching, documenting, and disseminating the most effective ways to scale and sustain the program.

Mission.io Literacy is aligned to the universal core curriculum and integration of science of reading principles. Such evidence-based programs are desperately needed in the literacy

space, particularly in upper elementary grades where many students struggle to keep their passion for reading and writing (Huebeck, 2023). So many literacy programs are focused on early literacy (grades K-3) and developing literacy skills. Mission.io Literacy is designed to address a missing piece: continuing to build literacy skills in upper elementary school and, critically, increasing students' engagement, connection, and resilience to ignite a love of reading.

The proposed project will address three critical needs: (1) the lack of evidence-based supplemental reading programs for upper elementary students, (2) the strong demand to expand Mission.io's literacy program statewide in Utah, and (3) the need for centralized knowledge and innovative professional learning (PL) tools and infrastructure to support scale-up in other states. While Mission.io's current activities and resources are aligned with state standards, they **require deeper knowledge and resources that can be easily disseminated to provide guidance around integrating Mission.io Literacy readily** across an array of district contexts. To meet this challenge, we will design, build, launch, and actively disseminate a free, web-based **Centralized Learning Hub (CLH)** that will serve as the foundation for scaling and implementation. The hub will include the following focal areas:

- **Technology Guides** – Practical resources that unpack how Mission.io can be integrated within the range of district technology infrastructures and capabilities.
- **Implementation and Alignment Guides** – Tools that demonstrate how Mission.io aligns with various curricula, initiatives, and district academic priorities, including pacing guides, scope and sequence charts, and recommended classroom integration strategies (e.g., frequency and duration of use).
- **Professional Learning Resources** – Expanded offerings to strengthen leadership capacity, teacher buy-in, fidelity, and instructional effectiveness, building on the existing

PL program with tiered training, coaching, and supports for teachers and districts.

Technology Guides. Technology innovations can be challenging to integrate in schools (Lawlor et al., 2018). The districts the RESAs served are varied in technology capability and availability. First, we will collect technology information from all Utah school districts using websites, a statewide district survey, and personal connections that will allow RESAs to garner a comprehensive picture of technology availability and capability of each of their districts.

Mission.io will then work with RESAs to create a series of technology guides for each type of technology infrastructure focused on how to adapt Mission.io to conform to these parameters.

Technology Guides will specifically consider capacity and integration. Capacity is looking at the technology the schools already have and how to cater the product to meet those needs. Capacity includes wifi access, devices, and classroom infrastructure. Integration is about making it easy for teachers within the districts to find and use the program as seamlessly as possible without running into district firewalls or systems that would hinder a teacher from participating. Guides will help district teams integrate Mission.io into the LMS (if applicable) so teachers can launch straight from their platform. They will also address firewalls and security issues to ensure usability. The process will also allow Mission.io to identify and build, as part of this project, the needed technology support infrastructure to align to these guides.

These guides will be used as continued resources for the regions and their district, but will also be used to support scaling as an additional tool for future interested districts since they will clearly map out how the product has been successfully integrated in similar contexts.

Implementation and Alignment Guides. Mission.io is already aligned to Utah state standards. A description of standards and how Mission.io Literacy integrates them in real-world Missions is detailed in Appendix J.2. However, districts can still benefit from further alignment support, including detailed pacing and integration information, that corresponds to their needs and contexts. The guides will identify if and how each standard is addressed to show districts how Mission.io can align with their curricula and academic priorities.

Strategies in the implementation guides will help ensure that the number and pacing of Missions within each curricular unit are calibrated to optimally promote student engagement while avoiding overuse. The guides will formalize how Missions can be introduced, revisited, and explicitly connected to the Utah Core Standards for fifth grade reading, such as summarizing key ideas, analyzing text structures, citing textual evidence, and building vocabulary through context and morphology. The guides will then make integration more seamless for districts and more user-friendly for teachers. These enhancements will not only increase buy-in but also support higher fidelity of implementation and greater instructional efficacy.

Professional Learning (PL) Resources. Mission.io will collaborate with the RESAs to expand and strengthen PL resources (on the Centralized Learning Hub) and offerings (external support) so they effectively connect to and support districts served across the state and, ultimately, in other states. These offerings will include multiple levels of training, coaching, and implementation support designed to build a comprehensive understanding of the program, its instructional design, and its intended impact. Each resource will be intentionally structured to increase teacher and district buy-in, satisfaction, fidelity, and instructional efficacy.

These resources will build on Mission.io's existing PL infrastructure, which already includes up-front training, topic-specific webinars, and on-demand coaching (see Appendix J.3

and J.4). Enhanced training resources will engage both **regional and district staff** so that internal teams can assume greater responsibility for supporting school- and classroom-level integration, aligning the program to district priorities, and onboarding new teachers. **Having a proven method for cultivating local leadership capacity will make the program more scalable, sustainable, and cost-effective for districts.**

Scaling in Utah. Utah serves students across a broad landscape. There are over 60,000 public elementary students in Utah across 600 elementary schools that could be served by this project. NUES alone serves nine school districts providing educational opportunities to over 33,500 students, mostly in rural settings, including over 2,200 5th grade students. In Utah, over 30% of students receive free- or reduced-priced lunch. Statewide and less than 50% of students score at the proficient or above in language arts (Utah State Board of Education, 2025). These districts and students have voiced a demand for a research-based literacy intervention.

Rural schools face significant challenges in providing students with equitable access to technology. Unlike their urban and suburban counterparts, many rural schools lack the infrastructure, funding, and high-speed internet access necessary to integrate technology effectively into the classroom. Teachers in rural areas may also have fewer opportunities for professional development in educational technology. These factors may contribute to the gap between rural students and suburban or urban peers. This is why Mission.io Literacy is **designing its scaling-oriented CLH by prioritizing guides that demonstrate how Missions can be effective in nearly any context.** These improved resources, along with the RESAs and Mission.io's dedication to the program, will help ensure success of the proposed project to meet the discussed growing demand for Mission.io's literacy program across the state.

B.2 Management Plan

Northeastern Utah Education Services (NUES) will lead the proposed project, collaborating closely with RESAs, Mission.io (M) and [REDACTED] Evaluation ([REDACTED] external evaluator). An organizational chart, illustrating the role of each key personnel and organization is contained in Appendix J.5. The major goals and project objectives are displayed in Table 1, which also indicates the respective year(s) of work and the responsible organization(s). The lead organization for each sub-objective is bolded. A **comprehensive timeline** for each month of the entire project, including more detailed milestones, procedures, and the specific role responsible for each objective, is included in **Appendix J.6**.

Table 1. Project Goals, Objectives, and Performance Measures by Organization and Project Year

Goals and Objectives	Y1	Y2	Y3	Y4	Y5	Org & Role*	Performance Measures
Goal 1. Implement strategies to deliver services more efficiently at scale and maintain effectiveness							
1.1 Build and improve web-based Centralized Learning Hub (CLH)	X	X	X	X	X	NUES, Director of Technology	100% of the CLH focal areas (e.g., Technology Guides) have at least 1 active page and link.
1.2 Develop PL components to help use the CLH	X	X				M, Program Director	New PL components demonstrate how to leverage all of the main CLH focal areas.
1.3 Test PL and CLH resources across a range of contexts	X					[REDACTED], Formative Director	85 schools implement Mission.io using CLH resources

1.4 Build internal capacity for sustainability		X	X	X		M, Program Director	At least one lead Mission.io coach/trainer identified and trained in each partner region.
Goal 2. Evaluate the implementation and impact of Mission.io							
2.1 Complete all phases of formative research	X	X				█, Formative Director	At least four reports written, 1 from the scan phase and 3 from the implementation research.
2.2 Measure and assess implementation fidelity of Mission.io		X	X	X		█, Impact Director	100% of Mission.io PL and program usage data collected. 90% of teacher logs completed.
2.3 Measure and assess the impact of Mission.io using an RCT		X	X	X	X	█, Impact Director	< 10% attrition, 90% completion of all measures by teachers and students.
Goal 3. Disseminate findings, information, and resources							
3.1 Publish to the CLH to support development, adaption, and replication			X	X	X	NUES, Director of Technology	At least 5 pages on the CLH to support development, adaption, and replication.
3.2 Disseminate findings to research audiences			X	X	X	█, Impact Director	3 peer-reviewed publications submitted, 4 conference presentations delivered.

3.3 Disseminate findings to public, teacher, and policy audiences				X	X	█, Literacy Education Specialist	3 public webinars delivered, three presentations at local practitioner events delivered.
Goal 4. Track progress on scaling and sustainment							
4.1 Track cost, scaling, and sustainment		X	X	X	X	█, Impact Director	Cost Guides and Scaling Guides released each year.
4.2 Track use of the Centralized Learning Hub		X	X	X	X	█, Impact Director	100% of districts are aware of the CLH and 75% have used it.

*Roles and personnel are described in Table 2.

To accomplish these goals, the NUES teams will be led by █, Executive Director who will oversee all management and partnership relations (see B.3). █ will help coordinate and oversee all technology development and integration, such as creating and maintaining the CLH. To ensure proper CLH functionality from Mission.io’s perspective, their team will be led by █, Director of Academics, who will ensure all learning, updates, and strategies are properly documented, organized, and published for use. █ Evaluation will serve as the external evaluator. They will be responsible for leading the independent impact evaluation and have a proven track record of successfully executing projects of similar complexity, scope, and focus, including multiple large scale, multi-site RCTs. They will also lead the analytics around cost, scaling, and sustainment, which will inform the guides.

NUES will hold bi-weekly meetings and form collaborative working and digital storage spaces so all parties will continually be aware of each other’s activities and learnings. NUES will

take guidance from all parties in collating information and resources into proper guides for wide dissemination through the CLH, which all parties will support, as described in C.2. NUES will be responsible for overseeing the progress and completion of each objective as noted by the corresponding performance measure, and will communicate progress with the Program Officer.

B.3 Project Personnel and Commitment

NUES, Mission.io, and [REDACTED] Evaluation bring extensive experience, strong capacity, and a shared commitment to scaling the proposed project statewide. NUES has secured participation from **all four of Utah’s Regional Education Service Agencies (RESAs)** (see Appendix C), ensuring comprehensive reach and support. The RESAs will assist across all project phases—recruiting schools and teachers, contributing to resource development, tailoring implementation support to local contexts, and facilitating accurate and compliant data collection.

NUES will designate a **project coordinator** to oversee internal management and lead recruitment and support for participating schools. Senior leadership, including the Executive Director and Principal Investigator, will leverage deep relationships with districts and RESAs to sustain engagement and coordination. A project assistant will provide logistical and communications support. NUES has a proven record of executing large-scale initiatives involving technology integration, reporting, and accountability, [REDACTED] [REDACTED] with reliability and efficiency.

[REDACTED] **Evaluation** specializes in the research and evaluation of innovative learning technologies. Their mission is to understand how such products best support students—especially those in rural and high-need communities—and under what conditions they are most effective. The evaluation team includes experts in educational technology, literacy instruction, implementation research, and advanced quantitative analysis. [REDACTED] has successfully

led numerous state and national randomized controlled trials (RCTs) and brings expertise in product improvement, usability testing, and both formative and summative evaluation.

Mission.io is a nationally recognized developer of collaborative, game-based learning platforms that translate research into practice. The company has received NSF SBIR and IES SBIR Phase I and II awards, demonstrating its capacity to innovate and scale evidence-based products. Mission.io’s multidisciplinary team of educators, technologists, and advisors will collaborate closely with NUES, the RESAs, and [REDACTED] Evaluation to iteratively refine and enhance the Mission.io Literacy platform. This partnership ensures a responsive, research-informed product capable of supporting diverse Utah learners and providing a scalable model for replication beyond the state.

Table 2. Key Personnel’s Relevant Experience and Proposed Roles and Responsibilities.

Staff and Role	Primary Responsibilities and Relevant Experience
Northeastern Utah Educational Services Key Personnel	
	<p>[REDACTED], [REDACTED], is responsible for efficient operation and use of resources including personnel. She is an experienced educational administrator. She will be the Project Director and main point of contact for the funder, M, and [REDACTED]; oversee the NUES staff and partner relationships; support recruitment; and contribute to reports and dissemination. [REDACTED]</p> <p>[REDACTED], [REDACTED], maintains connectivity and runs Help Desk for the NUES region. He will act as the Technology Director and will ensure that Mission.io is accessible for participants and problem-solve hardware or network issues. [REDACTED], [REDACTED], serves as an instructional technology coach for the NUES region. He will act as the Implementation Lead and facilitate the integration of Mission.io in NUES districts through</p>

The quality of the plan to deliver project services more efficiently at scale while maintaining effectiveness rests on a combination of centralized infrastructure, scalable professional learning, flexible integration, and continuous improvement systems. The Centralized Learning Hub will make implementation more efficient by housing technology guides, implementation and alignment guides, and professional learning resources in a single, easily accessible platform. This hub reduces redundancy, shortens onboarding time, and ensures that all districts, regardless of size, resources, or prior experience, have access to the same high-quality materials, thereby supporting consistency of implementation across the state.

Mission.io's professional learning components are designed to scale while maintaining rigor. Multiple levels of support, including initial training institutes, coaching cycles, topical webinars, on-demand modules, and a train-the-trainer model, equip teachers, coaches, and administrators with the knowledge and skills needed to incorporate Mission.io into curriculum and to implement Mission.io with fidelity. By preparing RESAs and district staff to lead training and coaching, the model builds local capacity that lowers long-term costs, makes scaling easier by ensuring that instructional expertise remains in place even after the project period ends.

The plan also emphasizes flexibility and alignment. Implementation guides explicitly connect Missions to Utah's 5th grade reading standards while allowing districts to adapt pacing, technology integration, and instructional strategies to fit their local contexts. This balance between consistency and adaptability ensures that scaling does not come at the expense of teacher buy-in or district alignment. **Together, these strategies demonstrate a high-quality and comprehensive plan to deliver services efficiently, at scale, and with proven effectiveness, positioning Mission.io for long-term success in Utah and beyond.**

To ensure the creation and effective use of the CLH, [REDACTED] Evaluation will conduct rigorous, ongoing research throughout the project, employing iterative cycles of development, testing, and redesign informed by teacher and district feedback. Throughout this process, [REDACTED] will provide NUES and Mission.io with ongoing, actionable feedback to refine scaling models and resources, ensuring that the program is both feasible and effective across district contexts.

B.5 Dissemination Strategies

We will use multiple mechanisms to broadly disseminate resources through the Centralized Learning Hub (CLH) and partner networks to support adaptation and replication in additional settings. The CLH will be freely available on the NUES website and linked from Mission.io's site, providing administrators, teachers, and parents access to resources about Mission.io Literacy. Near the end of the project, we will add microlearning videos, model classroom recordings, and topic-specific webinars that offer practical guidance for current and future users.

A core CLH product will be a **Scaling Playbook**, a practical guide for districts and states adopting, implementing, and sustaining Mission.io Literacy. It will include readiness checklists, alignment guidance with state standards, professional learning models, and phased strategies for scaling from pilot implementation to statewide adoption, with examples, pacing tools, and cost-effectiveness considerations.

[REDACTED] Evaluation will lead dissemination to researchers and policymakers through presentations at AERA, SREE, and SSSR; policy briefs, infographics, and cost snapshots; and publications in journals such as *AERJ* and *Reading Research Quarterly*. Together with NUES, they will host webinars and practitioner sessions, including presentations at the National Rural Education Association. NUES and Mission.io will share findings through practitioner

conferences, regional meetings, and outreach to Utah’s RESAs. They will use their websites, newsletters, and social media channels to share updates and products, supporting ongoing use and sustainability of Mission.io Literacy across Utah and beyond.

Section C: Project Design

C.1 Logic Model and the Project’s Conceptual Framework

SMILE: Supportive Missions Improve Literacy Education focuses on Mission.io Literacy and is guided by a comprehensive logic model that connects all key components, mediators, and outcomes (see Appendix G). Mission.io supplements traditional literacy curricula through collaborative Missions, which are aligned to national and state standards. To ensure the missions can be integrated across a large population of schools, certain components must be in place.

Key among those components is the Centralized Learning Hub (CLH), which will be the go-to resource for current and future regions, districts, schools, and teachers for efficiently and effectively making Mission.io work for their students. The CLH will house Technology Guides, Implementation and Alignment Guides, and Professional Learning Resources that will collate all on-going strategies and learning from involved program staff, evaluators, and educators at all levels. The CLH will lead to improved program implementation for districts and schools, including the efficiency of upfront strategy, adaption, and implementation, to the ease of use from training resources and pacing guides, to ultimately more effective use from increased teacher fidelity and self-efficacy. This effectiveness will then lead to increased school and teacher buy in and longer program adoption and sustainability. Such program sustainability will lead to expansion and replication, where the CLH can again be utilized at all levels. Ultimately, state and nationwide investment in and implementation of Mission.io Literacy would ensue.

Another key component is the teacher and student platforms. The teacher platform provides extensive access to implementation support and analytics to inform teacher-driven instruction and formative feedback. They have controls to create student groups, adapt missions, and monitor progress. The platform the students see is yet another key component. Their platform provides student-led activities completed in collaboration with classmates, gamified with narratives and storytelling, to increase enjoyment of reading and self-efficacy (Nadeem et al., 2023). The missions are objective-focused around a problem and provide multiple opportunities to engage in productive struggle, problem solving, and repeated practice (Young et al., 2024). Students read and synthesize information, answer embedded questions, and receive group and individual feedback to guide the mission progress.

As students engage in these engaging, real-world problems in groups, the literacy activities come to life and the class and reading become more enjoyable. Students also see progress in their missions and receive support from their teacher and peers along the way which can boost the self-efficacy around these skills. This experience can lead to improved reading skills and ultimately increased performance on their ELA state standardized test. These outcomes are critical in late elementary grades since they may lead to increased AP enrollment, increased high school graduation, and increased postsecondary enrollment.

Corresponding professional learning is required for both teachers and educational leaders. For leaders, upfront and on-going training can help build infrastructure within regions and districts to support program expansion and success. It can also help leaders make optimal use of the CLH resources. Strong PL also helps teachers to learn how to integrate missions into their teaching strategies, feel confident in doing so, and ultimately implement the missions with fidelity. These PL experiences will leverage the CHL and its PL other resources.

C.2 Project Goals, Objectives, and Outcomes: Achievability and Measures

This project will have a direct and meaningful impact on over 285 teachers and 6,375 students in at least 85 elementary schools. The four overarching **project goals** and associated **measurable objectives** that guide all aspects of *SMILE* are seen in **Table 1** above in B.2. For Goal 1, we will create, test, and implement strategies to deliver services more efficiently at scale and maintain effectiveness. These strategies will aim to enhance the use and sustainability of Mission.io. Key to this will be the development and implementation of the Centralized Learning Hub, which will be a massive collaborative effort from NUES and other RESAs, [REDACTED] Evaluation, and Mission.io. Each of the four objectives under this goal are key benchmarks that can be measured objectively as noted in Table 1.

For Goal 2, the project will evaluate Mission.io through rigorous implementation research and a randomized controlled trial for the impact study. The phases of formative research will allow [REDACTED] Evaluation to understand the needs and context of the population, to iteratively test and research CLH resources, implementation strategies, and PL components, and provide actionable feedback to Utah's RESAs and to Mission.io. [REDACTED] Evaluation will then lead the impact study including fidelity and student short and medium term outcomes. Long term outcomes are beyond the scope of the current project. The [REDACTED] team has a long history of executing formative research and RCTs of this scale and adhering to tight timeframes and program requirements and has outlined achievable objectives.

For Goal 3, our teams will work collaboratively to disseminate findings, information, and resources. A large portion of these findings will be released in the form of the CLH, which will help schools within and beyond the scope of the study. These resources will help regions and districts with program adaption and implementation. They will also help larger researcher

audiences for eventual replication and expansion studies. Additionally, the most relevant findings will be brought to larger audiences through more traditional methods, including peer-reviewed journals and conferences, as well as webinar and other practitioner-facing events. All partners in this project have extensive experience in these forms of dissemination (see B.5).

Our final goal, Goal 4, will track progress on scaling and sustainment and complete a detailed cost analysis. As part of the RCT, [REDACTED] Evaluation will complete comprehensive cost analyses (see D.1.b) to inform potential scaling and cost guides. All parties will also help track scaling across the state of Utah and in other states during the 5 years of the project duration. Additionally, RESAs and Mission.io will track continued use (sustainment) of each school who initially implements the program during the study period. Mission.io will have usage data and RESAs will have on-going communication with all participants to gather and verify this data.

All of these goals and objectives are achievable by the involved parties as described above. A detailed table with tasks and timelines to achieve each objective is in **Appendix J.6**.

Section D: Project Evaluation

[REDACTED] Evaluation will execute a multi-phase, independent evaluation that culminates in an 80-school randomized controlled trial (RCT) designed to meet What Works Clearinghouse (WWC) Standards Without Reservations (WWC, 2022). Consistent with the Standards for Excellence in Education Research (SEER; IES, 2020), the evaluation will emphasize pre-registration, rigorous causal inference, attention to implementation and context, and transparent, replicable reporting. The evaluation will proceed in three phases. First, a formative implementation study will focus on the development of the CLH and the PL improvements by gathering feedback from teachers and districts, testing of materials (e.g., fidelity tools), and exploring implementation processes. Second, the summative impact study will assess the effects

of Mission.io on fifth-grade students’ enjoyment of reading, literacy skill development, and performance on state and national assessments, using a cluster-level RCT that ensures both internal validity and generalizability. Finally, a scale-up study will explore factors influencing adoption and scaling across Utah. Together, this phased approach will provide rigorous, policy-relevant evidence of program effectiveness while simultaneously generating actionable insights for improvement, replication, and large-scale adoption. Table 4 provides the research questions (RQ) that will guide each study along with primary data sources.

Table 4. Research Questions and Primary Data Sources

Research Questions	Goals	Data Source(s)
Implementation research questions		
1. How does the Centralized Learning Hub support administrators and teachers to implement Mission.io more efficiently and confidently?	1	CLH usage data, district and region surveys.
2. To what extent is the Mission.io PL and program implemented with fidelity?	2	PL attendance, logs, usage data
3. Which contextual factors (district, school, teacher, classroom) affect the fidelity of implementation and how?	2	Demographic data
RCT / Impact research questions		
4. What is the impact of Mission.io on students’ 5th grade reading achievement?	2	Utah ELA RISE Summative
5. What is the impact of Mission.io on students’ 5th grade	2	Acadience

literacy skills?		Reading
6. What is the impact of Mission.io on students' enjoyment of reading?	2	Enjoyment of Reading Scale
7. What is the impact of Mission.io on students' self-efficacy?	2	MRQ
Main mediating and moderating research questions		
8. Which contextual factors moderate the impact of Mission.io and how?	2	Demographic data
9. How does student enjoyment of reading and self-efficacy mediate the impact of Mission.io on literacy achievement?	2	Same as RQs 1-3
10. How does fidelity of Mission.io moderate the impact on student outcomes?	2	Treatment data, usage data
Scaling and sustainability research questions		
11. How does the Centralized Learning Hub promote scaling, sustainability, and future replication?	3, 4	Usage data and surveys
12. What is the cost-effectiveness of Mission.io for student outcomes?	3,4	Cost data

Impact Study Summary (Sample, Power, Model). We will recruit 80 elementary schools across Utah over two years and include all 5th grade teachers and students. Forty schools will be randomly assigned to implement Mission.io Literacy and the other 40 will teach business-as-usual (BAU) reading. We will prioritize schools with a large percentage of high-needs students and we will attempt to balance the sample for generalization. The impact study alone will include 240 teachers and 6,000 students. The analyses will use hierarchical

linear models (see full analytics models in Appendix J.8) and are powered for minimum detectable effect sizes of 0.168 for student outcomes (see Appendix J.7 for full power analysis).

WWC Acceptable Outcome: Student Reaching Achievement. To measure student reading achievement (RQ5), Evaluation will collect the Readiness Improvement Success Empowerment (RISE) Grade 5 Reading assessment. RISE is a computer adaptive criterion referenced assessment (Cambium Assessment, 2024). The Utah RISE Grade 5 Reading assessment measures students' ability to comprehend and analyze both literary texts (stories, drama, poetry) and informational texts (expository and nonfiction) and is considered valid and reliable by WWC standards (WWC, 2022).

Outcome: Literacy Skill. Acadience Reading has shown high reliability for its Reading Composite score: alpha = 0.91 to 0.97 (Gray et al, 2021).

Outcome: Enjoyment of Reading Scale. Adelson et al (2019) shows that strong reliability: alpha = 0.79 for the Recreational Reading subscale and 0.78 for Academic Reading.

Outcomes: Motivations for Reading Questionnaire. Wigfield & Guthrie (1995) is widely accepted and has shown medium to strong reliability of the subscales to be used in this study: Reading Efficacy (0.63 - 0.68) and Reading Challenge (0.68 - 0.80).

Assignment. The impact study will use a school-level, cluster RCT designed to meet What Works Clearinghouse standards without reservations (WWC, 2022). Participating schools will be assigned to conditions using blocked random assignment. Blocks will include school-level reading achievement and demographic data. We use school-level random assignment because (a) Mission.io is most often implemented school-wide; (b) it limits contamination threats from teacher-level randomization, as teachers may share materials and approaches within a school; and (c) technology integration is also simpler at a school level.

After randomization, [REDACTED] Evaluation will onboard all teachers to the study. Mission.io will enroll all teachers in treatment schools into its PL program. Those teachers and students will have full access to all of Mission.io Literacy’s features and resources. The control schools’ 5th grade teachers will teach BAU reading classes and will not have training with or access to Mission.io Literacy and will use a variety of state approved universal reading curricula.

The impact analysis will use an **intent-to-treat (ITT) approach**, whereas schools, teachers, and students are retained in their originally-assigned groups. Students on rosters at the beginning of the impact study academic year (2027-2028) will constitute the ITT student sample. The school-level study design minimizes the risk of including joiners, but to be conservative, students who join the school after randomization will not be included in the analytic sample. We also expect a low level of teacher-attrition (< 5%) due to district, school, and Mission.io support and reasonable levels of student level attrition (< 10%), with both being comparable (within 5%) across conditions based on similar studies (Weidmann & Miratrix, 2021). All these factors lead us to believe that the student impact study will meet WWC standards without reservations and can result in compelling evidence around the impact of Mission.io (see WWC, 2022).

D.2 Strategies for Effective Replication

A key goal of the impact evaluation is to inform broader adoption of Mission.io Literacy across diverse contexts and states, including replication studies. The evaluation design is structured to produce findings that guide scale by identifying the contexts in which the program is most effective and those requiring additional supports. Analyses will validate whether the program works for all teachers and students and identify adjustments needed for specific populations.

Generalizability. [REDACTED] Evaluation will analyze moderating variables to determine how Mission.io Literacy can be adapted for diverse populations. The heterogeneous sample will

enable powerful moderator analyses (RQ6) to explore how contextual and demographic variables influence impact. These analyses will inform continuous program improvement and guide replication in other Utah districts and states. Full analytic procedures are detailed in Appendix J.8.

Scalability. The evaluation will examine Mission.io Literacy implementation across a wide range of contexts to identify challenges and effective strategies. Findings will be integrated into the Centralized Learning Hub (CLH), ensuring future districts and states can access practical resources for adoption and expansion. The CLH will include implementation guides, challenge-specific strategies, and cost-effectiveness tools to support decision-making and sustainable scaling.

Cost Effectiveness. Evaluation will conduct a comprehensive cost analysis using Levin et al.'s (2002, 2017) Resource Cost Model. Evaluators will identify and price key program “ingredients” for both professional learning and classroom implementation, calculating total and per-student costs for treatment and control conditions. Analyses will compare initial versus recurring costs and yield cost-effectiveness ratios (dollars per 0.10 SD gain), allowing stakeholders to assess Mission.io’s return on investment relative to business-as-usual. Cost findings and guidance will be summarized in user-friendly state and district cost analysis briefs.

CLH and Dissemination. The CLH will serve as the primary vehicle for sharing findings, challenges, and best practices related to implementation and scale. Partners will update the hub regularly with evaluation summaries, guides, and exemplars and will disseminate key takeaways through practitioner networks, research conferences, and the channels described in Section B.5. Collectively, these activities will ensure that evidence and practical guidance are accessible to all educators and agencies interested in adopting or replicating Mission.io Literacy.

D.3 Fidelity of Implementation

The conceptual framework discussed in C.1 and further visualized in Appendix G lay out the key components, mediators, and outcomes of this project and align to this evaluation plan.

The **thresholds of acceptable implementation** will be collected from logs and usage data and will span both PL and classroom implementation. Thresholds will include the following:

- Professional Learning attendance: Teachers will be expected to complete each aspect of the professional learning offerings. A 90% completion rate will result in high fidelity and 75% will be considered medium fidelity.
- Missions implementation: Fidelity will consider both the number and frequency of Missions implemented with respect to district expectation and the method of implementation, e.g. aligned to district expectations of lesson plans and pacing. 90% adherence to district plans will result in high fidelity and 75% in medium fidelity.

Fidelity Ratings. Overall fidelity scores will be calculated on a 0 to 1 scale for each teacher. High fidelity will be considered 0.9 as denoted above and medium fidelity at .75 or above. Other ratings will be indicated as low fidelity. These ratings will be considered in RQ2 and 10 (see Table 4). The analyses will allow us to describe fidelity levels across contexts with respect to perceived barriers. The fidelity indicators will inform areas for implementation support.

D4. Replication Guidance

All phases of the project are designed to facilitate replication. Our impact study includes methods that meet WWC standards without reservation, so replication studies can have corresponding parameters. The strong generalizability and scalability (see D.2) of our study will inform replication studies about context and potential mediation and moderation. Including valid and accepted measurements will also ease the burden for replication. Having detailed fidelity

measures will give guidance to future studies. The CLH will be the main resources for replication, giving guidance on implementation, cost, scaling, and sustainability. The implementation guides, scaling guides, and cost guides, *including the Scaling Playbook*, will be disseminated in each year of the study to ensure researchers and practitioners have the needed information for replication and scaling.

Scaling guides and sustainability guides will also be disseminated that provide guidance on strategies and learnings from the study around these facets. These guide will continue to evolve and expand as replication occurs. These will include cost calculators that will provide cost implications of implementing Mission.io Literacy. The cost calculators will also incorporate contextual variables that our study found to influence cost or impact.

D5. Formative Evaluation

■■■■ Evaluation will begin its evaluation with an in depth scan in spring 2026, where they will gather information directly from regions, districts, and teachers around perceptions of Mission.io Literacy and potential roadblocks to scale. They will use surveys and interviews to determine the best methods for scaling the program across all potential contexts.

The second formative phase will take place across the 2026-2027 school year, where ■■■■ Evaluation will work directly with RESAs and their schools to systematically and iteratively test resources and strategies created as part of building the CLH. They will test each strategy in at least 3 schools to inform resource design. As needed, ■■■■ will provide results and actionable recommendations to Mission.io and to NUES and other RESAs to launch improvement initiatives. The goal is for the CLH to ultimately have comprehensive resources to facilitate ease of adoption as Mission.io Literacy scales across Utah and beyond.

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