Pilot Study of the Dynamic Early Literacy Framework for Implementation of Science of Reading Aligned Instruction

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As of the most recent National Assessments Educational Progress Reading assessment in 2019, only 35% of American fourth graders are reading at or above proficient levels (U.S. Department of Education, 2019). Further, research has shown that students of lower socioeconomic status are disproportionately impacted, with nearly half of all minority children reading at below basic levels while less than a quarter of white same-age peers fall at below basic levels (U.S. Department of Education, 2019). COVID-19-mandated school closures have exacerbated reading deficits for all students, with some estimates reporting that second and third-grade students are falling roughly 30% below reading fluency rates achieved in a typical academic year (Domingue et al., 2021). These low, stagnant, COVID-exacerbated reading proficiency rates are unacceptable.

Over the course of the past 25 years, however, much has been learned about how reading develops, what critical skills are needed, and even how to predict and identify students who will struggle (Castles et al., 2018; Rose, 2009). The Science of Reading (SoR) instruction is neither an ideology, nor a one-size-fits-all approach to literacy instruction (The Reading League [TRL], 2022). Rather, SoR represents "the accumulated knowledge about reading, reading development and best practices for reading instruction obtained by the scientific method" (Petscher et al.,

2020, p. 268). We foreground that the overarching goal of all reading instruction is to enable an individual to construct and interact in a meaningful way with the text. This meaningful interaction requires a certain set of cognitive skills including word decoding and linguistic comprehension, as well as vocabulary and grammatical knowledge amongst others (Kim, 2020), as depicted in the Simple View of Reading (SVR) (Hoover & Gough, 1990). As such, effective literacy instruction must include quality instruction embracing a growth mindset across a variety of linguistic domains.

The challenge for teachers and for schools embracing the SOR is that implementation is complex. In fact, learning to read has been described as an impossibly difficult task, surpassed only by the complexity of teaching students how to learn to read (Coburn et al., 2012). Charting this course on how to bridge the divide between current literacy research and practice is our focus. Our experience is that schools frequently adopt an element or two of change aligned with the SoR but are stymied by the breadth of collaboration required across all school activities. For instance, the authors have experience with a school adopting a "phonics patch" (Hanford, 2019) - that is, adopting an "evidenced-based" phonics curriculum and assuming instruction is then aligned with the SoR. When the phonics program was found to be ineffective - that is, when students did not advance their reading skills, we were able to identify critical missing elements such as: robust training for teachers; screening and diagnostic assessment to identify specific student needs; adequate time in the schedule for differentiated instruction; and misaligned supervision criteria (Al Otaiba et al., 2009; Hoffman, 1998; Raphael et al., n.d.; Ward Parsons et al., 2019).

So while substantial funding has produced laboratory research evidence of effective interventions for improving literacy instruction, evidence is needed on the nature of success (or

failure) of these interventions in a wide variety of contexts (Byrk et al., 2015; McDonald et al., 2006). It takes much more than discrete interventions with large effect sizes to bring about changes for effective and equitable literacy instruction. In fact, efforts to identify and document improvement actions as well as the necessary infrastructure to support these initiatives has been advocated by implementation scientists (Woulfin & Gabriel, 2020) and is the focus of our work.

While supporting schools over the last eight years, we have studied and inventoried effective practices that impact student learning, creating a guide of seven drivers, the Dynamic Early Literacy Framework (DELF). The DELF (full version of the DELF tool can be viewed at https://bit.ly/DynamicEarlyLiteracyFramework), developed as a tool to be used within a Design-Based Implementation Research (DBIR) literacy improvement program, incorporates principles of improvement science. In the next sections, we detail the literature base for the development of the DELF and a pilot study on its usage in a midsize charter network. In the final sections, we review the results of the pilot and discuss the implications and suggestions for larger scale use. During this first pilot year (21/22 SY) in three schools, we have been able to further develop the DELF in answering two research questions which are the focus of this article:

1. Is the DELF effective in guiding and documenting the inquiry and change process for schools (K-2) to embrace a Science of Reading aligned literacy model?
2. Does the DELF facilitate school stakeholders to guide necessary changes to the literacy model to increase instructional coherence?

Literature Review

Improvement Science

Improvement science is an applied science based on the assumption that two distinct knowledge bases are needed for a successful improvement effort. These knowledge bases

include content knowledge (such as deep knowledge of the phonological and orthographic systems) in addition to "a system of profound knowledge" needed to enact basic disciplinary knowledge (Langley et al., 2009, p.75). In recent years, improvement science has been successfully applied to the education sector and offers a dynamic approach to improving literacy models where previous intervention implementations may have been short-sighted (Bryk et al., 2015). Improvement science seeks to elucidate variation that doesn't exist in strictly randomized control trials but is inevitably in abundance in schools. The elements of improvement science underpinning the DELF include these principles: focus on a persistent problem of practice from multiple perspectives; a commitment to iterative, collaborative design; a concern with developing theory and knowledge related to both classroom learning **and** implementation through systematic inquiry; and concern with developing capacity for sustainable change in the system.

Design Based Implementation Research (DBIR)

Design-Based Implementation Research, instructional coherence and collaborative inquiry are each fundamental to the success of quality Science of Reading instruction. Design-Based Implementation Research (DBIR) is a specific approach to improvement based on collaboration between researchers and practitioners (Penuel et al., 2011). The goal of this type of research, as used with the DELF pilot, is to bridge the cavernous gap between research and practice by situating the research within the complex realities of schools. Researchers and practitioners co-construct innovations, implement them in their settings, evaluate their effectiveness, and reconvene to refine the strategies and try again.

Instructional Coherence

Instructional coherence, defined as a "set of interrelated programs for students and staff that are guided by a common framework for curriculum, instruction, assessment and learning climate and are pursued over a sustained period of time" (Newmann et al., 2001, p. 299) has emerged a critical component to consider in school improvement initiatives. The DELF framework aligns with the theory of instructional coherence as it brings together the socio-cultural and cognitive dimensions of *organizational* learning and situates them in an early literacy model within a school context.

Collaborative Inquiry

Collaborative inquiry is a process of co-constructing new knowledge and innovation in a democratic process (Bray et al., 2000). The collaboration of multiple stakeholders working jointly on a problem of practice resists weaknesses of "top down" initiatives by capitalizing on local knowledge of school communities. It positions teachers as important decision-makers who know the context in which the initiative is being deployed. The DELF elicits inquiry at a variety of levels including systems, school leadership, teachers and their instructional practices and most critically at the center of all levels of inquiry – the student level.

Methods

Rationale

The central tenet of the DELF is that literacy improvement initiatives require inputs and changes within a highly complex and interconnected system. As a result of the complexity of the reforms and the system, no single stakeholder can be responsible for instituting these changes. The DELF framework and process facilitate re-engineering school infrastructure, procedures, and routines through collaborative inquiry by a diverse stakeholder team, consisting of

researchers and practitioners, in pursuing co-constructed innovations within a design-based implementation research framework.

The DELF framework serves as both a guide for inquiry and innovation in the pursuit of instructional coherence, as well as an organizing framework for the inquiry and innovation processes. The use of the DELF promotes a systems thinking approach designed to guide users to broaden their lens to identify previously unknown factors that may influence the effectiveness of any intervention by fostering instructional coherence (Senge, 2006).

The development of the tool was an extensive, iterative process that relied heavily on our expertise and experience in a wide variety of schools with both effective and ineffective literacy models. We strongly believe in the value of applied experiences in the development of all levels of teaching. As a result of our own residency experiences in graduate schools and shared belief in the value of this type of model, we worked to create a graduate residency model in a public school setting with students from historically disadvantaged populations. Specifically, the tool began in 2015 as a list of questions (reflective of the core element of inquiry as a vehicle for change) used to guide conversations with interested potential school sites for a residency program.

In the years that followed, interest in improving preservice and in-service teacher knowledge and practice received increasing attention (Bos et al., 2001; Fedora, 2014; Leader-Janssen & Rankin-Erickson, 2013; Moats, 2014; Moats, 1994; Piasta et al., 2020; Washburn & Mulcahy, 2014). Additionally, the International Dyslexia Association revised its accreditation standards in 2018 (International Dyslexia Association [IDA], 2018), which renewed our interest in finding or creating aligned field experiences.

Tool Development Timeline

The development of the tool fell into three phases: the initial conception as a questionnaire to assess potential field sites for graduate students; revision into a rubric framework; and the pilot testing of the tool in its current form.

The development process included deriving central drivers of evidenced-based literacy models based on extant literature, meeting with experts in the field to solicit feedback, revisions, and field testing and reconvening to discuss proposed revisions. Initially, the list of questions across five drivers included: assessment; curriculum & instruction; school leadership & culture; supervision & evaluation; and teacher quality. The questions were derived from the literature on evidenced-based literacy practices (Buckingham et al., 2013; National Reading Panel (US) et al., 2000; Rayner et al., 2001; Rose, 2009; Rowe, 2005) our previous experiences of enabling and destabilizing contexts within literacy models. The questionnaire of five drivers was then reorganized into a rubric with four levels - emerging, developing, operationalizing, and optimizing. The benefits of constructing the tool as a rubric were two-fold: first, the continuum of the rubric documents stages of growth; and second, the rubric identifies goal-oriented action steps in pursuit of optimization. Field-testing included using the tool as an evaluative measure in a dialogic process with two members of a school leadership team at the beginning and end of an academic year. The experience during the year indicated that the tool did not capture obstacles and incoherent elements of the literacy model, due in large part to the omission of key stakeholders such as general education teachers, special education teachers, and network-level leadership.

After revisiting the tool in seeking to create high quality student teaching placements, the authors determined that extensive revisions were needed to reflect the present literature based on school change (te Riele et al., 2021) and implementation of evidence-based literacy practices to

ensure theory and evidence were well integrated. Using McNamara's (1996) approach to rubric development, the authors consulted available literature in a variety of fields including: implementation science (Fixsen et al., 2009); school change (te Riele et al., 2021); collaborative inquiry (Lotter et al., 2014; Panero & Talbert, 2013); evidenced-based reading practices (Castles et al., 2018); data-based decision making (Schildkamp, 2019); design-based implementation research (Penuel et al., 2011; Sandoval & Bell, 2004); and models for continuous improvement (Means & Harris, 2013). The authors concluded that the five existing domains needed expansion, with additional subdomains and ultimately, two additional drivers - 1) supervision and evaluation; and 2) coaching and professional development. Following these revisions, the tool is organized in seven drivers (and four sub drivers), supported by diverse literature and the authors' experience. See Table 1 for a summary of the function, goal and literature support for each of the DELF divers and sub-drivers.

Pilot of Final Tool

Following IRB approval, the authors sought to pilot the DELF tool as part of an initiative to simultaneously improve kindergarten through second-grade literacy skills but also address the urgent needs of in-service teachers as well as the preservice teachers who observe and often replicate their mentors' practices.

The context of the study was within a large Mid-Atlantic city. A midsize charter network was an ideal partner for this collaborative effort. After discussing the tool with the network administrative leaders and affirming a cooperative agreement, network leaders embraced the DELF tool as an organizing feature of the pilot collaboration.

Three schools were sought for the present pilot study. As part of the collaborative effort, the schools received grant-funded, IDA-Accredited, asynchronous/hybrid professional

development for all school site stakeholders who implement or affect literacy within grades kindergarten through second grade. Once school sites were identified, the researchers communicated guidance on the makeup of the school DELF site teams to the school principal and assistant principal of instruction (API) for kindergarten through second grade. The principal and API recruited K-second grade instructors at each school site.

Study Participants

A critical aspect of the school site DELF team is delineating diverse perspectives. Stakeholders were to include educators from classroom teachers up through the regional office in addition to ourselves, who served as external research and advisory team members.

The study's participants fell broadly into three groups, school-based literacy teams (one in each school), network literacy support team members, and outside researchers. This was a representative example of the school district faculty. Study participants needed to be over 18 years of age and working at the charter network. Participants ranged from three to more than twelve years of teaching experience, with the vast majority having more than seven years' experience. Details of participant demographic data can be viewed in Table 2. Each school site team selected participants in accordance with guidance we provided. This guidance included the following: the principal; assistant principal of instruction for grades kindergarten through second grade; at least two general ed teachers from kindergarten, first, or second grade; at least one special education representative; a leader of family and community connections; and a reading specialist if available.

The pilot participants included a total of 28 participants: 26 school stakeholders from three school sites and network level administrators, in addition to ourselves serving as participant

researchers. All participants received and returned a study overview and consent to participate. A summary of pilot participants is depicted in Table 2.

Table 2

Pilot Participants

Demographic Characteristic	**School Site 1**		**School Site 2**		**School Site 3**		**Network Leadership**		**Full Sample**	
	n	%	*n*	%	*n*	%	*n*	%	*n*	%
Gender										
Female	5	100%	5	83%	6	86%	4	80%	20	87%
Male	0	0%	1	17%	1	14%	1	20%	3	13%
Age										
25-29	1	20%	2	33%	5	71%	0	0%	8	35%
30-34	2	40%	3	50%	1	14%	1	20%	7	30%
35-39	1	20%	1	17%	0	0%	1	20%	3	13%
40-44	0	0%	0	0%	1	14%	1	20%	2	8%
45-49	0	0%	0	0%	0	0%	1	20%	0	0%
50-54	1	20%	0	0%	0	0%	1	20%	2	8%
Race										
African-American	3	60%	1	17%	4	57%	2	40%	10	43%
Asian	0	0%	0	0%	0	0%	0	0%	0	0%
Caucasian	2	40%	5	83%	3	43%	3	60%	13	57%
Latinx	0	0%	0	0%	0	0%	0	0%	0	0%
Native/Indigenous	0	0%	0	0%	0	0%	0	0%	0	0%
Two or more	0	0%	0	0%	0	0%	0	0%	0	0%
Other	0	0%	0	0%	0	0%	0	0%	0	0%
Years Taught										
3-4	0	0%	2	33%	3	42%	0	0%	5	21%
5-6	0	0%	1	17%	0	0%	0	0%	1	4%
7-8	1	20%	1	17%	2	28%	1	20%	5	21%
9-11	0	0%	1	17%	0	0%	0	0%	1	4%
12+	4	60%	1	17%	2	28%	4	80%	11	48%
Educational Level										
BS	1	20%	3	50%	0	0%	1	20%	5	22%
MS	4	60%	3	50%	7	100%	4	60%	18	88%
EdD/PhD	0	0%	0	0%	0	0%	0	0%	0	0%
Weekly Teach. Roster										
Yes	3	60%	4	67%	4	57%	0	0%	11	48%
No	2	40%	2	33%	3	43%	5	100%	12	52%

Data Collection

Following guidelines for design-based implementation research (Design-Based Research Collective, 2003) we collected multiple types of data: meeting and agenda notes; lesson observation notes and transcripts; and surveys. Data collected included: school site stakeholder meetings; school site leadership meetings; classroom teacher meetings; and network leadership meetings. The purpose of the meetings was to discuss problems of practice as the schools evolved their literacy model. The following will provide a brief description of each of the levels of meetings.

School Site Stakeholder Team

The authors met via Zoom with full stakeholder teams in site-specific school meetings at the end of the 2020-2021 school year to introduce the tool, the rationale, and the process and activities for the coming school year. This initial meeting served as a baseline for documenting the current literacy model. A second meeting was scheduled in October with each school site. Two of the schools were able to fulfill this meeting while the third was unable to meet due to logistical constraints. Two additional full school site stakeholder meetings were planned but ultimately not executed because of heightened logistical constraints, primarily due to COVID impacts from social distancing procedures, staff sickness, and school stakeholders' bandwidth.

School Site Leadership. We held time-protected weekly or biweekly meetings with the assistant principals at each of the three school sites. Agendas for these meetings were co-constructed and the assistant principals' topics were foregrounded. Conversations were anchored to DELF drivers, and we guided leadership in analyzing improvement actions by making connections to various DELF drivers. Initially, this aided our understanding of implicit structures we were not previously aware of and over time, enabled improvement actions, as we analyzed

supportive infrastructure, seizing opportunities to make it more robust. Members of the network early literacy leadership team often attended these meetings, but summaries were always distributed.

Classroom Teachers. As external research and advisory team members, we also made ourselves available to classroom teachers with the permission and often participation by school site assistant principals. These meetings were an opportunity for classroom teachers to identify "front line" obstacles that may have been overlooked without their critical input. Notes of these meetings were reported to school site leadership and network leadership.

Network Literacy Support Team. The primary network leadership stakeholders, the K-second network literacy support team (NLST), met weekly to discuss school site improvement actions and current problems of practice. During these meetings, network infrastructure was discussed and analyzed, and existing obstacles were identified. Over time, the NSLT enacted their own improvement efforts that resulted in network wide improvement actions beyond the three school sites participating in the study. A key role of the NLST is to provide both supervision and support to classroom teachers and assistant principals. The NLST engages in instructional coaching as well as other support. Actions aligned with the improvement initiative were also reported in these meetings and connections to the DELF were detailed.

Data Analysis

Data analysis was two-pronged. The first of these was analysis as a collaborative process during the pilot period by all stakeholders. The second, a more formal content analysis by the authors, together with the NLST, occurred at the conclusion of the pilot period. The NLST is uniquely positioned with the full range of stakeholders - the NLST is active in each of the schools with the API and teachers, as well as with principals and broader network leaders.

Collaborative Processes

In keeping with the design-based implementation framework, we examined processes and products throughout the school year, to understand the effect of design decisions and program components. The DELF served as the organizing framework for meeting agendas and notes. The DELF drivers were organized in a table format with the drivers on the left column. School stakeholders were able to co-construct agendas by adding problems of practice to the agenda and notes were collected in the third column. If actions were derived to address problems of practice, an individual was identified as the responsible party. The notes were cumulatively kept in a shared file with the most recent agenda and notes at the top of the document. This ensured that topics addressed in each meeting were connected and addressed in a process of continuous improvement.

Content Analysis

Qualitative content analysis was manually conducted using a deductive approach to address the usability and effectiveness of the DELF as a tool to guide and document inquiry and innovation during a literacy improvement initiative in a kindergarten through second grade setting (Creswell & Creswell, 2017). All meeting agendas and notes were analyzed together through a text analysis method to crystalize the relevant parts of the collected data. Seven *a priori* parent codes (Leadership and Culture, Assessment, Curricula, Instruction, Supervision, Professional Development and Coaching, and Community Engagement) with four additional child codes (related to school leadership and culture: literacy vision statement, staffing and scheduling, and multi-year literacy plan; related to assessment, assessment portfolio and data-based decision processes; related to instruction: differentiated core instruction and tiers two and three instruction) were applied to the meeting agendas and notes; surveys and observation notes.

Additionally, the data was analyzed to determine whether the tool was helpful in facilitating necessary changes to the school literacy model by increasing instructional coherence. We grouped and categorized improvement actions documented in meeting agendas and notes. A summative meeting with the director and assistant director of the early literacy team was held to discuss improvement actions throughout the 21-22 school year. The improvement actions, guided by the DELF, are depicted in Table 3. A review of the actions throughout the year made it evident that the DELF was facilitative of primary improvement actions (such as evolving from a guided reading framework utilizing leveled texts to one that included direct and explicit instruction of literacy subskills) as well as secondary improvement actions to bolster supportive infrastructure.

Findings

The DELF served its intended purpose as an organizing framework to guide and document inquiry and innovation as the three school teams worked to evolve into a more aligned SoR literacy model. The tool helped foreground movement across all drivers and encourage analysis of required infrastructure needed to support initiatives. We have organized the findings into three sections. The first two sections describe the results of the two research questions. In the third section, "lessons learned", we explain key findings that impacted tool implementation and use across settings.

Research Question One: Is the Delf Effective In Guiding And Documenting the Inquiry and Change Process to Embrace a Science of Reading Aligned Literacy Model?

The DELF drivers served as an organizing tool for agendas, notes, and action items for weekly meetings with API and ELT stakeholders. Using the tool frequently helped keep the scope of the required changes for an SoR model in the foreground while APIs and network

leadership including the NLST were simultaneously able to understand how current and persistent problems of practice were raising needed actions in a variety of DELF drivers. NLST members reported that “The strength of the DELF is stimulating deep discussion about our processes and has documented it as well” (notes from leadership meeting, June, 2020).

In using the DELF framework and process, school stakeholders became aware of elements of their literacy model that were incoherent, incomplete, fractured or competing. An example of this was school stakeholders identifying that directives to adhere to pacing guides which stipulated calendar weeks (Grade one pacing guide created in school year 2019-2020) for each unit of a given grade (Wilson, 2002) were in conflict with teaching to student proficiency. As a result of the pacing directives, teachers and assistant principals prioritized completing a unit within the prescribed time frame as opposed to prioritizing student proficiency. While verbal guidance encouraged teachers and school leadership to make adjustments as needed, teachers and school leadership complied with the more concrete instructions to follow prescribed instructional timeframes.

After network leadership understood that these competing priorities were an obstacle for teachers to teach in a diagnostic/prescriptive manner, the pacing guidelines were adjusted to state: “80% of students should demonstrate 80% mastery on the Unit Test before moving on to the subsequent unit” (2022-2023 K-2 Curriculum and Instructional Guidebook).

When engaging in inquiry about incoherent elements of the literacy model, data analysis procedures were not in place. Furthermore, teachers were not utilizing daily formative data to identify student difficulties with unit concepts prior to the end of the teaching time allotted for the given unit. In response to this realization, network leadership provided professional development in understanding the available data and how it could be used to inform instruction

(April 6th, 2022, in house professional development). Leadership from this meeting further scaffolded this process by developing a worksheet for teachers to identify student performance across various data streams, and guidance on making prescriptive decisions about what instructional priorities were evident from the data.

Surfacing competing agendas at the teacher level was a critical understanding for network leadership. Infrastructure (Supervision and Assessment Drivers) needs to support teachers being responsive to the level of student proficiency, recognizing that gaps in early skills will undermine any future progress.

Another result of DELF guided stakeholders, was a change in the coaching structure provided by the network literacy team (Coaching and Professional Development Driver). Previously, the network literacy team's coaching structure included widespread support to the network's 14 elementary sites but with very limited depth. Alternatively, the coaching structure was adapted to provide narrow support for a few sites with ample time for guidance and support at every stage of change (meeting notes, November 2021). The result was substantial support in fewer sites per year – thus enabling enhanced coaching in guiding teachers and school leaders through a problem solving and decision-making process.

With a strong culture of collaborative inquiry, school stakeholders made progress in each of the seven DELF drivers. While still operating primarily within the rubric category of "Emerging", stakeholders see progress as well as clear next steps in moving to "Developing". As a result, an itemized list of initiative actions and deliverables organized by DELF drivers was available to the stakeholders (Table 3).

Research Question 2: Does the Delf Facilitate School Stakeholders to Guide Necessary Changes to the Literacy Model to Increase Instructional Coherence?

As a result of the inquiry - that highlighted what infrastructure was needed to support each initiative action - the schools now think critically and holistically about changes needed to address present problems of practice, as well as future changes. Charter leadership initially believed that increasing teacher literacy content knowledge would result in improved teacher instructional skill. Throughout the pilot year of the study, however, leadership came to realize that "content knowledge does not easily translate into instructional skill" (meeting notes, June, 2022).

With the DELF process in place, all school stakeholders engaged in inquiry, analyzing existing literacy structures and identifying obstacles to the overall goal - identifying student strengths and areas for growth that would result in aligned instructional practices. The iterative analysis and adjustment of initiative actions ensured that the school stakeholders would consider the additional gaps in their literacy model beyond a simple initiative action that concerned a single driver. One NLST member noted, "the strength of the DELF is the stimulation of deep discussion and documenting where that conversation takes us"(meeting notes, June 2022). While the pilot was concerned with two of the network sites, the strong centralized nature of the network enabled learners from the pilot sites to migrate to other schools as well as to inform centralized guidance concerning literacy. One leader commented that "This partnership informs everything that we are doing" (meeting notes, June 2022). An example of this was the adoption of a new assessment of record, from Fountas & Pinnell's Benchmark Assessment System (Fountas & Pinnell, 2011), to the NWEA MAP Reading Fluency (Northwest Evaluation Association, 2019) which includes assessments of foundational literacy skills including listening comprehension, picture vocabulary, phonemic awareness, phonics, sentence reading fluency and literal comprehension as well as measures of oral reading fluency of passages. This was a

monumental shift but as inquiry discussions occurred throughout the year, it became increasingly apparent to school site leadership that the presence of the MAP Reading Fluency alone would not be enough. As a result of the DELF guided inquiry, leadership recognized that a substantial cultural shift in *how* the schools analyzed and *used* the data to drive instruction needed to be a critical focus for the following school year (meeting notes, June 2022, April; June 2022). Leadership recognized that while the adoption of MAP Reading Fluency, in addition to diagnostic measures of phonemic awareness for students who were flagged, was a big leap forward, schools still needed to learn how to use the data. In fact, leadership sees that understanding and application of this knowledge needs to increase at every level - from the top leadership down to individual classroom teachers, requiring collaboration across vertical organizational structures (meeting notes, June 2022).

An additional example of the incoherence across various DELF drivers was highlighted by another NLST who identified that while training had occurred in newly adopted curricula tools, leaders may not have attended this training. As a result, during observations, leaders were not able to identify elements of instruction that are critical to systematic and explicit instruction. The school needed coherence between the drivers, Supervision, Instruction and Coaching and PD. Leaders were prioritizing other key performance indicators such as student engagement and voice. As a result, teachers who showcased an individual student performing a segmenting and blending task may have scored higher than a teacher who had ensured the cognitive load for the task was held by every student in the room. Systematic and explicit instruction requires adaptive expertise of assessing and enacting instruction that is logically broken into manageable units and providing cognitive support or scaffolds, ideally within a fading framework, to bridge the student to success (Archer & Hughes, 2010). Leaders tasked with supervision and observation of literacy

must also be aware of key instructional actions that align with newly instituted instructional programs.

Key Lessons Learned

Diverse Stakeholder Participation is Key to Success

The leadership team members attributed a substantial portion of the success of the pilot to the collective impact participation of each stakeholder. The collaborative team leading the initiative for this pilot included external research and advisory members: a university faculty member; a representative from a community organization with close ties to funding agencies; and a teacher educator from a third-party professional development program. The network leadership included knowledgeable, motivated, and dedicated education professionals who valued the improvement initiative. Furthermore, school site leadership and classroom teachers were motivated and welcoming to improve the literacy outcomes for their students.

Stakeholder Voice, at all Levels, Must be Supported. We hypothesized at the outset of the pilot that DELF discussions would assist in breaking down barriers between vertical stakeholder teams. However, when site-based stakeholder teams met, those at the teacher level, who have critical perspectives to share on feasibility and requisite process-oriented aspects, often remained silent or deferred to network administration, principals, and assistant principals. In the spirit of DBIR, our methodology pivoted, and anonymous surveys were solicited from stakeholders at the teaching level. Another element that inhibited the collaborative inquiry discussions at the stakeholder meetings was leadership reluctance to appear unknowledgeable about existing processes or procedures or about fundamentals of evidence-based reading. As a result, leaders often leaned on facilitators to heavily structure conversations.

Stakeholder Teams are Unique for Each School System. The structure of the charter network in this pilot necessitated substantial DELF discussions that addressed the infrastructure at all levels: network; school site; divisional; grade band; and at the classroom and individual student level. Despite ample conversations prior to beginning the pilot, we became aware of the considerable influence of the charter network structure on individual school decisions. The strong centralization of many elements of the K-2 literacy model necessitated that a DELF process simultaneously occur at the Network level. Given the flexibility of DBIR to respond in real-time, we were able to utilize the DELF during weekly Network meetings as well as the individual school site meetings. Depending on the structure of the system, multiple levels of DELF teams engaging in inquiry at various levels may be needed.

Success of the DELF Depends on Collaborative Inquiry and Problem-solving. While the DELF is conceptualized as the structural framework for guiding a variety of improvement initiatives, collaborative inquiry is the process by which initiative actions are identified, planned for, enacted, and reflected upon. At the initial meetings with school sites, school leaders were hoping for a prescriptive list of changes rather than identifying and determining the needed changes for themselves. Stakeholders must be willing and able to participate in frequent meetings about day-to-day operations as well as innovative actions that can be taken to make the day-to-day operations better align with evidenced-based principles.

Stakeholders may Fall Victim to Simple Scoring. At the outset, the charter network viewed the DELF as a formative data tool that would capture a school's progress in a simple score - either a sum score across all drivers and sub-drivers or a score for an individual driver. The organization of the DELF in a rubric is meant to convey progress toward an optimal SoR

model. The rubric stimulates questions and discussion and enables stakeholders to make changes – changes that can best be captured in qualitative descriptions.

More explanation and clarification on the rubric progression needs to take place at the outset of the tools' use. Additionally, the DELF needs to be better described as an organizing framework for improvement changes as opposed to simplifying it as a simple formative assessment of improvement actions.

Environmental Contexts Need to be Considered

While all the stakeholders wanted to make progress, together we needed to respect the environmental contexts. The pilot year of this tool occurred while COVID procedures including intermittent disruption of in-person instruction continued to be in place. All stakeholders endured exhaustion from the ongoing stress of COVID as well as everyday life. Additionally, it was evident that the assistant principals, who provided a gradual release model of facilitating collaborative inquiry and problem solving with their school teams, did not have the bandwidth to continue to take this lead. When external support from the early literacy team and/or the research and advisory team waned, assistant principals often slowed their pace or felt incapable of further support of their school teams. (Meeting notes reflecting canceled meetings with assistant principals in February, March and April 2022). Those charged with leading the improvement initiative must recognize and accommodate changes dictated by the school context.

Discussion

Our study found that the DELF served as an effective tool to organize and document a school improvement initiative focused on increased SoR alignment across the K-2 grade bands in three school sites. The DELF prompted stakeholders, at the school and network level, to identify necessary infrastructure for improvement actions as well as identified areas for additional self-

study. Furthermore, the tool elucidated contradictions in existing infrastructure. When infrastructure identified across the seven drivers is logically connected, the connective tissue between the drivers becomes mutually facilitative (Cohen & Mehta, 2017). One leader commented that the DELF process instigated a "Cultural Shift" (Meeting Notes, May 2022) for leadership to see that actions in one DELF driver may have downstream effects on another.

Any given school is a complex organization with various departments, responsibilities, initiatives that may support, compete or deride any improvement efforts. The use of evidenced based research in education "is not simply the product of bureaucratic rationality or individual leaders' action but rather it is embedded in a dynamically changing ecology of action actors and organizational units and connections among them." (Penuel & Coburn, 2014, p. 9). One "outcome" of the standards movement that has received less attention from researchers is its contribution to educational system building - that is, an effort to shift toward instructional focused school systems that engage centrally with guiding and supporting the educational work of schools by defining instruction and delegating responsibility to various system actors for organizing and coordinating instruction (Cohen et al., 2018). School stakeholders must learn how to adaptively integrate new materials, processes, and/or roles brought forward by a reform into organizational dynamics that operate day-today in schools" (Yeager et al., 2013, p. 5).

By using the DELF as a structure to organize improvement meetings with all stakeholders, the necessary action steps are foregrounded. The "interconnectedness" (meeting notes, May 2022) of the drivers also became apparent as stakeholders discussed and deliberated what actions needed to occur for the specific improvement initiative to be successfully implemented. Furthermore, the DELF as an organizing tool, facilitated in making the required infrastructure transparent at the various levels of the school. Coburn (2001)posits that when

infrastructure is transparent, it enables educators to fully understand the underlying principle of each driver and contributes to deeper levels of change. By using the DELF as a documentation tool, initiative actions were identified and assigned and repetition, contradiction and competition between various concepts, tools and routines was minimized. As opposed to implementing a piecemeal improvement initiative such as a new curricular resource, the system and all stakeholders increased their capacity for a robust SoR model.

Limitations

While the DELF clearly achieved the intended outcomes, the tool does have some limitations. An obvious limitation was the use of the tool with a charter network that was not only motivated to adapt their literacy model, but also received grant funded professional development to increase the content knowledge of the Science of Reading and evidenced based instructional practices for teachers and leaders. Many schools may not have an articulated commitment to adopting instructional practices aligned with principles of the Science of Reading. Further, if motivation and commitment are present, access to effective and aligned professional development may not be within reach. Having both leadership and teacher content knowledge for the science of reading is a critical prerequisite to any change initiative. If school leadership does not engage in developing expertise in the knowledge and skills they wish teachers to enact, improvement efforts will not be sustainable.

An additional critical limitation is that the reform initiative has leadership with both experience and expertise in SoR instructional practices as well as systems that support effective literacy instruction. A key learning for the leadership team of this initiative was that content knowledge does not equal instructional skill. Since all stakeholders *'don't know what they don't*

know', it's impossible for agents of reform to innovate new instructional practices and procedures that will support evidenced based practices.

Furthermore, if the team member responsible for facilitating the inquiry and innovation actions for the team(s) does not possess knowledge and experience in instructional practices aligned with the Science of Reading, the efforts will be shallow and not yield impacts to continuously work at improving the literacy model.

Another limitation of the pilot was that this was only a one-year pilot. Ideally, this tool would be used over the course of years in a systemic literacy change process. In fact, the pilot schools and network are enthusiastically continuing to utilize the DELF, with the research team's support, in the next school year.

Next Steps

While we are encouraged by the effectiveness of the DELF, we will continue to strengthen the implementation in the coming year in these three schools. First, addressing the "Lessons Learned", we will continue with a diverse Stakeholder team focusing on: supporting voices at all levels; strengthening collaborative inquiry and problem solving; and further supporting the rubric as a progression (and not a scoring tool). Second, we will address each of the specific next steps outlined in Table 3. A yearly or ongoing summary of "Accomplishments and Next Steps" advances specific aspects of each of the drivers.

Beyond a second year of the pilot, we plan to expand the DELF to the other schools within this very open and embracing network. Eventually, we plan to introduce the DELF, and the process of collaborative inquiry, to public schools that, while open, may be inclined to a prescriptive list of change actions rather than a process. Finally, our commitment to collaborative inquiry of course encompasses our own work in further developing the DELF. We

look forward to engaging in continuous problem solving, learning from diverse environments, and co-constructing innovations with partner schools.

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Table 1

DELF Drivers - Function, Goal and Literature Support

Drivers & Sub-drivers	Function	Goal	Literature Support
Leadership			
Vision statement	With Stakeholder team, create SoR aligned literacy vision statement	Faculty use data and feedback to continually adjust policies, and maintain alignment with vision	(Coyne et al., 2008; Hall, 2018; Hallinger & Heck, n.d.; Newmann et al., 2001)
Multi-year plan	Stakeholders establish goals and improvement initiatives, guided by data and aligned to MTSS-R and SoR-aligned reading instruction	Literacy improvement plan challenges existing structures based on data, maintaining systematic structures for continuous improvement	
Staffing & Scheduling	Stakeholders understand staffing structure that supports differentiated instruction	Stakeholders regularly evaluate staffing and anticipate need for changes	
Assessment			
Portfolio of Instruments	Audit and map assessments and conduct a needs analysis	Portfolio of literacy assessment instruments address all screening purposes and ensure instruments are aligned with research recommendations	(Bohanon et al., 2016; Hoover & Tunmer, 2020; Kovaleski, & Marco, 2005; Kovaleski & Pefersen, 2008; Ricketts & Murphy, 2019; Scarborough, 2001)
Data Based Review Processes	Grade level data review teams meet regularly, are knowledgeable in SoR, and access and document group and student-level screening, progress monitoring and summative data	Meetings use a script, data collection and cycles are determined for all students; decisions are based on data with clear, established decision rules	(Bohanon et al., 2016; Kovaleski, & Marco, 2005; Kovaleski & Pefersen, 2008)

Curricula	Audit and identify curricula used at each tier of MTSS-R, and map to Scarborough's Reading Rope	Continuous improvement review for alignment to universal, targeted and intensive instructional needs	(Hoover & Tunmer, 2020; National Reading Panel (US) et al., 2000; Scarborough, 2001)
Instruction			
Differentiated Core	Differentiated Instruction is clearly determined and documented	Regularly evaluate instructional practices at all three tiers for adherence to the research, and fidelity of implementation	(Ikeda et al., 2007; Jankowski, 2003)
Tier 2/Tier 3 Instruction	Clear targets to evaluate a teacher's ability to implement evidenced-based instructional practices and to provide structured feedback for improving instructional practices	Instruction guided by RESET rubric	(Johnson et al., 2019; Oakes et al., 2014)
Supervision & Evaluation	Practices are used to measure fidelity of instruction and curricula tools	Measuring fidelity of instruction and curriculum is standard, ongoing practice	(Dane & Schneider, 1998; Hill et al., 2012)
Coaching and Professional Development	School collects information on faculty experience and preparation in SoR and culturally and linguistically relevant instruction, and in working with struggling readers and uses information to inform coaching and professional development structures	Leadership continuously makes more targeted staffing decisions and provides Professional Development that meets the specific needs of its teachers.	(Cantrell & Hughes, 2008; Carlisle & Berebitsky, 2011; Lotter et al., 2014; Sun et al., 2013; Washburn & Mulcahy, 2014)
Family & Community Engagement	Parents introduced to early literacy skills and components of RTI/MTSS frameworks	Parents introduced to early literacy skills and components of RTI/MTSS frameworks	(Epstein et al., 2011; Jeynes, 2005)

Table 3

DELF Drivers – Accomplishments and Next Steps

Drivers & Sub-drivers	Pilot Year Improvement Actions/Accomplishments	Next Steps
Leadership		
Vision statement	SoR understanding in place; K-2 Network Vision Statement formalized	Communicate K-2 Vision Statement with all stakeholders; include in intention setting for meetings/professional development; planning meetings etc.
Multi-year plan	SoR aligned instruction is a priority for K-2	Literacy improvement plan challenges existing structures based on data, maintaining systematic structures for continuous improvement
	Improvement needs identified for phonemic awareness	
	Basic elements of RTII framework have been instituted in three site schools	Data analysis/management plan needs to be articulated for Core and tier 2 and decision-making protocols need to be derived for evaluation for specialized services
	Pilot program for instructional decision-making process occurred in 2 school sites	Articulate a plan for *at least* kindergarten students for close progress monitoring; generate targets for reduction of flagged students for SY 22-23
		Consider plans to support the collection, documentation and analysis of data from a resource perspective
Staffing & Scheduling	Options for staffing models for *Fundations*® identified	Identify further staffing needs especially for tiers 2 and 3 Consider a "walk to intervention model" (Hall, 2018; p. 1038)
		Evaluate whole group Fundations® with MRF and Fundations® progress monitoring probes
Assessment		

Portfolio of Instruments	Instructional supports for K-2 understand and have mapped centralized located assessment instruments and understand four assessment purposes Adopted phonemic awareness diagnostics Mandated usage of phonemic awareness diagnostics and progress monitoring for phonics Universal screener instituted across network Assessment protocol initially mapped for phonemic awareness	Expand assessment protocol mapping and operationalize into flow chart guided by questions Identify needs once assessment map is completed; evaluate additional capacity for MRF progress monitoring Develop a three year plan to address needs Focus on progress monitoring for tiers two and three
Data Based Review Processes	Review teams established at 2 site schools Triangulation and access to begin Distributed responsibility for data management/analysis beyond assistant principal Small increases to teacher data literacy and assessment literacy	Continue to increase teacher data literacy Pilot data teams at site one and site two with additional progress monitoring data; determine participants of data teams; allocate and protect time for team meetings following each data cycle; formalize how data will be presented/accessed and what assistant principals, teachers and leadership will need to be successful
Curricula	Identification of broader use of phonemic awareness curricula for core and intervention Fundations® instructional weaknesses broadly identified	Conduct curricula mapping and needs analysis across all strands of the reading rope (Scarborough, 2001)
Instruction Differentiated Core	Differentiated Instruction in place in literacy centers	Develop plans for increased fidelity for Fundations® instruction

Tier 2/Tier 3 Instruction	Small group intervention groupings piloted across all three sites	Adoption of content evaluation via Reset Rubrics (Johnson et al., 2020) by instructional coaches and school site leadership
	Instructional routines for discrete literacy skills developed and implemented	Summary data analysis on phonemic awareness skill development; codify decision rules; develop actions for low/non-responders
	Decision rules for intervention status for PA weaknesses articulated and formalized	
Supervision & Evaluation	Identified disconnect between pacing guides and proficiency aligned instruction and supervision/evaluation for content instruction	Examine additional supervision and evaluation policies and procedures that weaken coherent infrastructure
		Develop knowledge and capacity for all leadership to identify aspects of exemplary systematic/explicit phonics instruction and incorporate into key performance indicators
Coaching and Professional Development	Informal assessment of faculty knowledge	Leadership continuously makes more targeted staffing decisions
	Extensive SoR professional development provided to faculty	and provides Professional Development that meets the specific needs of its teachers.
	Knowledge measures are available	Discuss addressing onboarding of new faculty and key roles (instructional leadership and assistant principal for instruction) as much as possible in the current hiring marketing
	Identified slower pacing needs of teachers	
	Extended access for professional development platform	Seek recruitment from IDA (International Dyslexia Association, 2018) accredited schools
	Evolved coaching structure to provide deep, targeted centralized coaching support	

	Awareness that instructional knowledge has increased but this does not translate to instructional skill	
Family & Community Engagement	Early Reading Skills (ERS) workshop has been introduced	Extended ERS workshop outreach Develop and formalize plan to communicate to parents RTII framework and policies and procedures for communicating progress in intervention instruction

References

Bohanon, H., Gilman, C., Parker, B., Amell, C., & Sortino, G. (2016). Using school improvement and implementation science to integrate multi-tiered systems of support in secondary schools. *Australasian Journal of Special Education, 40*(2), 99–116.

Byrk, A. S., Gomez, L. M., Grunow, A., & Le Mahieu, P. G. (2015). *Byrk, Anthony S., Louis M. Gomez, Alicia Grunow, and Paul G. Le Mahieu, Learning to Improve: How America's Schools Can Get Better at Getting Better. Cambridge, MA: Harvard Education Press, 2015.*

Cantrell, S. C., & Hughes, H. K. (2008). Teacher efficacy and content literacy implementation: An exploration of the effects of extended professional development with coaching. *Journal of Literacy Research*, *40*(1), 95–127.

Carlisle, J. F., & Berebitsky, D. (2011). Literacy coaching as a component of professional development. *Reading and Writing*, *24*(7), 773–800.

Coburn, C. E. (2001). Collective sensemaking about reading: How teachers mediate reading policy in their professional communities. *Educational Evaluation and Policy Analysis, 23*(2), 145–170.

Cohen, D. K., & Mehta, J. D. (2017). Why reform sometimes succeeds: Understanding the conditions that produce reforms that last. *American Educational Research Journal*, *54*(4), 644–690.

Coyne, M. D., Simonsen, B., & Faggella-Luby, M. (2008). Cooperating initiatives: Supporting behavioral and academic improvement through a systems approach. *Teaching Exceptional Children*, *40*(6), 54–59.

Dane, A. V., & Schneider, B. H. (1998). Program integrity in primary and early secondary prevention: Are implementation effects out of control? *Clinical Psychology Review*, *18*(1), 23–45.

Domingue, B. W., Hough, H. J., Lang, D., & Yeatman, J. (2021). Changing Patterns of Growth in Oral Reading Fluency during the COVID-19 Pandemic. Working Paper. *Policy Analysis for California Education, PACE*.

Epstein, J. L., Galindo, C. L., & Sheldon, S. B. (2011). Levels of leadership: Effects of district and school leaders on the quality of school programs of family and community involvement. *Educational Administration Quarterly*, *47*(3), 462–495.

Hall, S. L. (Susan L. (2018). *10 success factors for literacy intervention: Getting results with MTSS in elementary schools*. ASCD.

Hallinger, P., & Heck, R. H. (n.d.). *Exploring the journey of school improvement: Classifying and analyzing patterns of change in school*. 28.

Hill, D. R., King, S., Lemons, C., & Partanen, J. (2012). Fidelity of Implementation and Instructional Alignment in Response to Intervention Research. *Learning Disabilities Research and Practice*, *27*, 116–124. https://doi.org/10.1111/J.1540-5826.2012.00357.X

Hoover, W. A., & Gough, P. B. (1990). The simple view of reading. *Reading and Writing*, *2*(2), 127–160.

Hoover, W. A., & Tunmer, W. E. (2020). *The cognitive foundations of reading and its acquisition*. Springer.

Ikeda, M. J., Rahn-Blakeslee, A., Niebling, B. C., Gustafson, J. K., Allison, R., & Stumme, J. (2007). The Heartland Area Education Agency 11 problem-solving approach: An overview and lessons learned. *Handbook of Response to Intervention*, 255–268.

International Dyslexia Association. (2018, March). *Knowledge and Practice Standards for Teachers of Reading.* https://dyslexiaida.org/knowledge-and-practices/

Jankowski, E. A. (2003). Heartland area education agency's problem solving model: An outcomes-driven special education paradigm. *Rural Special Education Quarterly*, *22*(4), 29–36.

Jeynes, W. H. (2005). A meta-analysis of the relation of parental involvement to urban elementary school student academic achievement. *Urban Education*, *40*(3), 237–269.

Johnson, E. S., Crawford, A., Moylan, L. A., & Zheng, Y. (2020). Validity of a special education teacher observation system. *Educational Assessment*, *25*(1), 31–46.

Johnson, E. S., Zheng, Y., Crawford, A. R., & Moylan, L. A. (2019). Developing an explicit instruction special education teacher observation rubric. *The Journal of Special Education*, *53*(1), 28–40.

Kovaleski, J. F., & Marco, C. M. (2005). *Screening Information Recording Form (SIRF). Unpublished manuscript.*

Kovaleski, J. F., & Pefersen, J. (2008). Best practices in data analysis teaming. In A. Thomas & J. Grimes (Eds.), *Best practices in school psychology* (pp. 115–130).

Lotter, C., Yow, J. A., & Peters, T. T. (2014). Building a community of practice around inquiry instruction through a professional development program. *International Journal of Science and Mathematics Education*, *12*(1), 1–23.

McDonald, S.-K., Keesler, V. A., Kauffman, N. J., & Schneider, B. (2006). Scaling-up exemplary interventions. *Educational Researcher*, *35*(3), 15–24.

National Reading Panel (US), National Institute of Child Health, & Human Development (US). (2000). *Teaching children to read: An evidence-based assessment of the scientific*

research literature on reading and its implications for reading instruction: Reports of the subgroups. National Institute of Child Health and Human Development, National ….

Newmann, F. M., Smith, B., Allensworth, E., & Bryk, A. S. (2001). Instructional program coherence: What it is and why it should guide school improvement policy. *Educational Evaluation and Policy Analysis*, *23*(4), 297–321.

Northwest Evaluation Association. (2019). *MAP Reading Fluency Technical Report*.

Oakes, W. P., Lane, K. L., & Germer, K. A. (2014). Developing the capacity to implement tier 2 and tier 3 supports: How do we support our faculty and staff in preparing for sustainability? *Preventing School Failure: Alternative Education for Children and Youth*, *58*(3), 183–190.

Ricketts, J., & Murphy, J. (2019). Assessing Literacy Skills—Purposes, practicalities and pitfalls. In *The researchED guide to literacy: An evidenced-informed guide for teachers* (p. 47).

Scarborough, H. S. (2001). Connecting early language and literacy to later reading (dis)abilities: Evidence, theory, and practice. In S. Neuman & D. Dickinson (Eds.), Handbook for research in early literacy (pp. 97–110). New York, NY: Guilford Press. In S. B. Neuman & D. Dickinson (Eds.), *Handbook for research in early literacy* (pp. 97–110).

Sun, M., Penuel, W. R., Frank, K. A., Gallagher, H. A., & Youngs, P. (2013). Shaping professional development to promote the diffusion of instructional expertise among teachers. *Educational Evaluation and Policy Analysis*, *35*(3), 344–369.

Washburn, E. K., & Mulcahy, C. A. (2014). Expanding Preservice Teachers' Knowledge of the English Language: Recommendations for Teacher Educators. *Reading & Writing Quarterly*, *30*(4), 328–347. https://doi.org/10.1080/10573569.2013.819180

Woulfin, S., & Gabriel, R. E. (2020). Interconnected Infrastructure for Improving Reading Instruction. *Reading Research Quarterly*, *55*(S1), S109–S117. https://doi.org/10.1002/rrq.339

Yeager, D., Bryk, A., Muhich, J., Hausman, H., & Morales, L. (2013). Practical measurement. *Palo Alto, CA: Carnegie Foundation for the Advancement of Teaching*, *78712*.