

## **Expanding School Readiness to Rural States with Poor Preschool Access**

### **The UPSTART Great Plains TASK Force: Taking All to Success in Kindergarten**

#### **A. SIGNIFICANCE**

This Education Innovation and Research Expansion Grant proposal forms the UPSTART Great Plains TASK Force, a consortium of local education agencies (LEAs), state education agencies (SEAs), and nonprofit education leaders dedicated to Taking All to Success in Kindergarten. In Idaho, Wyoming, Montana, North Dakota, and South Dakota, 95% of LEAs qualify as “rural” as defined in the Expansion grant notice, while more than half (59%) are “Rural, Remote.” Bucking national trends for expanding state preschool programs, these contiguous states comprise five of the seven states nationally that do not offer a state-funded preschool program (Friedman-Krauss, et al., 2018). Pre-requisite inputs like transportation, qualified teacher workforce, and facilities are particularly expensive in distant and remote rural areas. As a result, high-quality center-based preschools in these states can be prohibitively expensive for statewide implementation. Furthermore, existing programs are both geographically and financially impractical for many rural families, especially when participating at their own expense. The Waterford UPSTART program offers an innovative capacity-building model for helping rural state educational agencies (SEAs), local education agencies (LEAs), and families overcome these barriers to early learning supports.

Supported by “strong” Randomized Controlled Trial evidence of efficacy, as well as What Works Clearinghouse (WWC) recommendations for early literacy instruction, the UPSTART program has proven to cost-effectively scale in rural geographies, while driving sizable significant gains in school readiness. By scaling this model across the expansive, rugged, rural geography of the TASK Force states, this project serves a significant population of their

most vulnerable, high needs, and difficult-to-support young learners, while expanding the range of early childhood learning options for rural school districts.

## **1. Severity of the Problem to be Addressed by Waterford UPSTART**

Waterford Institute is a nonprofit research organization, dedicated to solving the problem of social inequity through education. Significantly, research traces this inequity back to early childhood (Hart & Risley, 1995; Phillips, et al., 2017). Experts call the early childhood period between pre-kindergarten and third grade “the tipping point” (Atchison & Diffey, 2018)—the most opportune time to eradicate early achievement gaps. Over time, those gaps not only widen but also harden, resisting intervention and suffocating each child’s potential in a downward spiral of struggle and failure. If children struggle to read at grade level at the end of third grade, they are four times more likely to drop out of high school; add poverty to this achievement gap and dropout rates multiply by 13 times (Atchison & Diffey, 2018). Preschool programs have shown great promise in reversing this trend and helping young, disadvantaged children succeed (Phillips, et al., 2017).

However, despite a 300% increase in state spending on pre-K since 2002 (Barnett, et al., 2017), our most vulnerable young children still do not have equal access to school readiness supports. In fact, more than 2.5 million 4-year-old children lack access to publicly funded preschool. This access gap is especially devastating for rural children who are among the most underserved and difficult to serve populations. According to the U.S. Department of Education, only half of children in rural areas have access to public or private “center-based preschools” (U.S. Department of Education, 2015). Since 23 states now have more than half of their rural populations living in poverty (up from 16 states in 2013), the impact of this access gap is exacerbated (Showalter, Klein, Johnson, & Hartman, 2017). Thus, it is no surprise that children

in rural areas present at kindergarten with lower levels of school readiness than their peers along the urban-rural continuum. On measures of reading and math, “rural children lag about 2–3 points (or .20 of a standard deviation (SD)) behind children living in small urban and suburban areas” (Miller & Votruba-Drzal, 2013, p. 240). This phenomenon is a likely explanation for why rural kindergarten children are 60% more likely to be placed in special education (Grace, et al., 2006). Because rural schools have more difficulty finding and retaining highly qualified special education teachers, this higher referral rate is problematic not only for rural families but for rural schools, which already receive just 17% of state education funding, despite educating a quarter of the country’s children (Showalter, et al., 2017).

Predominant rural conditions—lower property values, smaller tax base, less educated citizens, larger families, limited access to educational programs, and lower expectations for academic achievement—influence state, school, and family investments in educational services and supports. In rural America, these investments have not typically prioritized early childhood education (Miller & Votruba-Drzal, 2013; Showalter, et al., 2017). These conditions characterize rural states and locales nationwide. While keeping available revenue and cost issues in mind, this rurality demands an approach tailored to increase options and build capacity, supporting young learners as a long-term, sustainable force in building thriving rural families, schools, and communities across the country.

## **2. National Significance of the Waterford UPSTART Project.**

The UPSTART Great Plains TASK Force seeks to leverage innovation with evidence to both overcome barriers to rural student achievement and develop sustainable models for scaling across rural communities nationwide. With 30% of American students living in fringe, distant, and remote town and rural areas, the scarcity of early childhood supports in these locales attacks

the very foundation of our national progress and achievements (National Center for Education Statistics [NCES], 2013). Nobel Laureate James Heckman’s groundbreaking study, “The Lifecycle Benefits of an Influential Early Childhood Program,” found that high quality birth-to-five programs for disadvantaged children can deliver a 13.7% per child, per year return on investment. Long-term outcomes for children include reduced crime, reduced special education costs, higher educational attainment, and healthier lives, while mothers gain more education, work experience, and higher wages (Garcia, Heckman, Leaf, & Prados, 2017). These varied gains are essential to eroding intergenerational and community poverty and achieving equity.

The TASK Force scales a proven logic model (see Section D, Figure 5, p. 48) that leverages UPSTART’s innovative blend of adaptive, personalized early learning software within a developmentally appropriate usage model that helps families learn to monitor family screen time and use technology for educational, prosocial purposes. UPSTART builds capacity for parental engagement with parent training and ongoing, personalized coaching offered remotely and in-person in participants’ districts and communities. These supports help parents improve the home literacy environment and understand the importance of early learning to their child’s future learning success. This capacity building approach extends to LEA and SEA partners, providing rural TASK Force superintendents with scholarships to participate in The School Superintendents Association (AASA) Early Learning Rural Cohort. As confirmed in the AASA Letter of Support (Appendix C), rural superintendents learn not only through explicit and expert training, but through the ongoing superintendent conversation, study, and collaboration that is the backbone of the Early Learning Rural Cohort experience. TASK Force superintendents will form a critical nucleus of the Rural Cohort. As they participate, they will gain experience that enables them to better articulate the importance of early education in their own district and

community as they seek collaboration and supports from local pediatricians and health organizations, libraries, community-based clubs, faith-based organizations, and philanthropic organizations. Over time, this improved early education leadership, combined with families who understand the importance of early learning, can have a transformative effect for school readiness and early childhood outcomes in these rural communities and states.

The UPSTART model is also supported by the National Rural Education Association (NREA), the national Rural School and Community Trust (RSCT), and Technology & Innovation in Education (TIE) (see Letters of Support in Appendix C), three nonprofit education leaders that recognize the dearth of current early childhood education services for rural children.

### **3. Waterford UPSTART: An Exceptional Approach to the Priorities for Strong Evidence, Field-Initiated Innovations, Personalized Learning, and Early Learning**

The Waterford UPSTART program attacks the rural achievement gap, offering a cost-effective, scalable early childhood intervention, proven by randomized controlled trial study to drive significant and positive gains in school readiness for young children in the year before kindergarten (Overby & Hobbs, 2016; Overby, Hobbs, & Thomas, 2017). As such, this proposal meets Absolute Priority 1 with Strong Evidence, Absolute Priority 2 for Field-Initiated Innovations, and both Invitational Priorities for Personalized Learning and Early Learning and Cognitive Development. To validate this alignment, this section begins with a program overview before proceeding to an explicit description of how the program meets each of these priorities.

#### ***UPSTART Overview***

As noted by family engagement and early childhood experts, “Today’s young children who are using technology to learn and create *while working with adults who can set good examples and guide them to new heights* are receiving tremendous advantages” (Guernsey,

Clark, & Donohue, 2017, p. 20; emphasis added). This type of “tech-assisted but human-powered” learning model (Guernsey, et al., 2017, p. 20) is central to the UPSTART program, which is proven to drive high family engagement, implementation fidelity, and school readiness. Simply stated, UPSTART is much more than just software.

Specifically, UPSTART’s home-based early literacy learning model is a unique combination of highly individualized software and a successful support model that forms a partnership with parents. Participants are asked to use the reading software for just 15 minutes a day, 5 days a week. With a personalized, adaptive approach, the software engages children at their own pace and encourages language proficiency with interactive, context-rich, multicultural content. Each family receives personal, live support on a weekly basis from an assigned Personal Care Representative (PCR) in Waterford’s call center in Salt Lake City, Utah. Locally based program Liaisons also provide face-to-face implementation supports. They establish local partnerships, recruit families, conduct home visits, and hold multiple social learning events for the children throughout the year that help prepare them for their transition to kindergarten.

Our proposed UPSTART Great Plains TASK Force implementation is modeled after our successful rural Utah i3 Validation Grant (2013, PR/Award # U411B130020), where we successfully built community-based partnerships to scale UPSTART statewide by increasing service to Utah’s 18 most rural districts. Having served over 45,000 children statewide, Waterford UPSTART flexibly scales with high-fidelity and consistent results, including in the most rural parts of the state, where population density can be one person per square mile. Key program elements include:

- **Recruitment:** Waterford works with SEAs, locally based program Liaisons, LEAs, and community partners to actively identify and recruit program participants. Like our i3

Grant “District Liaisons,” the program Liaisons may be district personnel, but they may well serve multiple contiguous districts, depending upon geography.

- **Educational technology:** Chromebooks and internet access are provided to families with financial need, free of charge. As a participation incentive, families get to keep the Chromebook if they meet program participation requirements.
- **Adaptive literacy software:** Comprehensive, adaptive reading software and supplemental activities in math and science are aligned to state early childhood development standards, NAEYC Early Childhood Program Standards, and the Head Start Early Learning Outcomes Framework. Full correlations are available at <http://help.waterford.org/resources/>.
- **Training:** Face-to-face trainings for parents are provided (in English or Spanish) to develop program understanding, buy-in, and ongoing collaboration and engagement.
- **Family engagement:** Waterford Personal Care Representatives (PCRs) and local program Liaisons monitor children’s program usage and provide reports, motivation, and coaching for families, using a mix of live and technology-mediated strategies.
- **Assessment:** Waterford administers a pre- and post-assessment, as well as ongoing formative assessment to document growth and optimize implementation.
- **Reports:** Waterford reports results to stakeholders.
- **Evaluation:** Waterford works with external evaluators to support their work, emphasizing rigorous assessment standards to measure a variety of outcomes.

More specifically, the UPSTART program uses two evidence-based software programs developed by the Waterford Institute:

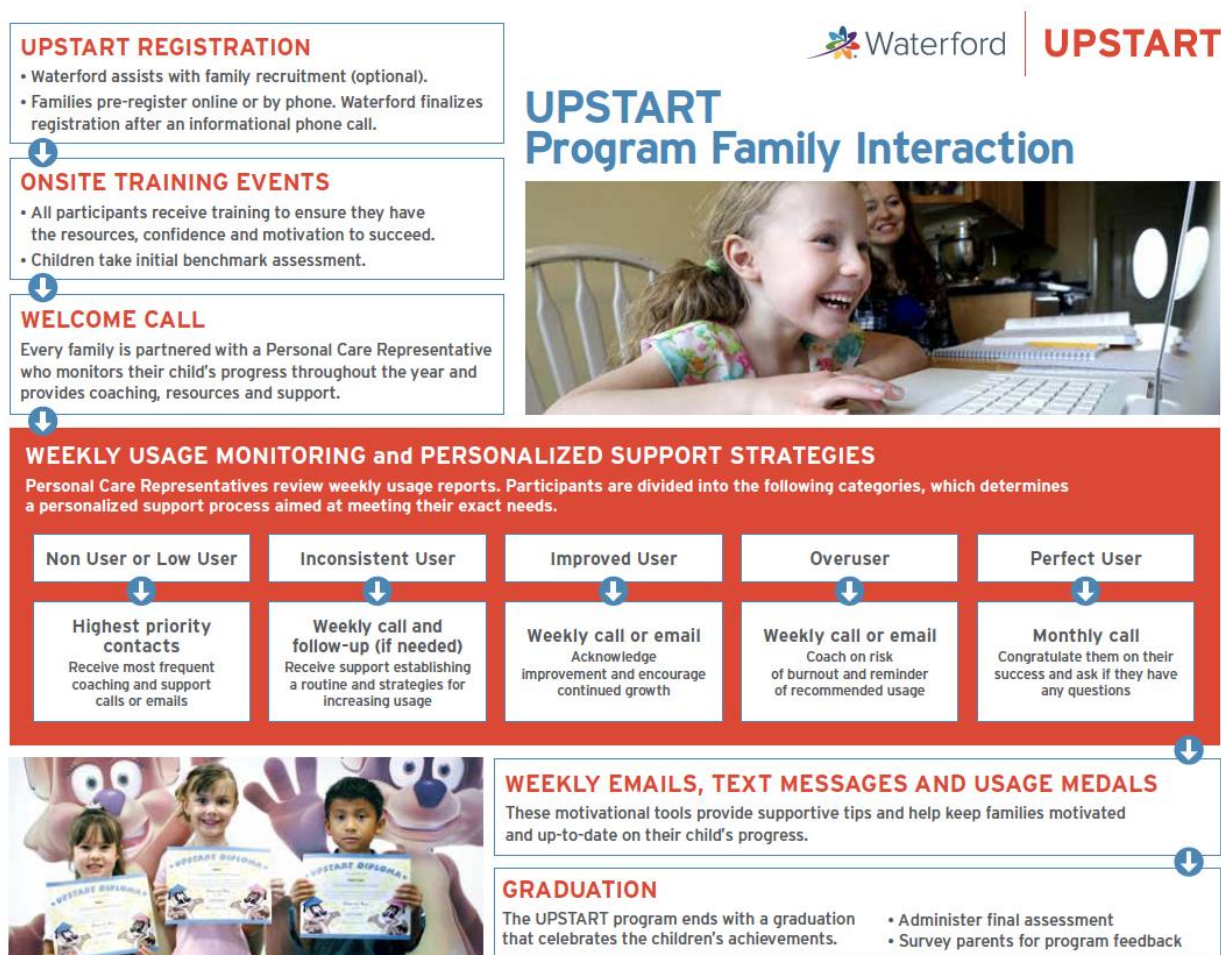
- **Waterford Early Learning** – this comprehensive, adaptive, and interactive reading, math, and science curriculum includes 2,500+ lessons; 7,000+ activities; 360 digital books; 330 animated songs; and 450+ instructional hours, supporting state and national standards for early learning and pre-K–2. (See Appendix 2: Section 2, Skills Taught.)
- **Waterford Assessment of Core Skills (WACS)** – this adaptive, computer-administered assessment gives an accurate indication of each child’s reading readiness and competence. A hallmark of the software is its easily understood reports, which receive high marks from parents (see parental satisfaction scores in Appendix G: Section 1).

**Family Engagement.** UPSTART’s responsive family engagement model utilizes a “tech assisted but human-powered” approach (Guernsey, et al., 2017, p. 20), with a mix of support strategies—telephone, text, training, and email to name only four—from PCRs in the UPSTART User Support Center and in-person supports from a locally based program Liaison. Within the Support Center, PCRs are assigned families based on the family’s home language. They then establish communication and support lines with their participants. Locally based program Liaisons are also assigned families, for the most part by geography, and collaborate with the PCRs to review weekly reports, monitor progress, and determine a customized support plan for each family. Liaisons and PCRs easily collaborate and track activities using UPSTART’s custom Salesforce support platform, which automates the development of custom plans for each family, tracks and schedules support activities, and produces reports to ensure continual progress monitoring and program optimization. More specifically, each customized family support plan includes a mix of proactive PCR communications in the family’s native language and in-person supports from program Liaisons, such as home visits, social learning activities, and connections to school and community-based resources. The frequency and intensity of these interactions flex



to meet each family’s unique needs and ensure their successful participation, as shown in Figure 1. Resulting parent satisfaction has been consistently high, even near perfect, across the statewide Utah implementation and state pilot programs. See Appendix G: Section 1 for a summary table of these parent satisfaction results.

*Figure 1: UPSTART Family Engagement and Support Model*



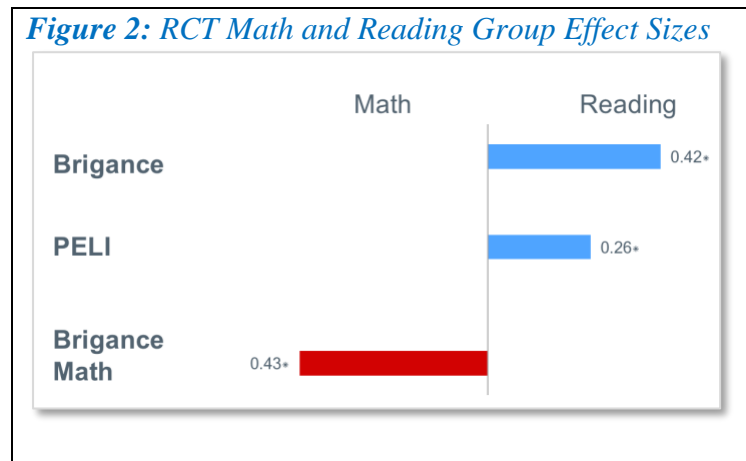
**Turnkey value.** Thanks to the i3 Validation Grant, Waterford has carefully honed each of these elements, developing strategies for overcoming scaling barriers, particularly in rural areas. With turnkey simplicity, UPSTART has scaled to serve rural Utah statewide and expanded to pilot programs across 13 other states (ID, SD, CO, AZ, TX, CA, OR, IN, OH, MS, LA, SC, PA). Of these pilots, all but Colorado, California, and Pennsylvania include a rural emphasis.

Because of this scaling blueprint, the implementation model is actually very simple. As one SEA partner summarized, “SEAs help you promote the programs to districts, districts help you find families with 4-year-old children, and families simply use the program.”

### ***Absolute Priority 1—Strong Evidence***

Six years of independent evaluation show UPSTART significantly increases literacy skills for preschool-age children, especially among at-risk populations (Evaluation and Training Institute [ETI], 2011; ETI, 2012; ETI, 2013; ETI, 2014; ETI, 2015; ETI 2016). These research findings are confirmed in an independent, rigorous Randomized Controlled Trial study that meets “strong” evidence requirements, conducted for the Investing in Innovation (i3) Validation Grant (2013, PR/Award # U411B130020). In this i3 Validation Grant study, children from 13 rural Utah districts (N=497) were assigned randomly to either the UPSTART reading software (treatment) or Waterford’s math/science software (control). The National Evaluation of i3 (NEi3) supported the use of an alternative math/science program as a control condition to study the reading programs on emergent literacy skill development. In addition, using the math/science software allowed for a rigorous RCT evaluation design, while addressing the challenges of finding enough participants in sparsely inhabited rural areas, avoiding the moral dilemma of denying support to high-needs children, and placing school leaders in the difficult position of not serving all of their children. This study proves that when used with fidelity, UPSTART has a substantial impact on improving student growth and closing achievement gaps for rural 4-year-old learners. Using Cohen’s *d* (Cohen, 1969) to estimate the impact of the program on two standardized literacy measures, the Brigance Inventory of Early Development III (IED III) and the Preschool Early Literacy Indicator (PELI), positive effects were found when comparing literacy outcomes between treatment and control students. Treatment students outperformed

controls as measured by the IED III Literacy composite scale ( $d = .42, p < .001$ ) and the PELI composite scale ( $d = .26, p < .001$ ) (Overby & Hobbs, 2016). As a point of context, “for the WWC, effect sizes of .25 standard deviations or larger are considered to be substantively important” (What Works Clearinghouse, 2017, p. 14). Gains in school readiness were documented for both the reading and the math group, as shown in Figure 2:

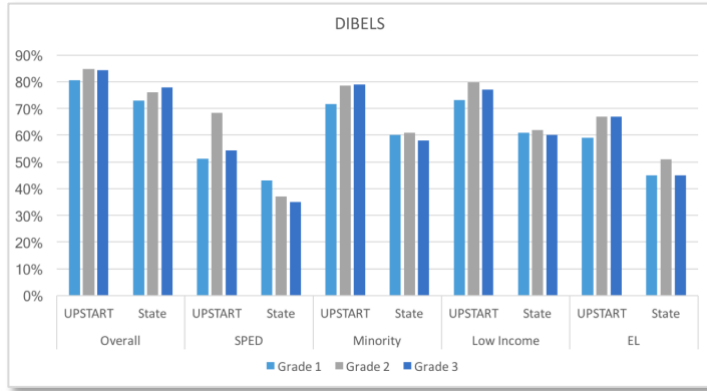


The Utah State Board of Education (USBE) also conducted a separate, independent longitudinal evaluation of UPSTART results. This study contributes to the consistency of positive results observed across many different

independent studies. In this study, UPSTART students continually outperform state averages compared to their non-UPSTART peers on state standardized tests (DIBELS and SAGE) in grades first through fourth (the highest grade UPSTART participants had achieved at the time of the study). Significantly, these gains were consistent across all subgroups, including special education, minority, low-income, and English learner populations. Figure 3 provides a graphic summary of these gains. As reported by the USBE, external evaluators concluded:

These outcomes would have specific benefits to at-risk children, whose families struggle with poverty and other issues, and often lack the resources to help their children develop the literacy skills needed to succeed in school. The strong program effects support wide-scale implementation across at-risk preschool populations (Suddreth, Throndsen, & Wiebke, 2016, p. 13).

**Figure 3: UPSTART Longitudinal Results in Utah**



Waterford has also conducted in-depth evaluations of its pilots outside of Utah, to whitt the following comparison of pilot performance to the i3 RCT, which bears out continuing outstanding outcomes:

**Table 1: Outcomes: Comparison of Pilots to Utah RCT Outcomes**

	Group	Mean	Standard Deviation
<b>Objectives Encountered</b>	Mississippi Pilot	267.84	140.13
	i3 RCT	299.10	111.27
<b>Objectives Mastered</b>	Mississippi Pilot	185.52	98.61
	i3 RCT	198.13	76.23
<b>Average Scores</b>	Mississippi Pilot	87.24	5.79
	i3 RCT	82.35	6.69
<b>Objectives Encountered</b>	Ohio Pilot	267.71	153.35
	i3 RCT	284.55	105.63
<b>Objectives Mastered</b>	Ohio Pilot	189.97	111.47
	i3 RCT	189.73	72.96
<b>Average Scores</b>	Ohio Pilot	88.59	5.20
	i3 RCT	82.46	6.64
<b>Objectives Encountered</b>	Philadelphia Pilot	294.01	150.67
	i3 RCT	284.55	105.63
<b>Objectives Mastered</b>	Philadelphia Pilot	201.46	102.93
	i3 RCT	189.73	72.96
<b>Average Scores</b>	Philadelphia Pilot	86.61	5.45
	i3 RCT	82.46	6.64

The consistency of the strong evidence, combined with the other independent studies, can be attributed to the UPSTART program’s pedagogical alignment with and implementation of recommendations from the WWC Practice Guide, *Foundational Skills to Support Reading for Understanding in Kindergarten through 3<sup>rd</sup> Grade* (Foorman, et al., 2016). Two of the four

recommendations in this Practice Guide are characterized as having “strong” evidence, including Recommendations 2 and 3. UPSTART adheres closely to these recommendations.

**Recommendation 2: Develop awareness of the segments of sounds in speech and how they link to letters (phonological awareness)**

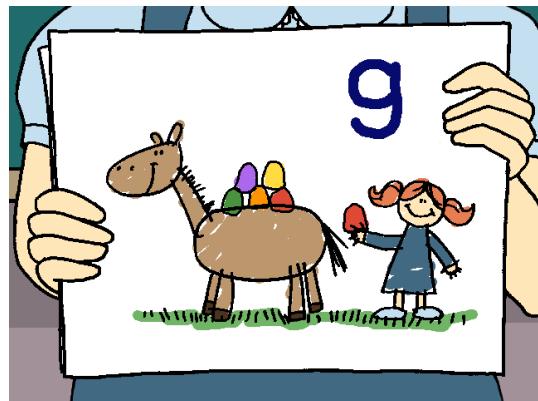
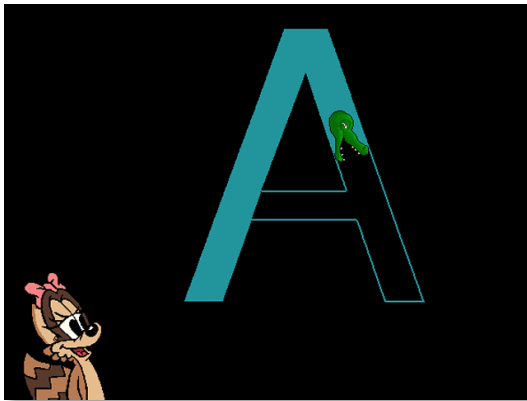
The UPSTART curriculum includes extensive phonemic awareness instruction, practice, review, and remediation activities in a systematic scope and sequence. More specifically, UPSTART software helps children develop an awareness of the individual sounds in speech and in words. Activities start with listening, rhyming, alliteration, and syllabication skills in phonological awareness activities, and progress to more advanced phonemic awareness activities like blending, segmenting, deleting, and substituting individual phonemes. The WWC Practice Guide explicitly confirms the findings of the National Reading Panel for phonological awareness, which included six studies showing positive effect in pre-K students for phonological awareness (National Institute of Child Health and Human Development, 2000). Both research analyses utilized similar criteria in selecting high-quality rigorous studies, concluding that this phonological awareness instruction should occur as early as possible and is a critical component of effective early literacy interventions. Waterford’s approach exactly aligns with this strong evidence-based recommendation. Appendix G: Section 2 details the Skills Taught for the Phonological Awareness strand, as well as Phonics, Comprehension and Vocabulary, Language Concepts, and Fluency.

**Recommendation 3: Teach students to decode words, analyze word parts, and write and recognize words (phonics)**

UPSTART’s adaptive literacy software, Waterford Early Learning, includes a comprehensive phonics curriculum for young children that systematically builds students’ skills

from no reading to confident reading at 90 words per minute. Students develop letter recognition automaticity as they learn the alphabet song and the name, sound, shape, and formation of each upper and lowercase letter.

*Screenshot 1: Students draw the capital letter*      *Screenshot 2: Fun animated ABC songs.*



Waterford’s multimedia instruction is explicit and direct, so that learners hear online readers model how to use phonics to decode unfamiliar words. More specifically, the program teaches word attack skills such as mastery of letter sound correspondence, blending, pattern words, sight words, and key words. Students practice these word attack skills in fun, game-like skill drills, as well as part of reading actual text in the program’s many interactive books. All skills lead to the reading experience with a focus on natural reading.

### ***Absolute Priority 2—Field-Initiated Innovations—General***

UPSTART is a field-initiated innovation that overcomes the most difficult preschool access barriers for rural, underserved populations. Barriers like scarcity of services, transportation, cost, and implementation fidelity in remote locations have proven insurmountable for many states, including the five UPSTART Great Plains TASK Force states which have especially rugged and expansive rural geographies. Education technology leaders Clayton Christensen and Michael Horn describe how pockets of “nonconsumption”—like the preschool

access gap—are ideal for disruptive innovations (Christensen & Horn, 2008) like UPSTART, which serves rural children who have very limited access to traditional pre-K supports.

Researchers who have attempted to decompose income related gaps in cognitive school readiness have found that parenting style and home learning environment account for over 40% of the income-related learning gaps (Waldfoegel & Washbrook, 2011). Waterford UPSTART is unique in the field, with an innovative blend of “tech-assisted but human powered strategies” and researched-based curricula targeting these most consequential factors in the young child’s most proximal environment—the home—improving the teaching behaviors of primary caregivers and developing foundational academic and cognitive skills.

While we do not consider parent preference a barrier per se, we do acknowledge that no state requires a 4-year-old to attend school and in that regard, parent preference is a huge determining factor. Parents who have no experience with early education may not understand its importance or may simply feel a 4-year-old is too young for school. Wyoming, for example, does not mandate school attendance until age seven. Providing a home-based option can be a simple and intriguing option for families that can break down thought barriers and increase choices.

### ***Invitational Priority One—Personalized Learning***

UPSTART meets Invitational Priority One—Personalized Learning by implementing a flexible blended model for student personalized learning in the home. For young children, the Waterford Early Learning software is like a fun game personalized to their literacy learning needs and their individual pace, with interactive activities, catchy songs, colorful animation, celebrations, and rewards for their learning success. This personalized learning model includes individualized starting points, personalized pathways and pace, instruction based on needs, and mastery-based progression with an implementation requirement of just 15 minutes a day that is

well within the usage guidelines for young children (American Academy of Pediatrics [AAP], 2016a).

### ***Invitational Priority Two—Early Learning and Cognitive Development***

UPSTART meets Invitational Priority Two—Early Learning and Cognitive Development—by providing evidence-based early childhood education supports for underserved and high-needs rural 4-year-old children. As experts note, young learners have especially plastic brains and thus, efforts to provide “environments rich in language and cognitive stimulation . . . have the potential to strengthen critical neural networks associated with learning” (Phillips, et al., 2017, p. 22). In their analysis of the nationally representative data from the Early Childhood Longitudinal Study, Miller and Votruba-Drzal emphasize:

Rural children may experience less cognitive stimulation than their urban and suburban peers due to their lack of proximity and access to educational activities and materials, such as libraries, museums, and cultural activities. Libraries, for example, are less accessible in rural communities, which may reduce access to developmentally appropriate reading materials in rural homes (2013, p. 235).

UPSTART addresses these early learning and cognitive development needs with its home-based, fun digital curricula and interactive books specifically developed for young children.

**WestEd quality validation.** The quality and appropriateness of UPSTART’s digital resources for early learning and cognitive development has been affirmed by independent and expert review. In March 2018, WestED conducted an independent product review of Waterford UPSTART, in connection with UPSTART’s award as a NewSchools Ignite Early Learning Challenge winner (Tricoche, 2017). Significantly, the expert review team gave UPSTART the highest rating in each of the following categories:



- Content
- Standards Alignment
- Learning Science
- Social and Emotional Learning
- Engagement and Inspiration
- Bias and Sensitivity
- Affordances of Technology
- Usability and Implementation

The independent findings of this in-depth review are significant, revealing a standard of excellence in each of the foundational factors that drive UPSTART’s remarkably consistent outcomes across six years of external evaluation. UPSTART is also endorsed by the Council of Administrators of Special Education (CASE), based on an extensive review. This pedagogical and curricular quality for early learning is combined within a developmentally appropriate implementation model that not only enriches the home literacy environment, but helps parents learn to better interact with their children, use digital media for educational purposes, and help their child develop social and emotional skills that are essential to school readiness.

**Supports American Academy of Pediatricians screen time recommendations.** The UPSTART usage model of just 15 minutes per day falls well within the American Academy of Pediatricians (AAP) recommendations of no more than 1 hour of screen time per day for the UPSTART age group (AAP, 2016a).

**Coaching for parents to focus screen time on educational purposes.** The AAP highlights studies showing that the trendline for access to digital devices for young children is rising sharply. Moreover, screen time in low-income families tends to be higher (hours per day), and lower in terms of quality and educational focus (AAP, 2016b). This reality makes the UPSTART family engagement model especially important, as it educates, coaches, and encourages parents to limit and focus screen time on educational and prosocial content and to be actively involved in their children’s learning. UPSTART provides direct, personalized coaching

that helps parents to understand and implement these developmentally appropriate practices for technology use using high-quality resources. As shown in experimental studies, these shifts can significantly improve behavioral symptoms, particularly for low-income boys (AAP, 2016a).

**Develops both cognitive and social emotional skills.** The UPSTART program support model and curriculum are designed to enhance young children’s development and improve kindergarten readiness, so social and emotional learning (SEL) is built directly into both the software learning sequence and the parent engagement curriculum. As noted by WestEd’s expert reviewers, “The program promotes SEL strategies within the interface, as well as provides the parent/school resources to extend learning beyond the ‘classroom’ and interface through parent newsletters.” As further evidence, a detailed alignment of the UPSTART program with the Collaborative for Academic, Social, and Emotional Learning (CASEL) Social and Emotional Learning (SEL) competencies is available at <http://help.waterford.org/resources/>.

## B. STRATEGY TO SCALE

### 1. Unmet Demand

The UPSTART Great Plains TASK Force is designed to scale UPSTART to serve children across five rural states that, according to the National Institute for Early Education Research (NIEER), do not have a state-

funded pre-K program (Friedman-Krauss, et al., 2018). As shown in Figure 4, these states form a block starting with Idaho in the intermountain west and spanning across the Great Plains in Wyoming, Montana, North Dakota, and South Dakota.

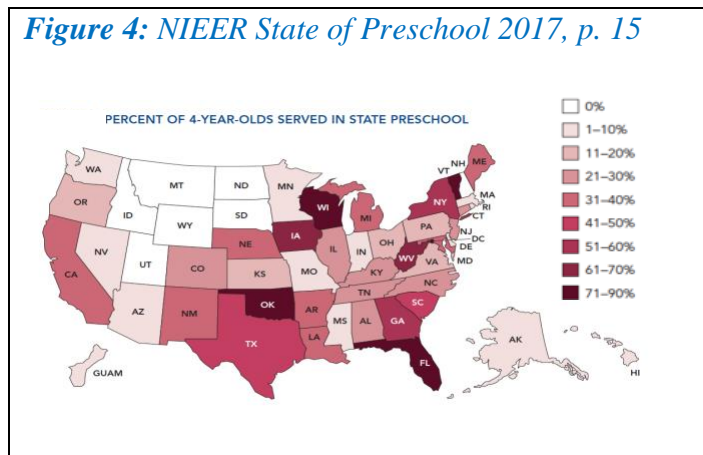


Table 2 presents many of the most poignant indicators of unmet need, based on issues of Access and Rurality, including the following:

- **No state funded preschool programs:** None of the TASK force states provide a state-funded preschool program (Friedman-Krauss, et al., 2018), a commonality that derives from their intensely rural, rugged, and expansive geography. State decision-makers tasked with serving all children may simply be acknowledging that site-based preschools are prohibitively expensive and difficult to implement in these predominantly rural contexts, where qualified teachers are difficult to recruit and retain, commute times are long, transportation costs are high, and many rural parents simply prefer to keep their young children at home (Smith, 2006). Certainly, Utah lawmakers experienced these concerns when they implemented UPSTART as the first state-funded pre-K effort. Significantly, three years later, the legislature expanded state funding to include site-based pre-K once a rural solution had been definitively identified.

- **High rurality:** 88%–97% of school districts in these states are rural, compared to 71% nationally. The Rural School and Community Trust places South Dakota, Montana, and North Dakota among the top 10 priority states in terms of the importance of rural education. This gauge includes percent of rural schools, percent of rural districts, percent of rural students, number of rural students, and percent of state education funds to rural districts (Showalter, et al., 2017).

- **Remote rural school districts:** 32%–69% of school districts in TASK Force states are Rural-Remote, compared to just 18% nationally, which means increased difficulty accessing site-based preschools because of distance and transportation.

- **Low service rates for preschool students:** 75% or more of students in these states are in the None/Other category for preschool enrollment in the NIEER 2017 Preschool Yearbook, compared to 56% nationally, representing extensive unmet need (Friedman-Krauss, et al., 2018).

- **Hispanic minority groups:** Hispanics are among the top two minority groups in each state. Hispanics have the largest school readiness gaps of any ethnic group (Nores & Barnett, 2014), which flags the challenge that rural schools face with addressing these substantial gaps.
- **Native American populations:** Native American populations are higher in most of these states, particularly Montana (12%) and South Dakota (14%), compared to 1% nationally. Native Americans join Hispanics as having the largest school readiness gaps (Nores & Barnett, 2014).

**Table 2: TASK Force States—Profiles of Unmet Needs for Early Childhood Education**

	ID	MT	ND	SD	WY	NATL
<b>ACCESS</b>						
State funded preschool program <sup>1</sup>	None	None	None	None	None	See Figure 4
None/Other – % of 4-year-olds not served by Head Start or Special Ed <sup>1</sup>	87%	79%	82%	79%	75%	56%
<b>RURALITY</b>						
Total number of school districts <sup>2</sup>	115	407	176	151	48	13,491
Number of rural school districts (urban centric district locale code of 32, 33, 41, 43, or 43) <sup>2</sup>	101	393	170	146	46	9,642
Percentage of rural school districts <sup>3</sup>	88%	97%	97%	97%	96%	71%
Number of "Remote" rural school districts <sup>2</sup>	37	253	122	96	21	2,429
Percentage of "Remote" rural school districts (code 43) <sup>3</sup>	32%	62%	69%	64%	44%	18%
Total number Kindergarten students in Rural School Districts <sup>4</sup>	8,380	8,340	5,291	7,684	5,589	--

<sup>1</sup> (Friedman-Krauss, et al., 2018); See state profiles, Access section (pie charts)

<sup>2</sup> (National Center for Education Statistics [NCES], 2013)

<sup>3</sup> (NCES, 2013); Calculated by dividing the total number of districts with urban centric codes 32, 33, 41, 42, or 43 by the total number of districts

<sup>4</sup> (NCES, 2018); Data is from a District based table data export with the following filters applied: State(s) (All Years): ID, MT, ND, SD, WY. The number of kindergarten students from 2015–2016 were added for all regular school districts with urban centric codes 32, 33, 41, 42, or 43.

UPSTART has successfully dealt with all of these indicators, serving rural children in the most remote parts of the country, serving areas with no preschool services, and serving Hispanic and Native American populations in Utah, Arizona, South Dakota, and Oklahoma.

## **2. Specific Strategies To Overcome Barriers to Scale**

As the early childhood experts at the Brookings Institute emphasize, “the challenges of scale-up are illustrated by the national Head Start program, for which consistently strong and enduring impacts have been elusive” (Phillips, et al., 2017, p. 20). NIEER also captures the difficulty of scaling quality programs. In 2017, only five state pre-K programs met all 10 of NIEER’s quality standards benchmarks, while “some of the programs that still meet few quality standards benchmarks are those serving large numbers of children (e.g., California TK [Transitional Kindergarten], Florida, and Texas)” (Friedman-Krauss, et al., 2018, p. 6). The UPSTART program incorporates proven strategies to overcome major barriers to scale in rural areas, including availability of services, cost, transportation, performance fidelity, parental preferences, and local priorities.

**Access and availability of services.** As previously documented, there is generally a scarcity of early childhood education services in rural areas (Miller & Votruba-Drzal, 2013), and most acutely in the five TASK Force states. Pre-requisite inputs, like transportation and qualified teacher workforce, are more expensive in rural distant and remote areas, making center-based preschools prohibitively expensive for these states. In Wyoming, districts are geographically large. Programs like Head Start or district funded pre-K programs may be offered in a few schools but are still too far away for many families. These are all factors that fuel the persistent rural gap in school readiness. UPSTART overcomes these problems with turnkey simplicity. Because it is implemented in the home and develops parents’ or primary caregiver’s skills as the

child's first teacher, there is no need to find classroom space, build a site, purchase new curriculum, hire a qualified staff, or find transportation resources, enabling it to hurdle the most difficult and common access barriers to site-based preschool programs in rural areas.

**Cost.** Even while the cost of a high-quality school readiness program is justified, it remains a formidable barrier in many rural states, which are more likely to be conservative and tax averse. Center-based preschool services average anywhere from \$5,008 per child for state pre-K programs (Friedman-Krauss, et al., 2018) to \$8,038 for Head Start programs (Friedman-Krauss, 2016). Because of this high cost, these programs are often implemented to serve targeted populations, resulting in wait-lists and significant numbers of children unserved, especially in rural areas where Head Start is the only pre-K option. UPSTART, by comparison, is only \$2,000 per child, and only \$1,000 if the family already has internet and a device. Furthermore, as the UPSTART program scales, the price drops, as it has in Utah where it has scaled to serve 14,500 students each year (30% of 4-year-olds statewide) and only costs \$800 per student. Thus, UPSTART offers exciting new dimensions of affordability, convenience, choice, and accessibility for developing school readiness. **It is not intended to replace or threaten any site-based programs, but rather, to provide affordable, scalable options for developing school readiness in rural populations that are unserved or underserved by existing services.**

**Transportation.** Transportation may be the biggest obstacle to providing early childhood education services in rural areas. For rural families, schools are often farther away, while small communities lack public transportation systems and school busses are not equipped with legally mandated 4-year-old safety seats. The UPSTART model is based in the home, eliminating transportation barriers. Twice a year, the program Liaison will conduct social learning activities for participating families, but Liaisons can arrange these to minimize the transportation burden.

**Performance fidelity.** As state pre-K programs have scaled, quality has become highly variable, as have outcomes. Issues of fidelity compromise any program's ability to scale and still produce results. UPSTART overcomes this barrier by leveraging technology's innate ability to scale, cope, and perform with fidelity under an increased workload. Thanks to the i3 Validation Grant, Waterford has also expanded and refined its parent support program specifically for rural parents, based on parent feedback and program evaluations. Waterford has honed its processes and has developed a precise multistep plan that all program support personnel are trained on and follow from program registration to parent training, welcome calls, weekly emails and motivational calls, and "graduation" (see Figure 1). With these replicable supports, UPSTART has proven to scale successfully with fidelity and impact, statewide in Utah and across pilot programs in 13 states.

**Parental preferences.** There is no requirement in any state to send a 4-year-old to a pre-K program. The unavailability of services has left many rural parents unfamiliar with the benefits of this important school preparation and unaccustomed to ensuring children's participation. A home-based option can be implemented to optimize family learning routines without disrupting family life with rigid schedules, commutes, or the expense of transportation, making it an outstanding introduction to the many benefits of early education that will become readily apparent once children enter school.

**Priorities.** As addressed above, one of the most pervasive barriers to scale is a lack of understanding around the importance of early childhood education that causes families, schools, districts, and states to overlook its importance. Waterford has worked to scale UPSTART statewide in Utah and secure state funding that prioritizes rural children. Similarly, we have successfully worked with families, LEAs, community-based organizations, SEAs, and state

government decisionmakers to achieve sustainable state funding streams for UPSTART in South Carolina and Indiana as well (based on successful pilot models). These achievements were recently recognized by the National Conference of State Legislatures (NCSL) in their new white paper, *A Fair Start: Ensuring all Students Are Ready to Learn* (Weyer, 2018). The UPSTART Great Plains TASK Force is built on this collaborative pilot model, designed to overcome political forces that deprioritize early childhood education by engaging SEAs, LEAs, school leaders, and national nonprofit partners with expertise in rural education, including the [AASA](#) ([The School Superintendents Association](#)), the [Rural School and Community Trust](#) (RSCT), the [National Rural Education Association](#) (NREA), and [Technology & Innovation in Education](#) (see Letters of Support in Appendix C). Our scaling model develops a capacity building infrastructure for stakeholders from the ground up, starting with personalized and ongoing training for parents to improve their teaching behaviors in the home. LEA supports include our locally based Liaisons, which collaborate with LEAs in recruiting families and personally connecting them to LEAs through kindergarten transition activities. Participating LEA superintendents will be offered a scholarship to join the [AASA Early Learning Rural Cohort](#), where they will participate in a series of capacity building experiences and training to become better early childhood education leaders. Under their leadership, entire communities can unite to provide more options for early childhood education for rural families in ways that are sustainable and transformative. This transformation is represented in this video that features school leaders discussing the benefits of the UPSTART program in the 2017-2018 South Carolina implementation:

<https://goo.gl/YUFFPc>



### 3. UPSTART Dissemination Across Rural America

Our i3 Validation Grant included a robust dissemination plan, which has proven to be very successful. The innovation, impact, and cost-effectiveness of the UPSTART model is gaining national recognition and momentum, particularly as it drives impact in rural locales, as featured in [\*Forbes\*](#) (Dolan, 2016), [\*Huffington Post\*](#) (VanderArk, 2015), [\*USA Today\*](#) (Wiltz, 2015), [\*The 74\*](#) (Phenicie, 2017), and [\*Hechinger Report\*](#) (Mader, 2017). The Great Plains TASK Force dissemination plan includes the following strategies: 1) Research information; 2) Public information; 3) Policy information; 4) Pilot expansions; and 5) Partnerships and philanthropy.

**1. Research information.** As we have done with our i3 Validation Grant research results, we will regularly present outcomes to professional organizations, like the American Education Research Association, the National Rural Education Association, the National Association of Elementary School Principals, the REL-NEI Northeast Rural Districts Research Alliance Research Symposium, and Ed Media, to name only five, as well as other members of EIR cohorts. We have found that one presentation usually spawns additional invitations. For example, Dr. Claudia Miner, the i3 Validation Grant project director and proposed EIR project director, was invited to join the American Enterprise Institute’s Early Childhood Working Group, along with representatives from NAEYC, Head Start, Apple Tree, All Our Kin, and others.

**2. Public information.** Waterford’s marketing and public relations team has already identified salient features of an outreach campaign, including messaging and positioning categories, audiences, and key and supporting messages. To augment its small team, Waterford has contracted with outside firms to provide media services that include press releases, events, campaign development, and coverage (pitching and placement), including Tier 1 broadcast and print media. These resources are already in place, ready to support the UPSTART Great Plains

TASK Force project. We have also had great success with video profiles of our UPSTART implementations shared through social media. For example, the UPSTART videos of our rural [South Carolina](#), [Mississippi](#), and [Ohio](#) pilots on the Waterford YouTube channel have had nearly 40,000 views. Our media outreach plan includes creating a video for each TASK Force state to help us promote the unique partnerships, populations, and outcomes of each state implementation and use in an informational campaign with state stakeholders and decision makers. Similarly, our recent South Dakota Facebook campaign promoting our pilot program in Rapid City and Rosebud reached over 11,000 views in just two weeks. Waterford has also successfully used local events such as fairs and festivals for recruitment, relying on Liaisons to interface with their neighbors to raise the profile of the UPSTART program and the importance of early education.

**3. Policy information.** Our dissemination plan to promote ongoing implementation and growth after the EIR grant also includes working with those that influence state policy, such as legislators and their staff. We have found it important to share program information that answers questions critical to decision makers, including: How does UPSTART work? Why does it work? How much does it cost? Where it is best implemented? What is the relationship between the program and state departments of education? How is the program assessed? The executive director of the UPSTART Program has addressed legislative staff, committees, and legislators in South Dakota, Idaho, Ohio, South Carolina, Indiana, and North Carolina to answer these questions, and every effort will be made to expand this outreach. Our recent success in securing state funding for Waterford UPSTART for rural students in South Carolina and Indiana, as highlighted by the NCSL State Policy and Research for Early Education Working Group (SPREE), offers compelling options for decisionmakers seeking to overcome difficult barriers to early childhood education in their states (Weyer, 2018). More specifically, our work was

highlighted in connection with messages describing the importance of parent choice, outcomes, and reaching underserved, rural populations in a cost-effective way.

**4. Pilot expansions.** As part of our dissemination and scaling plan, Waterford has worked closely with i3, nonprofits, and philanthropists interested in early childhood learning to expand UPSTART pilots to test program impacts with diverse populations and different locales. This replication across 13 states has produced excellent results with high fidelity implementations that consistently exceed usage targets, growth goals, and participant satisfaction. Additionally, it has produced sustainable implementations supported by state funding. Measured using WACS, the excellent software usage in these pilot programs correlates with significant gains in school readiness. For example, we currently have a pilot in Rapid City area and the extremely remote Rosebud Reservation in South Dakota, where transportation and access to services is an ongoing challenge for the at-risk children living on the reservation. Similarly, in Oklahoma, UPSTART is serving about 80 children, the majority of whom are Native American members of the Muscogee (Creek) Nation. Of particular interest are Waterford's efforts to support these parents in their native tribal language. In both pilots, children are currently meeting or exceeding usage goals with no known program dropouts. In effect, the TASK Force follows and expands this pilot model using EIR funds to also greatly enhance program assessment, which will add significantly to the research literature in the field as well as data for state-level decision makers. Our pilot and expansion plans will also work synergistically with the Great Plains TASK Force, helping to scale in a way that will lower UPSTART costs over five years as we meet critical scaling goals across a region. As a group, the five states could approach scaling-cost outcomes similar to Utah's, described previously, while no one state has the population to approach the numbers needed on its own.

**5. Partnerships.** One of the important lessons we learned in our i3 Validation Grant is the importance of establishing community-based partners to support each implementation. District Liaisons led this partnership development effort and it proved invaluable to our success in finding and recruiting participants, as well as connecting UPSTART families with enriching community resources and supports. We have replicated this model in our state pilot programs. As a collaborative, capacity building framework for the TASK Force, Waterford will expand its current partnerships with the AASA and Rural School Community Trust in support of the Early Learning Cohort program. By launching a new chapter with AASA as an Early Learning Rural Cohort, we are able to share program results with rural school leaders from across the country, while building capacity of our TASK Force superintendents to advance early childhood education priorities in their own communities. Experts in scaling note that a “supportive professional community of colleagues” provides continuous opportunities to learn, more knowledgeable leadership, and a stronger foundation for sustainability (Coburn, 2003, p. 6). This capacity building structure will add great depth to our dissemination and policy plan as well, as it has already led to significant UPSTART program replication and expansion. Within this work, we also are able to collaborate and network with national early childhood education leaders, who conduct training for these superintendents, including experts like Dr. Deborah Phillips from Georgetown University, Dr. Nell Duke from University of Michigan, and leaders from the National Rural Education Association.

### **C. Quality of the Project Design and Management Plan**

#### **1. Goals, Objectives, and Outcomes**

The proposed UPSTART Great Plains TASK Force project builds from a structure of four core goals which support improvement in school readiness and early childhood education

services for underserved rural children, communities, and regions across the nation. This structure has evolved from the successful implementation of Waterford’s i3 Validation Grant serving rural Utah districts with the addition of a goal related to establishing a regional TASK Force in partnership with AASA to undergird the importance of early education and ensure the success of the proposed expansion model. No goal is untried—Waterford has a long history of working with AASA to achieve early learning goals, and each goal is supported by a series of measurable objectives that have been honed and perfected in a major grant implementation and subsequent related pilot implementations. Furthermore, these clearly specified goals and objectives are supported by specific activities and performance measures (in all instances, completing stated tasks on time), driving timing and accountability. Together, they structure our Project Management Plan, which is detailed in Table 4 in Section C.2 (p. 31).

## **2. Management Plan**

Because of our successful implementation of the i3 Validation Grant, Waterford has an experienced grant project leadership team already in place. The Project Management Plan details the assignment of experienced administrators and practitioners to the goals, objectives, and activities to ensure that all goals are successfully met on time and within the budget. Please note that Table 3 (next page) lists abbreviations in yellow highlights for various project roles in the “Role” column. The Project Management Plan (Table 4, p. 31) uses those abbreviations in the “Responsible” column. Significantly, 10 of 11 staff members have experience with the i3 Validation Grant, while two staff members without i3 experience bring outstanding relationships and experience. Resumes and bios for project personnel are included in Appendix B.

*Table 3: EIR Expansion Grant Implementation Team*

Name	Role (Abbreviation in Table 4)	i3 Grant?	Comments
<b>Dr. Claudia Miner</b>	<b>Project Director (PD):</b> Overall coordination and reporting	Yes	Experienced with ensuring i3 grant meeting all requirements and outcomes.
<b>Dr. Haya Shamir</b>	<b>Chief Scientist (CS):</b> Evaluation	Yes	Experienced in working with a variety of external evaluators.
<b>Dr. Jon Hobbs</b>	<b>External Evaluator (EE):</b> Conduct RCT	Yes	Delivered all grant requirements to precise standards.
<b>Tom Ness</b>	<b>Chief Financial Officer (CFO):</b> All financial aspects	Yes	Experienced in all aspects of federal grant administration.
<b>Dr. LaTasha Hadley</b>	<b>Liaison Director (LD):</b> Pilot Director and Liaison supervision	No	Expertise and experience add value to vital component of expansion.
<b>Ann Izzo</b>	<b>Waterford UPSTART Support Team (UST):</b> Training and Parent Support	Yes	Developed successful training and support model used in i3 grant.
<b>Jennifer Torres</b>	<b>Curriculum Director (CD):</b> All Academic Aspects	Yes	Successfully implemented i3 Summer Slide curriculum roll-out.
<b>Mike Hight</b>	<b>Technical Services (TS):</b> All Technology Aspects	Yes	Implemented scalable support efficiencies used in all UPSTART programming.
<b>Mark Welling</b>	<b>Marketing Director (MD):</b> Recruitment and Outreach	Yes	Wide experience in UT and pilot program recruitment and high-profile coverage.
<b>Anne Brown</b>	<b>AASA Partnership (AP):</b> Facilitate collaboration	Yes	AASA is value added, ensuring local support of early education and scaling efforts.
<b>Rich Stombres</b>	<b>Advocacy Lead (AL):</b> Lead stakeholder outreach efforts	Yes	Instrumental in pilot state efforts to bring i3 project to scale.
<b>Superintendents</b>	<b>LEA:</b> Oversee local efforts; participate in AASA cohort; assist with advocacy	Yes	Superintendents in i3 grant successfully fulfilled similar roles (except AASA).
<b>Liaisons</b>	<b>Program Liaisons (PL):</b> Local recruitment, support, K-transition	Yes	Liaisons in i3 grant successfully fulfilled similar roles.

In addition, the CFO will oversee expenditures and maintain financial reporting requirements for the grant and work to actively manage grant resources and budgets to maximize impact, ensure efficiency, and support accountability and reporting. It is well understood that as an overarching goal of the project, the Project Director will meet all grant reporting deadlines and participate actively in the EIR grant cohort and related rural interest group to further the goals of both the project and the EIR program.

**Table 4: Project Management Plan**

Goals, Objectives, Activities	Responsibility	Performance Indicator	Year 1				Y2	Y3	Y4	Y5
			Oct 2018 Q1	Jan 2019 Q2	April 2019 Q3	July 2019 Q4	10/19-9/20	10/20-9/21	10/21-9/22	10/22-9/23
<b>Goal 1: Develop and expand the UPSTART Great Plains TASK Force consortium of SEAs and LEAs to advance early childhood education priorities across the region and more effectively advance early childhood education priorities in their schools and communities. (Implementation includes AASA.)</b>		Consortium Task Force (TF) MOU; Meeting minutes; Participation records								
<b>Objective 1:</b> By February 2019, finalize TASK force structure and initial membership.	PD	Consortium MOU								
<b>1-1a.</b> SEA names state representatives to TASK Force	PD, SEA	SEA lists for TF								
<b>1-1b.</b> Initial project planning meeting with TASK Force members	PD, AP	TF meeting minutes and project outline								
<b>Objective 2:</b> By August 2018, develop supportive communication and collaboration resources, including TASK Force website, monthly written updates, and virtual meeting frameworks.	PD, MD	TF website, virtual platforms established								
<b>1-2a.</b> Great Plains TASK Force – Monthly written updates all years	MD	TF written updates								
<b>1-2b.</b> Great Plains TASK Force – Quarterly virtual meeting	PD	TF meeting minutes								
<b>1-2c.</b> Great Plains TASK Force – Website development	MD, AP	TF website complete								
<b>1-2d.</b> Provide interim reports to TASK Force SEAs and their LEAs	PD, MD	TF reports								
<b>Objective 3:</b> By June of each project year (2019, 2020, 2021, 2022, 2023), conduct annual TASK Force meeting to support collaboration, optimize program implementation, and receive reports.	PD, LD, AL	Meeting attendance rolls, TF Program implementation plan								
<b>1-3a.</b> Great Plains TASK Force – SEA training and information dissemination	PD, LD, AL	Attendance rolls								
<b>1-3b.</b> Great Plains Annual TASK Force Meeting (rotates among states)	PD, LD, AL	Meeting minutes								
<b>Objective 4:</b> By February 2019 (and February 2020, 2021, 2022), provide scholarships for 25 TASK Force superintendents each year to participate in the Early Childhood Education Rural Cohort.	PD, AP	Successful registration of TF superintendents								
<b>4-1a.</b> AASA National Conference – Form Early Learning Rural Cohort (ELRC)	AP	ELRC registration and initial meeting minutes								
<b>4-1b.</b> AASA Early Learning Rural Cohort – Conduct Executive Briefing #1	AP	Attendance rolls, agendas								

Goals, Objectives, Activities	Responsibility	Performance Indicator	Year 1				Y2	Y3	Y4	Y5
			Oct 2018 Q1	Jan 2019 Q2	April 2019 Q3	July 2019 Q4	10/19-9/20	10/20-9/21	10/21-9/22	10/22-9/23
<b>4-1c.</b> AASA Early Learning Rural Cohort – Conduct Executive Briefing #2	AP	Attendance rolls, agendas								
<b>4-1d.</b> AASA Early Learning Rural Cohort – Participate in ongoing Virtual Collaboration	AP	Digital records								
<b>4-1e.</b> AASA Early Learning Rural Cohort – Conduct Capstone Certification	AP	Capstone project presentations								
<b>4-1f.</b> Conduct surveys of participating TASK Force superintendents to assess impact of the Early Childhood Learning Rural Cohort experience	PD, AP	Survey results								
<b>Goal 2: Successfully expand and implement the UPSTART model across TASK Force states to develop school readiness among rural, high needs populations, and develop evidence of effectiveness for local LEAs and SEAs. (Implementation includes NREA and RSCT.)</b>										
<b>Objective 1:</b> By June 2019 (and 6/20, 6/21, 6/22, 6/23), hire and train locally based Liaisons to support UPSTART implementations and TASK Force activities.	PD, LD, UST	Liaisons hired, training agendas, 100% participation								
1-1a. Once state geographies are identified, hire area UPSTART Liaisons	LD	Liaisons hired								
1-1b. Train Liaisons	LD, CD, EE, UST	Training agendas, 100% participation								
1-1c. Liaisons lead recruitment of families and local partners	LD	Liaison activity logs, recruitment outcomes								
1-1d. Waterford PCRs coordinate progress monitoring with Liaisons	LD, CD, UST	Weekly usage data, communication logs, family support plans								
1-1e. Liaison/Family Check-Ins and Social Learning Activity	LD, CD	Event agendas, participation records, liaison reports								
1-1f. Liaison/Family Check-Ins and Kindergarten Transition Activity	LD	Same as above								
1-1g. Liaison Home Visits and Progress Monitoring	LD, UST, CD	Liaison activity logs and reports, family support plans								
<b>Objective 2-1:</b> Beginning June 2019, working in conjunction with local Liaisons, implement UPSTART with 600 high needs students in rural LEAs across Idaho, North Dakota, and Montana (Cohort 1-Year 1) for the UPSTART program to be completed by July 2020.	PD, UST, LD	Participation numbers met, weekly usage data, communication logs, WACS scores								
<b>2-1a.</b> Recruit 600 students for Cohort 1-Year 1	PD, PL, UST, MD, LD, LEA	Participation numbers met								



Goals, Objectives, Activities	Responsibility	Performance Indicator	Year 1				Y2	Y3	Y4	Y5
			Oct 2018 Q1	Jan 2019 Q2	April 2019 Q3	July 2019 Q4	10/19-9/20	10/20-9/21	10/21-9/22	10/22-9/23
<b>2-1b.</b> Implement Cohort 1-Year 1 in Idaho, North Dakota, and Montana	PD, UST, PL, LD, LEA	Weekly usage data, communication logs								
<b>2-1c.</b> Conduct registration of UPSTART families and collect demographics and data sharing agreements	UST, TS, PL	Demographic profiles, signed documentation								
<b>2-1d.</b> Assign each family a dedicated PCR and Liaison	UST, LD	PCR assignment logs								
<b>2-1e.</b> Conduct welcome calls with all participating families	UST	PCR communication logs								
<b>2-1f.</b> Finalize agreements with local internet providers	UST, CFO	Final agreements								
<b>2-1g.</b> Purchase technology devices	UST, CFO, TS	PO and shipping records								
<b>2-1h.</b> Install and maintain internet service for eligible families	UST	Installation reports, invoices								
<b>2-1i.</b> Schedule local sites that are conveniently located for program events	LD, PL	Liaison reports								
<b>2-1j.</b> Conduct parent training event and WACS pre-test	LD, UST, CS	Participation rolls, WACS outcomes								
<b>2-1k.</b> Distribute technology devices to participating families	UST, PL	Signed documentation								
<b>2-1l.</b> PCR weekly emails, calls, and texts responsive to participation patterns and in-person supportive visits	UST, LD, CD, PL	Family support plans, PCR communication logs								
<b>2-1m.</b> Conduct graduation events with WACS post-test and parent feedback survey	UST, LD, CS	Participation rolls; WACS & survey results								
<b>2-1n.</b> Analyze Cohort WACS pre- and post-tests results and parent feedback	CS	WACS and survey analysis report								
<b>2-1o.</b> Prepare and disseminate report of Cohort results	PD, CS	Cohort Report								
<b>2-1p.</b> Obtain Kindergarten teacher feedback for Cohort 1-Year 1 UPSTART children	CS, LD	Teacher survey								
<b>2-1q.</b> Collect LEA kindergarten testing results	CS, LEA	Testing results								
<b>Objective 2-2:</b> Beginning June 2020, working in conjunction with local Liaisons, implement UPSTART for Cohort 1-Year 2 (1200 students) in Idaho, North Dakota, and Montana, and Cohort 2-Year 1 (400 students) in South Dakota and Wyoming to be completed by July 2021.	PD, UST, LD	Participation numbers met, weekly usage data, communication logs, WACS scores								
<b>2-2a.</b> Recruit 1200 students for Cohort 1-Year 2 (ID, ND, MT) and 400 students for Cohort 2-Year 1 (SD, WY)	PD, PL, UST, MD, LD, LEA	Participation numbers met								
<b>2-2b.</b> Implement Cohort 1-Year 2 (ID, ND, MT) and Cohort 2-Year 1 (SD, WY)	UST, PL, PD, LD, LEA	Weekly usage data, communication logs								

Goals, Objectives, Activities	Responsibility	Performance Indicator	Year 1				Y2	Y3	Y4	Y5
			Oct 2018 Q1	Jan 2019 Q2	April 2019 Q3	July 2019 Q4	10/19-9/20	10/20-9/21	10/21-9/22	10/22-9/23
All activities are the same as those outlined in 2.1-c through 2-1q.		See 2.1 activities								
<b>Objective 2-3:</b> Beginning June 2021, working in conjunction with local Liaisons, implement UPSTART for Cohort 2-Year 2 (800 students) in South Dakota and Wyoming to be completed by July 2022.	PD, UST, LD	Participation numbers met, weekly usage data, communication logs, WACS scores								
<b>2-3a.</b> Recruit 800 students for Cohort 2-Year 2 (SD, WY)	PD, PL, UST, MD, LP, LEA	Participation numbers met								
<b>2-3b.</b> Implement Cohort 2-Year 2 (SD, WY)	UST, PL, PD, LD, LEA	Weekly usage data, communication logs								
All activities are the same as those outlined in 2.1-c through 2-1q.		See 2.1 activities								
<b>Goal 3: Validate UPSTART program effects for school readiness and social and emotional development and longitudinal effects for sustained gains by conducting a rigorous, independent Randomized Controlled Trial study.</b>										
<b>Objective 3-1:</b> By May 2019 (and May each project year), revise and finalize RCT evaluation design and obtain approval from U.S. Department of Education.	PD, EE	Evaluation design approved								
<b>3-1a.</b> Revise Evaluation Plan based on US DOE feedback	EE	Evaluation design approved								
<b>3-1b.</b> Submit Final Evaluation Plan	EE	Evaluation design approved								
<b>3-1c.</b> Update evaluation plan annually	EE	Evaluation design approved								
<b>Objective 3-2:</b> By June 2019 (and June each project year), conduct pre-testing with related post-testing of treatment and control groups at end of UPSTART year (June/July timeframe).	EE	Treatment/Control groups formed, test results								
<b>3-2a.</b> Recruit participants for control group	EE, PL	Control group records								
<b>3-2b.</b> Randomize assignments to treatment and control groups	EE	Evaluation records								
<b>3-2c.</b> Conduct independent evaluation by pre-testing cohorts	EE	Pre-test results								
<b>3-2d.</b> Conduct independent evaluation by post-testing cohorts	EE	Post-test results								
<b>3-2e.</b> Conduct independent evaluation by longitudinal testing in Cohort 1	EE	Longitudinal test results								
<b>Objective 3-3:</b> By September 2020 (and September each project year), create independent evaluation report, including results, analysis, and conclusions, and share with stakeholders.	PD, EE, LEA, SEA	Evaluation report, publications and presentations								
<b>3-3a.</b> Engage in data cleaning, processing, and warehousing	EE	Evaluation report								
<b>3-3b.</b> Prepare Annual Report	EE	Evaluation report								

Goals, Objectives, Activities	Responsibility	Performance Indicator	Year 1				Y2	Y3	Y4	Y5
			Oct 2018 Q1	Jan 2019 Q2	April 2019 Q3	July 2019 Q4	10/19-9/20	10/20-9/21	10/21-9/22	10/22-9/23
<b>3-3c.</b> Prepare Final Project Report	EE	Evaluation report								
<b>3-3d.</b> Publish and present results	EE	Publications and presentations								
<b>Goal 4: Work with TASK Force SEAs, LEAs, and nonprofit partners to disseminate program findings broadly to promote adoption of and funding for the replication of the UPSTART program as an option for early childhood education services in rural, underserved areas across the country. (Implementation includes AASA, NREA, and RSCT).</b>										
<b>Objective 4-1:</b> Beginning 2020 (and June 2021, 2022), share program year outcomes with partners; local, state, and national stakeholders; and legislators, and at conclusion of grant (2023) disseminate overall program outcomes.	PD, MD, CS, EE	Publications, presentations, partnerships, marketing collateral								
<b>4-1a.</b> Successfully reach out to all forms of media	MD	News releases, marketing reports								
<b>4-1b.</b> Produce a state video for each TASK Force member	MD	Videos, YouTube channel hits								
<b>4-1c.</b> Meet with government decisionmakers at the state and federal levels to reinforce the importance of early education and related special barriers and needs in rural areas	PD, AL	Meeting notes, advocacy reports								
<b>4-1d.</b> Meet with early education leaders across the country to highlight UPSTART "rural" solution	PD, AL	Meeting notes, advocacy reports								
<b>4-1e.</b> Present to national and international academic and policy meetings and conferences	PD, CS, LD, EE	Presentations and publications								
<b>Objective 4-2:</b> During the course of the grant, expand UPSTART implementations within and outside of EIR grant locations to achieve greater scale and lower cost. Focus expansion on five target states once pilots are completed	PD, AL	Cost per participant, UPSTART participation								
<b>4-2a.</b> Apply for foundation grants to establish philanthropic sponsorships of new state pilots or expanded implementations	PD	Grant applications								
<b>4-2b.</b> Develop partnerships with national organizations to support UPSTART implementation and expansion	PD, LD, AP, AL	Partnership MOUs								
<b>4-2c.</b> Advise state-level decisionmakers of proven outcomes and cost-effectiveness of UPSTART as a model to serve rural locales	PD, AL	Presentations; advocacy reports								

### **3. Feedback and Improvement**

In consultation with SEAs, LEAs, Liaisons, and Waterford staff, opportunities for feedback are built into the multi-year management plan for the grant and will be revisited on an annual basis. The types of data to be included in the continuous feedback system include: recruitment goals and results; recruitment to full registration outcomes; training attendance; weekly usage; graduation attendance; WACS and other assessment data; parent and teacher feedback; and ongoing partner and field feedback. Changes will be addressed in regular written and in-person reports to and meetings with superintendents, Liaisons, and TASK Force members. UPSTART results from assessments and parent surveys from the first pilot year will be used to improve the program in its second offering in each state as will ongoing communication with superintendents and Liaisons. Waterford will use this important feedback to ensure the second pilot improves operation and outcomes. Improvements will be implemented as quickly as possible, particularly in the software and the support model. At Waterford, the Finance Department will provide the Project Director with monthly accounting reports for the sake of monitoring. She will also routinely receive weekly usage reports as well as reports on the number of calls received in the support center to determine any changes in staffing levels. PCRs will also report any concerns raised in their dealings with parents so that they can be attended to rapidly by the UPSTART manager. Liaisons will be managed separately to monitor effectiveness and provide all necessary ongoing training and support from Waterford.

### **4. Sustainability**

Founded in 1976, the Waterford Institute has a long history of financial stability and success. Moreover, we are in the 5<sup>th</sup> and final year of our i3 Validation Grant, where we have achieved a sustainable model for the grant activities to extend well beyond the duration of the grant. Fueled by strong outcomes in the i3 RCT grant evaluation, we were able to successfully disseminate results with stakeholders and decisionmakers in Utah, which has led to program

expansion within the state and a legislatively established state funding stream that explicitly assigns priority service to rural families. Significantly, this success also contributed to the expansion of state funding to include site-based pre-K once a rural solution (UPSTART) had been definitively established. Results from the i3 RCT have also helped us successfully raise over \$3M in philanthropic dollars to expand UPSTART in 13 pilot states, as well as establish sustainable state funding streams in Indiana and South Carolina supporting rural implementations. Our “pilot-evidence-advocate-scale” strategy has proven to be very replicable, resulting in both the expansion and sustainability of early childhood education services for underserved rural families in a cost-effective model that drives significant results.

**Multi-year financial and operating model.** The following multi-year financial and operating model in Table 5 provides evidence of our resources and ability to operate the project beyond the length of the grant. It reflects our trendline of growth, both for UPSTART and as an organization. Waterford’s FY2018 ends on August 31, 2018 and we are projecting to complete the year with an increase in our Net Assets of over \$1.5 million with projected current assets in excess of \$13 million with only \$3.6 million in long-term debt. The scaling grant and related activities are designed to increase our net assets and therefore our ability to invest in the activities outlined in this proposal and beyond to drive adoption and growth of this program.

**Table 5: Multi-year Financial and Operating Model**

(in 000's)	EIR						Post-EIR	
	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025
EIR - Federal Share		4,843	3,222	3,043	2,138	1,232		
EIR - Expansion						2,000	4,900	8,225
EIR - Scaling			2,200	5,240	13,400	22,500	33,800	43,600
Total EIR Impact	-	4,843	5,422	8,283	15,538	25,732	38,700	51,825
Other Revenue	25,008	27,628	30,471	34,191	38,514	43,551	49,433	56,318
Total Revenue	25,008	32,471	35,893	42,475	54,053	69,283	88,133	108,143
Expenses	23,484	30,499	32,618	38,227	48,918	63,047	81,082	100,033
Increase in Net Assets	1,524	1,972	3,274	4,247	5,135	6,235	7,051	8,111

As we learned with our i3 Validation Grant, costs drop with scale, while grassroots demand grows with capacity building supports, from families, to schools, to districts, to SEAs and government decisionmakers. Table 6 outlines a scaling model based on current growth trendlines and partnerships that projects growth for UPSTART both within and outside of the EIR grant. It is important to note that rural geographies and small numbers of students to be served sometimes present additional expenses that make lowering costs impossible. However, recognizing these barriers, if rural areas were to join together (e.g., our five TASK Force states), we would recognize these as a single entity (similar to a New York BOCES) for the sake of pricing. As an example, if the five states approach the 14,000 number UPSTART currently serves in Utah, we would work to offer a similar scaled price, which is currently less than \$1,000 per student. However, a caveat to that is also the number of homes requiring connectivity. Utah currently leads the nation in connectivity, while our five rural states lag far behind with some of the lowest rates and highest costs of Internet delivery in the country. For these reasons, Table 6 reflects conservative projections that still show the cost per participant falling from \$2,000 in 2019–2020 to \$1,307 by 2024–2025 (see Cost per Participant under Scaling Statistics). In truth, scaled pricing may well fall below \$1,000 per student, like it has in Utah.

**Table 6: Scaling Model Driving Lower Costs by End of Grant**

	School Year					
	EIR				Post-EIR	
	2019-2020	2020-2021	2021-2022	2022-2023	2023-2024	2024-2025
<b>EIR Statistics</b>						
EIR Direct Program Expense	\$ 1,197,591	\$ 2,601,576	\$ 1,146,333	\$ -	\$ -	\$ -
# of Students Served - EIR	600	1,600	800			
Cost per Participant	\$ 1,995.98	\$ 1,625.98	\$ 1,432.92			
# of States - EIR Target States	3	5	2			
<b>Scaling Statistics</b>						
Scaling Income	\$ 2,200,000	\$ 5,240,000	\$ 13,400,000	\$ 22,500,000	\$ 33,800,000	\$ 43,600,000
# of Students Served - Scaling	1,100	2,750	7,700	14,250	23,300	33,350
Cost per Participant	\$ 2,000	\$ 1,905	\$ 1,740	\$ 1,579	\$ 1,451	\$ 1,307
# of States - Other States	4	5	7	7	8	8

With the EIR Expansion grant fueling expansion both within and outside of the grant, UPSTART can cost-effectively scale across rugged, challenging rural geographies. More importantly, it can lead a charge for early childhood education more generally, driving progress and transformation that enrich early childhood learning options in rural locales regionally, statewide, and nationally.

**Project partners.** The AASA will be a primary partner in this project, as we extend our existing partnership in the AASA Early Learning Cohort to offer an AASA Early Learning Rural Cohort, specifically supporting rural superintendents from our TASK Force states. Nearly 70% of AASA superintendents lead rural districts. This Early Learning Rural Cohort adds significant depth and dimension to our dissemination and scaling plan, as it helps to develop knowledgeable rural school leaders and a larger supportive professional community of colleagues who understand the importance of early childhood education. These elements contribute to greater ownership in our project goals, as well stronger commitments to sustaining the program beyond the duration of the grant. The National Rural Education Association and the Rural School and Community Trust will also support the grant, offering expertise in rural education and rural communities, as well as presentation and reporting forums for sharing project results. Letters of Support are located in Appendix C.

**Broad support.** We also have broad support among the SEAs and rural LEAs in the TASK Force states. Appendix C includes letters of support representing 135 LEAs (109 confirmed Rural) across these five states. This consortium of lead LEAs will help us form the initial UPSTART cohort groups. As we've experienced in our i3 Validation Grant and state pilots, the project will then grow through grassroots means (parents share their enthusiasm with their community, superintendents share with other school leaders), defined dissemination of

project results, and outreach to stakeholders and decision makers. SEA agencies in the TASK Force states have also expressed support—see Appendix C with SEA letters from Montana, Wyoming, Idaho, and South Dakota. These LEAs and SEAs will form the initial membership of the TASK Force consortium, while we also expect support and participation to significantly grow with news of an official grant award.

## **D. Quality of the Project Evaluation – Prepared by Evaluation and Training Institute**

### **Introduction**

The Evaluation and Training Institute (ETI), a nonprofit research and evaluation center, has prepared this evaluation proposal to the Waterford Institute in support of an Education Innovation and Research (EIR) Expansion grant. We have proposed our plan for evaluating the UPSTART program as it is scaled-up across rural communities outside of Utah by partnering with the Great Plains TASK Force (serving Idaho, Montana, Wyoming, South Dakota, and North Dakota) through this EIR Expansion grant. This plan will be reviewed and adjusted as needed during the project planning phase in Year 1 of the grant. Our focus in writing the evaluation proposal is to meet the following criteria requested by the EIR grant review team:

- Conduct a fully independent randomized control trial research study that meets What Works Clearinghouse standards without reservations (WWC, 2017) and produces findings that can inform policy decisions related to rural preschool throughout the United States.
- Determine whether positive impacts found in previous experimental research studies can be reproduced in different rural states and sustained over time, and determine what mediates program success.



- Test a large sample (66% of enrolled students) so that we can study the conditions in which the program is most successful, including comparisons between program sites and different student characteristics.

### **Description of Intervention and Importance of the Research**

UPSTART is a home-based, interactive, virtual preschool program created by the Waterford Institute that is designed to promote the development of literacy skills<sup>1</sup> that will prepare young children for entry into school (school readiness), as well as to provide reading instruction to students up to third grade. The reading skills taught by the Waterford Early Learning software are adaptive and respond to a child's individualized learning needs. The curriculum focuses on core early literacy skills (phonological awareness, phonics, comprehension and vocabulary, and language concepts), but is also designed to enhance young children's development and social and emotional learning directly through the software learning sequences and indirectly through the parent engagement curriculum. The program will be administered in home settings during the pre-kindergarten (pre-K) year.

**Importance of Research.** Previous randomized-control trial experimental research findings show that the program has strong positive effects on early literacy development in rural preschool aged children (Overby & Hobbs, 2016; Overby, Hobbs & Thomas, 2017). Using Cohen's d effect size calculations (Cohen, 1969) to determine impacts on emergent literacy

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<sup>1</sup> The UPSTART program is designed to promote reading (literacy), but also has curricula developed to support Math and Science learning. We have operationally defined "school readiness" in terms of literacy; however, Math and Science are core skills for success in elementary school (and beyond).

skills, the program had substantive effects on aspects of phonological awareness ( $d = .25$ ,  $p < .001$ ), phoneme manipulation ( $d = .30$ ,  $p < .001$ ), reciting the alphabet ( $d = .24$ ,  $p < .001$ ) and identifying uppercase letters ( $d = .50$ ,  $p < .001$ ; for more details and results, see: Overby & Hobbs (2016) and Overby, Hobbs, & Thomas (2017). For additional results based on randomized site (district) block analyses, see Hobbs, Overby, & Thomas (2018). The Expansion grant will allow us to study the program's effectiveness with more diverse rural populations, and to expand our ability to better understand what key factors mediate program success beyond those already found in rural Utah. The rural communities in the United States have not received the volume of educational initiatives seen in urban communities, and they lack the depth of program evaluation research seen in larger metropolitan centers. This project would fund research to fill these gaps, and our results can be used by state and federal education policy-makers to plan effective school readiness and literacy programs for rural students across America.

### **Overview of Research Planning**

The UPSTART Expansion Grant timeline indicates that after the initial planning period (roughly from September 2018 to May 2019), the treatment and control groups will be identified in summer 2019. The necessary hardware and software will be in place by August–September 2019 for the program families to begin using the program with the selected children. Children will use the program before enrolling into kindergarten during their preschool year. Our research will include wide-scale student testing across diverse rural areas, and a central aspect of our approach to studying program effectiveness includes the use of educational professionals as student assessment experts. ETI will train and monitor a cadre of K–12 speech and language therapists and educators in each of the five states to collect student data throughout the project. Our past experience has shown us that this is a “win-win” proposition: educational professionals

have expertise navigating their state’s educational systems and are very effective working with young children. Two types of research studies will be conducted, each with its own research design (described in detail in the remainder of this proposal):

- An **Impact Study** will be conducted across all program sites and used to determine the program’s proximal effects on students entering into kindergarten and longitudinal effects as they matriculate through kindergarten and into the first grade.

- A yearly **Implementation Study** will be used to study the program from planning through implementation to determine if the program is meeting its stated implementation objectives and based on a mixed-methods research design (conducted during Years 1–5).

- A **Cumulative Cost-Effectiveness Study** will be conducted at the end of the grant and will help stakeholders and policy makers weigh the costs against the benefits for different communities and types of family groups that participated in the program.

### **Impact Study Design**

We will use randomized control trial (RCT) experimental research design to study the impacts the UPSTART program has on literacy achievement and social-emotional development—two key components to school readiness. Our research questions will guide the Impact Study design, and are as follows:

1. Do pre-kindergarten children randomly assigned to receive the UPSTART reading program have higher scores on measures of school readiness (see section below on measures) after one year than pre-kindergarten children who were randomly assigned to a similar home-based interactive computer-based preschool program created by the same developer that focuses on math and science?

2. Do children who were randomly assigned to receive the UPSTART reading program continue to receive program benefits in kindergarten and first grade as measured by literacy achievement than children who were randomly assigned to a program that focused on math and science in preschool?
3. What family characteristics mediate the program's effect on school readiness?
4. What site characteristics mediate the program's effect on school readiness?
5. Are there differential effects on measures of social and emotional development (see below section on measures) between children randomly assigned to the UPSTART reading program when compared to children randomly assigned to a program that focused on math and science in preschool?

A randomized, blocked experimental design will be used, and children whose families register for the program will be randomly assigned to receive either a preschool program focused on reading ("Reading," treatment group) or a program focused on mathematics and science ("Math," control group; Cook & Campbell, 1979). Reading group mean test scores will be compared to Math group mean test scores at pretest to verify baseline equivalency, at entrance into kindergarten to study the preschool impacts, and again at end of kindergarten and end of first grade to study the longitudinal impacts. This research design offers benefits for both treatment (Reading) and control (Math) students, and control students have shown improvement in math skills because of their participation in the program (Overby, Hobbs, & Thomas, 2017).

During registration, families will be recruited to participate in the preschool UPSTART program and told that they must agree to the following evaluation conditions to receive the free educational software: 1) if they are asked to participate in the evaluation they must complete a short (approximately 30 minutes) pre-program and post-program test, and follow-up tests in K–1,

to be arranged by the evaluator; and 2) they will be randomly assigned to receive either Reading or Math versions of the program and cannot choose which version their child receives. After registration is complete, Waterford will give ETI a list of all program families, and we will randomly select 66% of program families from each district block within states to participate in the evaluation. Test administrators will be blind as to what condition the family is in (Reading or Math). We will conduct the same protocol for each state/site participating in the grant.

Pre-testing will be done to establish baseline equivalency in the blocked, randomly assigned groups (WWC, 2017; Cook & Campbell, 1979) and to add precision to our statistical analyses of program impacts. Pretest scores will also serve as a backup measure in case of high levels of subject attrition that threaten the RCT design, something that we do not anticipate occurring but will protect against with the pre/post measures for a QED backup plan. This design is sketched below where R means “randomly assigned,” X\* stands for the “program implementation” (“P” for preschool) of the UPSTART treatment, T stands for “treatment,” C stands for “control,” and O1/O2 stand for pre-test and post-test (respectively). Please note that the Longitudinal Study will follow a single cohort of students for three years: preschool, kindergarten, and first grade. Both treatment and control students will be tested prior to entering their program condition (O1; baseline/pretest), after exiting the program but before entering kindergarten (O2; preschool posttest), at the exit of kindergarten (O3), and at the exit of first grade (O4).

		<b>Pre-K Year</b>		<b>Kinder Year</b>		<b>1<sup>st</sup> Grade</b>	
R-T	O1	X*P	O2		O3		O4
-----							
R-C	O1		O2		O3		O4
<i>Preschool Study</i>				<i>Longitudinal Study</i>			

### ***Sampling Plan***

ETI will test approximately 2,000 students total, roughly 67% of the total preschool program enrollment sampled across participating school districts and sites. The evaluation sample for each cohort (a unique preschool program in each state) will be 200 students per state per cohort. Our target sample size exceeds the minimum calculated through a statistical power analysis using G\*Power v. 3.1 (Linear regression fixed model,  $R^2$  deviation from zero; Faul, Erdfelder, Buchner, & Lang, 2009). In previous studies, an average UPSTART effect size was calculated at approximately  $f^2 = .25$ , and the cohort sampling plan exceeds a 95 percent statistical power criterion assuming the need to detect an effect size of .25 or greater with alpha set at .05.

### ***Outcome Measures***

We will study two types of outcomes supported by the program's theory of change model (see Figure 5, p. 48): literacy and social-emotional development. Literacy outcomes (e.g., letter knowledge, phonological awareness, oral reading fluency, and related constructs) will be measured for the treatment and control students using a combination of the following instruments: Preschool Early Literacy Indicator (PELI; preschool study only; Kaminski, Abbott, Bravo Aguayo, Latimer, & Good, 2014), the Brigance Inventory of Early Development III (IEDIII; preschool and longitudinal; Brigance, 2004), and the Peabody Picture Vocabulary Test (PPVT-4; preschool and longitudinal; Dunn, Dunn, & Pearson Assessments, 2007). Across these instruments, we will base our outcome analyses on the following preschool measures: receptive and expressive objects, visual discrimination, auditory discrimination, vocabulary, alphabet knowledge, listening comprehension, and phonemic awareness. Our longitudinal measures will include literacy development as measured by vocabulary (PPVT-4) and phonological awareness (blending, segmenting and rhyming; IEDIII). Social-emotional developmental outcomes will be

measured using the Social-Emotional Assets and Resilience Scales (SEARS) short form assessment, which measures core early SED concepts, such as responsibility, self-regulation/self-management, social awareness, and others (Merrell & Gimpel, 1998). The short form version can be completed by teachers, parents, or students in the upper-early grades, and will scale across entrance into kindergarten through first grade. Our SED measures will allow us to determine what, if any, differences exist as a result random of assignment to the experimental conditions.

### ***Statistical Analysis***

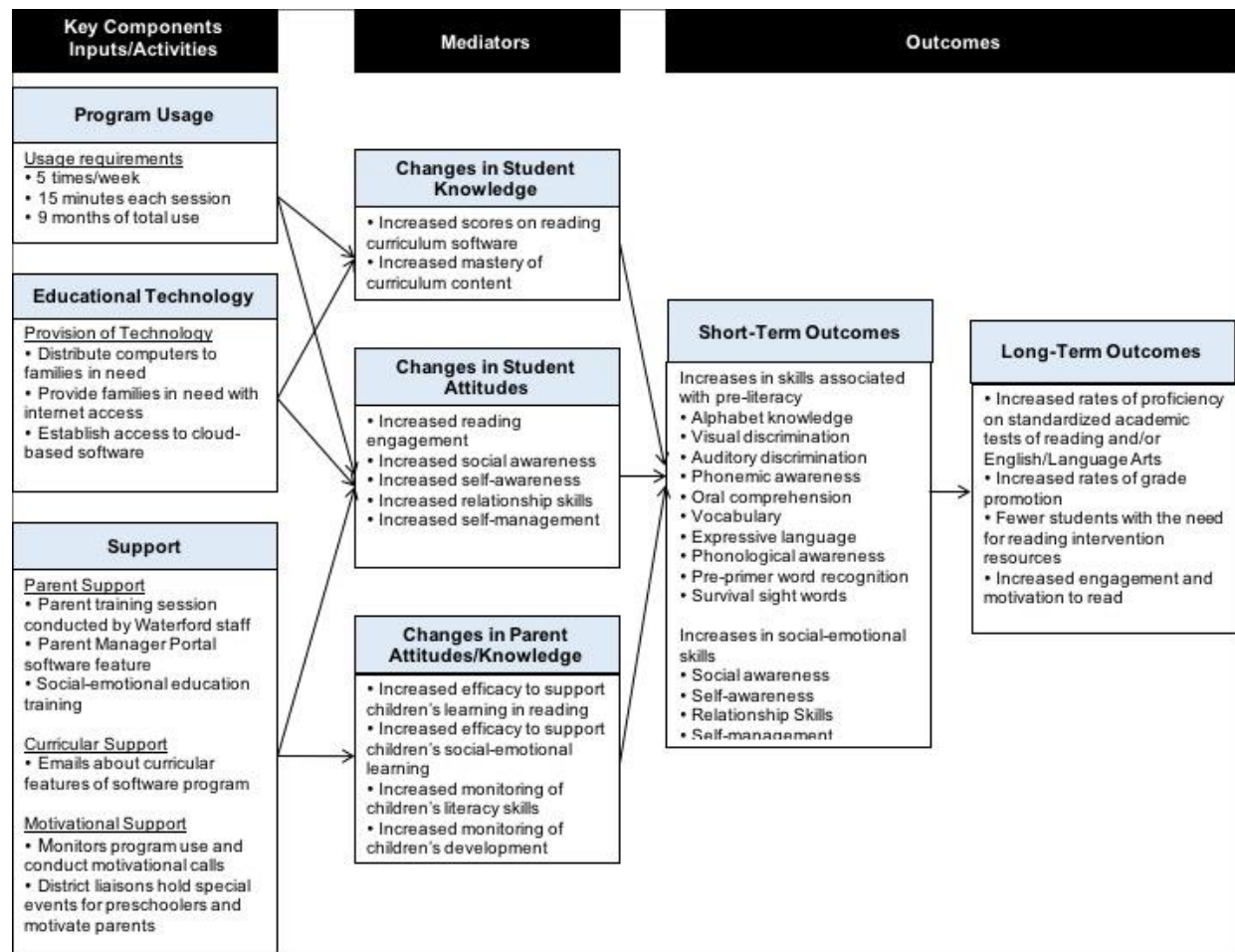
We will use raw scores for the various reading subtest analyses. We will conduct ordinary least squares (OLS) regression, and our model will have the following inputs: blocking on districts, pretest scores, and treatment group status (independent variables). Dependent variables will include scores on tests of our outcome measures, which will be regressed on the independent variables. With alpha set to .05, we will determine that the program had an impact if significant positive results are found, with an  $R^2$  of .25 or above.

### **Implementation Study Design**

Our Implementation Study will follow the standards set by the Office of Innovation and Improvement (OII) and WWC and will attempt to link program activities with the impact outcome findings. The implementation study will allow us to deepen our understanding of contextual and programmatic processes that mediated the program's impacts on students. ETI will develop a deeper understanding of the program objectives in each state during the program planning year (Year 1), and then measure the indicators across each grant year using a mixed-methods research approach. We will base our Implementation study on a theory of change shown in the program logic model (see Figure 5, p. 48), and we will track how the key inputs (far left column in the logic model) are implemented and how tightly they are aligned with the outcomes

studied in our Impact Study (outcomes are listed in the “short-term outcomes” column in the logic model). For the software-based reading program, our tentative areas of inquiry will include: program usage, education technology, and support for families. These key components of fidelity are aligned with the logic model and follow the general program implementation previously described in the proposed program design.

*Figure 5: Program Logic Model*



Implementation Study will employ a mixed-methods research design, and we will triangulate empirical indices (for example, number of computers provisioned, etc.) with observational data (meetings, field observations, etc.), and conducting interviews with program staff and stakeholders. We will report on the program’s progress meeting each Key Component



in the logic model and report a fidelity score for these components. The fidelity scores will be measured against an a priori established threshold for “Implementation with fidelity” or “Not with fidelity,” and the results will be reviewed with the Waterford Institute to determine their success meeting their initial goals for conducting the program.

### **Cost Effectiveness Study Design**

We will conduct a Cost Effectiveness Study (CES) of the UPSTART preschool program to determine what the program’s overall cost per student was to achieve its goals. Our retrospective CES analysis will be conducted after the program’s completion to assist stakeholders in evaluating the program’s overall success. Our CES will be developed in conjunction with the Waterford Institute during the planning year (Year 1) and will follow procedures recommended by Cellini and Kee (2010). In general, we will use a simple formula to determine final costs per student:

$$\text{Cost Efficiency} = \frac{\text{Total Cost}}{\text{Units of Effectiveness}}$$

Our work in this analysis will focus on the following areas (listed for clarity, but they will be further developed during the planning year). First, we will determine which costs and benefits should be included. Because UPSTART is funded by a grant in this implementation, we will need to count all the costs directly associated with running the program minus those used to meet other grant obligations. The benefits of the program will be measured using our literacy outcomes (described in the above sections), which we will use as “units of effectiveness” in our analyses. Our next steps will include identifying, categorizing, and measuring costs and benefits with the program provider. Some examples of possible costs used in previous CES analyses include: program salaries, (i.e., Waterford program staff, program Liaisons, IT support, etc.), internet accounts, equipment costs, extra maintenance costs associated with summer use of the

facilities for events, graduation, training, and testing (indirect, tangible, fiscal). When measuring the program benefits, they would accrue primarily to the direct participants of the program; however, we could also extend our analyses to the communities, and include data on the program's effect on incoming classes of kindergarteners within the K–12 system. For example, students who have higher literacy scores at entrance to kindergarten are more prepared to learn, which may reduce classroom management burdens placed on educators and result in more time on learning tasks.

Our cost-efficiency analysis will be based on monetizing costs and projecting them across the project. We will analyze the cost efficiency for subgroups as well, such as: different levels of poverty, different ethnicities, and other group comparisons. This will allow stakeholders to better understand the relative costs for achieving the program's objectives with specific student groups and ultimately help policy makers weigh the costs against the benefits for different communities and types of family groups that participated in the program.

**\*Page limit exclusion for Bibliography:** As noted in the Federal Register Notice for EIR Expansion Grant (CFDA #84.411A), p. 17386, the recommended page limit of 50 pages for the grant narrative does not apply to the bibliography. Therefore, we have placed these citations at the end of the grant narrative (rather than an appendix) for easy reference by the reader.

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