

The Strategic Literacy Initiative, WestEd

LITERACY APPRENTICESHIP:

READING, WRITING AND LEARNING IN THE DISCIPLINES

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I. ADDRESSES ABSOLUTE PRIORITY 2 AND COMPETITIVE PRIORITIES 2 AND 3

The Strategic Literacy Initiative (SLI) at WestEd is submitting this proposal for a SEED grant addressing Absolute Priority 2 and Competitive Priorities 2 and 3. The overarching project goal is to improve secondary students' academic reading and writing skills by increasing the number of highly effective subject area teachers. To meet this goal, SLI will provide an enhanced model Reading Apprenticeship professional development (RAPD) and school-based support for approximately 1,000 science, history, and English teachers in approximately 180 secondary schools across four states. Writing has always been an essential component of RAPD, and RA student performance on state ELA assessments have shown improvement; this grant will provide the opportunity to deepen the writing components in science and history and examine RA impact student performance on essay writing. SLI will also develop an online course of learning that will be integrated into the RAPD model to provide more cost-effective and timely Reading Apprenticeship (RA) implementation support. Additionally, SLI will prepare regional affiliates, administrators, and teacher leaders at these 180 sites to sustain and spread literacy instruction across their school communities, reaching an estimated 2,000 additional teachers during the grant period.

SLI's Reading Apprenticeship model of professional development and instruction has been widely implemented across the country, and a strong body of evidence supports its effectiveness in improving teachers' literacy instruction and students' literacy and academic outcomes in secondary grades (see Appendix E). Two recent Investing in Innovation awards from U.S. Department of Education's Office of Innovation and Improvement (OII) -- the 2010 Reading Apprenticeship Improving Secondary Education (RAISE) validation grant and the 2012 Internet-Based Reading Apprenticeship in Science Education (iRAISE) development grant --

have enabled SLI to both refine and scale up its in-person and online professional development, as well as for the organization to establish strong regional affiliates in several states, giving SLI both the national capacity and distributed leadership to implement the project described in this proposal.

SLI has developed a national and international reputation based on two decades of experience helping teachers support students to dig into complex texts and make sense of them. Because we have worked concertedly and successfully on engaging students with close reading and writing with subject area texts of all kinds, we believe the RA instructional model and associated PD has a special contribution to make to the improvement of student writing. Students who read well and deeply have more to write about because they have gained knowledge and insight from texts and are thus able to respond substantively to them. Furthermore, they can draw on the language and structures of texts they have read deeply and come to understand. Texts read closely thus become mentor texts for students' own writing as they acquire vocabulary, complex sentence structures, logical connectives, and discourse structures to support their own writing of comparisons, descriptions, explanations, evaluations, and arguments.

Further, the pedagogical routines central to the RA instructional framework work equally well for engaging students in both reading and writing. Teachers can leverage the same pedagogical routines to tackle both foundational literacy skills—reading and writing—that are vital to the attainment of the high level literacies envisioned in the Common Core State Standards (CCSS) and adopted by the four states we will work with for this project. The proposed project has the potential of making the reading/writing/learning connection transparent for subject area teachers across the curriculum.

An external evaluation of the project will measure the impact of the professional

development on students' academic reading and writing skills and dispositions using relevant state standardized literacy tests, an ETS-developed computer-administered reading and writing test, and a survey of metacognitive literacy knowledge and dispositions toward literacy and learning. The evaluation will focus also on the growth and effectiveness of teachers served by the project using surveys of teaching practices administered at multiple points over the grant period. In addition, the project will document and track its impact on teacher quality by using local, fair, and transparent measures of teacher evaluation, such as the Danielson evaluation system in place in participating states (see crosswalk of RA and Danielson in Appendix I.1).

Competitive Preference Priority 2: Improving Efficiency (Cost-Effectiveness)

To provide a bridge between face-to-face professional development sessions, increase teacher access to professional development, and decrease associated costs, this project will employ web-based technology providing 1,000 secondary science, history/social studies and English teachers 24/7 access to a professional development program proven to have a significant positive impact on teacher practice and student engagement and achievement. In so doing, the project builds on its already successful RA modules of online PD for instructors and administrators that create discursive, interactive, and blended learning opportunities for participants. Online learning is punctuated by “making it real” assignments in which teachers and administrators practice core elements of instruction and site support, meet in person and online with other teachers and administrators doing the same, and discuss and reflect on the results of their work. Appendix I.2 shows examples from SLI's existing on-line learning environments for teachers and administrators. By adapting proven professional development to a web-based delivery mode, this project will provide substantial cost savings compared to the face-to-face delivery of the same

program of teacher learning, through savings on travel, consultant pay, event costs, and more. The online course materials developed through this project will be available for wider use in the literacy professional development of subject area teachers during the project and beyond. In addition, by leveraging existing state partnerships with local leaders established through our current i3 grants, SLI will be able to provide ongoing, and particularly deep program support for participating schools through direct work with key educators already in place at each site— RA teacher leaders, administrators and RA school teams. The proposed project thus plants seeds for sustained implementation, on-site learning communities, and expansion by building the capacity of local affiliates and schools.

Competitive Preference Priority 3: Promoting Science, Technology, Engineering, and Mathematics (STEM) Education

This project will provide approximately 300 middle school and high school science teachers with a proven professional development program, impacting ~18,000 science students, with an emphasis on schools serving large numbers of high-needs students. In randomized, controlled studies funded by NSF and IES and conducted by external evaluation teams, RA has demonstrated its impact on science teachers' literacy instruction, students' opportunities to learn, and students' achievement of academic literacy in science classrooms (Greenleaf, et al., 2009; Greenleaf, et al., 2011b). These studies focused on achievement in reading and science content learning. To address the CCSS and NGSS, and building from SLI's already developed professional development and student curricula focused on writing to learn, making reading-writing connections, and learning to write effectively, the proposed project will strengthen professional development focused on support for writing explanations and arguments from textual evidence in science (Moje, et al, 2004; Osborne, 2010; Berland & McNeill, 2010).

Highlighting and providing more focus on learning to write explanations in science parallels recent understandings in the field regarding the role of argumentation in science learning (McNeill & Krajcik, 2008; Osborne, Erduran, & Simon, 2004). Reading and the negotiation of text meaning and conceptual understandings is a necessary precursor to writing well about science, or any other subject. Science teachers will learn how to engage students in reading to understand and learn science through metacognitive and discourse routines in which students negotiate meaning, essentially “arguing to learn” (Berland & McNeill, 2010). To build students’ writing skills, science teachers will learn how to engage students in learning to write science explanations through parallel pedagogical routines, helping students to “learn to argue” effectively in science writing. (Appendix I.3 includes writing lessons from SLI’s Reading Apprenticeship Academic Literacy curriculum.)

II. SIGNIFICANCE

A. The Significance of the Proposed Project on a National Level

The Need to Improve Students’ Academic Literacy Proficiencies

The CCSS scheduled for adoption by 45 states call for students to demonstrate advanced literacy proficiency not only in English classes but also in academic subjects such as science and history (NCCSSO & NGA, 2010). State consortia are developing new assessments that will measure students’ progress toward these advanced learning goals (AEE, 2010). In our partner states of Pennsylvania, Michigan, Indiana, and California, these standards are in the process of adoption and are increasingly driving the development of state-level policy on curriculum and teacher effectiveness. The Next Generation Science Standards (NGSS, 2013) represent a similar press for high-level literacy proficiency through their focus on scientific practices such as asking questions, analyzing and interpreting data, constructing explanations, and engaging in argument

from evidence. These documents make clear that *all* students must be prepared to meet these more rigorous academic standards necessary to succeed in college and career, including students with high needs such as English learners, low-income students, minority populations that experience persistent achievement gaps, students in rural settings, and students at risk of not graduating from high school. However, to meet this goal, the U.S. educational system must overcome the academic literacy crisis plaguing our nation's secondary schools (ACT, 2007; Berman & Biancarosa, 2005; College Board, 2012; NCES, 2012).

Nationally, two-thirds of high school students are unable to read and comprehend complex academic materials, think critically about texts, synthesize information from multiple sources, or communicate clearly what they have learned (NAEP, 2006; 2007; 2009; Snipes & Horwitz, 2008). According to national assessments, only 3% of U.S. 8th and 12th graders read at an advanced level, while fully two-thirds of our adolescents score below proficient in reading (NAEP, 2006; 2007; 2009). By some estimates, half of the incoming 9th graders in a typical high-poverty urban high school read at a 6th or 7th grade level (Balfanz, McPartland, & Shaw, 2002). Many high-needs students have been demoralized by years of academic failure and do not see themselves as readers or capable learners (Dweck, 2002). Similarly, recent tests indicate that only 27% of 8th and 12th grade students achieve proficiency in writing, with fully 20% unable to perform at even the minimum standard for their grade level (NCES, 2011). In these measures of literacy, achievement gaps are stubbornly persistent along racial/ethnic and socioeconomic lines (Jencks & Phillips, 1998; NAEP, 2007).

Without a substantial change in their academic literacy, U.S. middle and high school students face continued academic problems in high school and college because they are unable to handle the quantity and complexity of assigned reading and writing (ACT, 2005; 2006; College

Board, 2012; NCES, 2012). They are likely to struggle in the workforce as well; even for entry-level jobs, the ability to read, write, and think critically is increasingly a minimum requirement (ADP, 2004; Business Roundtable, 2009; NCEE, 2006). Literacy mediates students' access to the full range of subject matter, and low levels of adolescent literacy have contributed to the broader academic performance crisis among U.S. high school students in English, math, science, and history (Barton, 2003).

Further, as students move up the grade levels, they encounter increasingly complex forms of texts, and the writing and reading skills required to succeed in academic subjects increase significantly (Snow, 2002). In English language arts, students encounter increasingly sophisticated literary forms, language structures, and themes they are expected to illuminate through analytical essays. In history/social studies, students need to interpret the language of primary sources, however arcane and unfamiliar, for point of view and purpose, and use often conflicting accounts in explanations of historical places, times, and events. In science, students need to be able to gain knowledge from elaborate diagrams and data that convey information and illustrate scientific concepts, as well as attend to precision and detail in order to evaluate scientific claims. Likewise, writing and presenting information orally are key means for students to assert and defend claims in science, demonstrate what they know about a concept, and convey what they have experienced, imagined, thought, and learned (Heller & Greenleaf, 2007). Yet despite the recognized and widespread need for adolescent literacy development in the upper grade levels, *very few schools and districts provide the needed academic literacy instruction*, particularly in the subject areas where it is most critically absent (CCAAL, 2010; Lee & Spratley, 2010).

The Need to Improve Secondary Teachers' Skill and Will to Support Students' Improved Academic Literacy

To build the advanced literacy skills that high school subjects demand, then, subject area teachers must help students to develop the capacity to draw inferences from academic texts, synthesize information from various sources, follow complex ideas, and write from textual evidence in their disciplines (Heller & Greenleaf, 2007; Lee & Spratley, 2010; CCAAL, 2010). In large part however, middle and high school teachers are unprepared to meet this challenge, not knowing how to simultaneously build students' academic literacy skills and engage them in a rigorous curriculum of subject area study (Greenleaf & Schoenbach, 2004; Shanahan & Shanahan, 2008). Instead, teachers typically reduce their expectations if students struggle with literacy, and this "literacy ceiling" becomes students' *de facto* achievement ceiling, undermining their academic futures and life chances. But to meet the high standards of the CCSS and NGSS, subject area teachers must develop *both the skill and the will* to take up this challenge, requiring a paradigm shift in their beliefs and instructional practices.

Secondary teachers, focused on conveying content and concerned with "coverage," often approach this challenge with preconceptions and practices that make it hard for them to believe that changes are possible. Since they see that students have difficulty with reading and writing tasks, they skirt these tasks in an understandable but misguided effort to "give" students knowledge. The classroom structures and interactions most common in the nation's secondary schools often value "doing the lesson" over substantive learning, undermining the development of academic mindsets and task engagement critical for achieving high levels of literacy proficiency (Bloome, et al., 1989; Duschl, Schweingruber, & Shouse, 2007; Gutiérrez, Baquedana-López & Asato, 2000; Hall, 2010; Jiménez-Aleixandre, Rodríguez, & Duschl, 2000;

Rex, 2001; Rymes & Pash, 2001; Weiss, et al., 2003). As a result, many classes at the secondary level persist in offering few opportunities for students to engage intellectually with either content or texts, and the typical pattern of one-sided classroom discourse provides little room for student sense making (Applebee, et al., 2003; Langer, 2001). Rather than support substantive engagement with literacy, many lessons emphasize “procedural display,” a set of academic and interactional procedures that allow teacher and students to move through the lesson without actively engaging academic content (Bloome, et al., 1989). Lessons characterized by procedural displays are more prevalent in classrooms where students are already behind, an approach often exacerbated by the highly prescriptive pacing guides and activities characteristic of classrooms serving high-need students (Gutiérrez, 2008; Gutiérrez, Baquedana-López, & Asato, 2000; Gutiérrez, Rymes, & Larson, 1995; Iannacci, 2006; Pransky & Bailey, 2002/2003; Rymes & Pash, 2001). These practices reinforce an internal passivity around monitoring students’ own understanding and learning that undermines the development of academic mindsets and literacy skills.

To make headway on this problem, teachers need a vision of another workable solution, one that offers active learning for students, content integration, and skill building in essential reading and writing skills. Yet without access to in-depth professional development that builds on their content concerns and disciplinary expertise, teachers have limited routes for increasing their skill and will in this area. Similarly, without sustained school-based support for implementing and continually improving successful literacy instruction in disciplinary classes, teachers have a hard time imagining what success would look like, or why it would be worth their efforts to embed literacy as a way for their students to gain increased understanding of their content area. To build new instructional repertoires, secondary subject area teachers need

professional development opportunities to build knowledge about literacy and its role in their disciplines, to see others using instructional strategies in their subject areas, and to rehearse new teaching practices. They need sustained support to re-imagine and transform their teaching, to try out discipline-specific literacy instruction, to assess its utility as a practical and powerful tool for their particular students working with their particular curricula, and to solve problems of practice with their colleagues in professional learning communities at their sites.

B. Potential Contribution to Development of Theory, Knowledge, and Practices in the Field

Integrating Reading and Writing for Academic Literacy Development

Reading and writing each require explicit instruction as well as extensive opportunities for practice in order for literacy proficiency to grow into the kind of advanced skills required in secondary school and beyond (Graham & Perin, 2007). Reading and writing also each benefit from instruction focused on processes, whether for reading or writing (Goldstein & Carr, 1996; Pressley, 2002); from explicit teaching of strategies for comprehension and composition (Fidalgo, Torrance, & Garcia, 2008; Kamil, et al., 2008); and from experience with and knowledge of the text structures or genres represented in the subject areas (Graham, Kiuahara, McKeown, & Harris, in press; Fang & Scheppergrell, 2010). Demands for instructional time would be difficult to allocate to these foundations of literacy were it not for the fact that instruction in the one builds proficiency in the other. Writing, like reading, can support learning achievement across all subject areas (Bangert-Drowns, Hurley, & Wilkinson, 2004). Writing to learn activities can help students more deeply understand their reading (Applebee, 1984; Graham & Hebert, 2010). Writing instruction and practice improve overall reading proficiency (Graham & Perin, 2007) and vice versa (Grabe, 2003). As Grabe states, “A major implication for reading

and writing relations, for both L1 and L2 contexts, is that connections between reading and writing may be valuable, but they can be interconnected more efficiently through extensive reading in combination with consistent writing practice” (Grabe, 2003, p. 249).

Research thus indicates that reading processes influence writing in a variety of ways: 1) better readers tend to be better writers; 2) familiarity with text organization influences ability to organize text in writing; 3) extensive opportunities to read can lead to increased proficiency with writing over time (Grabe, 2003). Rouet et al. (1997) have demonstrated that more experienced readers in a discipline are able to integrate multiple texts when composing an argument in ways that are very different from less experienced readers.

To write well, students need to read well and to develop knowledge and insight through reading. Students often struggle with *what to write* as well as *how to write* because they have not understood the concepts in the texts they have read, or known how to authoritatively interact with texts so that they can make use of them to learn, gather evidence, and craft opinions. Building comprehension skills and dispositions supports deep reading, and it is this deep reading that in turn impacts writing. The layers of knowledge and skill that are required to write from texts is complex and dependent not only on students’ cognitive skill and knowledge base, but also the affective factors that lead to their willingness to engage and to participate in complex writing tasks. Therefore instruction in reading and writing processes and strategies alone is not enough to ensure that students, particularly adolescents, will engage in reading and writing tasks.

New research points to the importance of building students’ grit, tenacity, and perseverance to support learning and achievement (Schechtman, et al., 2013). Three facets of student dispositions have been shown to be malleable and teachable: student’s academic mindsets, effortful control of the learning process, and use of effective strategies and tactics.

“Academic mindsets” encompass elements of academic identity, attitude, and academic persistence that are critical to students’ academic success (Farrington et al., 2012; Yeager and Walton, 2011). Students need help to acquire the academic mindsets and dispositions required for sustained, academic work (Dweck & Molden, 2005; Schoenbach & Greenleaf, 2009). Particularly students who have struggled with low achievement need support to rebuild robust academic identities that can sustain their efforts in school (Gee, 1996; Litman & Greenleaf, 2008; Mahiri & Godley, 1998). Recent literacy research has identified the instructional characteristics necessary to meet the unique needs of adolescents: treat all students as capable learners; create a collaborative climate of inquiry; build on students’ interests and curiosity; tap into students’ knowledge and experience; and harness adolescents’ preference for social interaction to serve academic goals (HER, 2008; Kamil, et al., 2008; Greenleaf, et al., 2001). To meet adolescents’ academic needs, we must transform secondary, subject area classes into collaborative, inquiry-oriented learning environments that challenge students intellectually while helping them build their skills in high level literacy (Schoenbach & Greenleaf, 2007).

SLI is uniquely positioned to address the intersection of reading, writing, and learning because of its demonstrated success in helping subject area teachers and their students tackle complex texts and gain new academic mindsets and dispositions for reading and writing through the metacognitive routines and mentoring activities at the heart of Reading Apprenticeship.

The Reading Apprenticeship Approach Integrates Reading, Writing, and Learning through Metacognitive Conversation

With CCSS and NGSS and assessments requiring students to write discipline-specific arguments that reference multiple sources, it has never been more critical to explicitly unite reading- and

writing-to-learn theories and practice within the content areas. Drawing on these understandings, and to address the twin problems of student and teacher under-preparation for high-level academic reading, writing, and learning in the disciplines, SLI has been working since 1995 to develop the RA instructional framework and PD model through an iterative research and development process. Working collaboratively with secondary school educators, in the tradition of design research (Brown, 1992), and intentionally including educators to ensure the generation of usable knowledge (Weiss, 1979), SLI's models of literacy instruction allow students with varied academic performance to engage and succeed in rigorous, disciplinary curriculum.

In RA classrooms, reading and writing instruction is integrated into content area teaching, rather than being an instructional add-on or additional curriculum. Students are given extended opportunities to read and write with instructional support, both in assigned texts and in curriculum-related materials of choice. Through an “apprenticeship” process, content area teachers explicitly teach students the tacit reasoning processes, strategies, and discourse rules that shape successful readers’ and writers’ work. Instructional routines help students to clarify content, discuss the processes they use in reading and problem-solving, practice comprehension strategies, respond to and elaborate on content, engage in word-learning strategies, write to learn and to consolidate learning, and make connections to other related texts (see RA Framework in Appendix I.4).

In RA classrooms, students use writing-to-learn strategies to summarize their reading, take notes, keep dual-entry response logs, and annotate texts as they read to make connections to what they already know, externalize their thinking, and reflect on and solidify their learning. These metacognitive reading, writing, and learning routines are the heart of the Reading Apprenticeship framework and provide a foundation for supporting students in becoming

increasingly experienced readers of complex text, which allows them to become increasingly experienced and knowledgeable writers of complex texts.

Typical instructional strategies for struggling readers involve simplifying, slowing the pace, and often abandoning more rigorous course work with the tacit understanding that the students are simply not capable of performing at grade appropriate levels of rigor, virtually assuring low levels of achievement for students who are already behind (Dweck & Molden, 2005). In contrast, the RA model is based on research showing that most students are capable of complex thinking and carrying out scientific, historical, and literary inquiry but have not been given the skills or self-confidence to approach these tasks effectively (Greenleaf, et al., 2001; Langer, 2001; Lee & Spratley, 2010; Moje, 2008). Unique among literacy programs, RA addresses students' motivational needs while building skills and knowledge for subject-specific literacy tasks, strengthening students' view of themselves as readers, writers, and learners, and yielding strong, documented gains in student achievement.

To foster meaning-making, RA classrooms create a context in which teachers and students articulate and understand thinking strategies and processes within their disciplines, so students not only understand texts, but are able to apply and transform them—they “think aloud” through written comments on one another's papers; they deeply explore themes and texts within historical context; they write reasoned responses to real-world problems that include references to multiple texts; teachers and students closely examine texts by slowing down, asking questions out loud, describing personal experience and knowledge, stating their points of confusion, and sharing problem-solving strategies. These metacognitive routines, when integrated regularly into classrooms, develop in students the literacy skills required in CCSS standards and assessments, college courses, civic life, and a multitude of professions. Integrating reading and writing

instruction through ongoing metacognitive routines helps students develop self-regulation, awareness, and control of their literacy and learning (Langer, 2001).

The core pedagogical routines of RA thus multi-task to support reading of complex texts, writing to learn while reading and thinking about texts and ideas, and writing to communicate one's ideas to others. A collaborative classroom environment for risk taking and meaning making, routine metacognitive conversations to solve reading and writing problems, support for building stamina and persistence in the face of challenges, explicit strategy instruction, a focus on processes as well as products, developing students' knowledge about text and discourse structures of the disciplines—all are instructional approaches that apply to writing as well as reading. It is this ongoing and consistent practice, supported by routines set in place in a Reading Apprenticeship classroom, that provides the kind of scaffolding and support for students to not only develop facility with both reading and writing, but to build their academic dispositions and engagement and continue to expand their knowledge about the topics they are exploring.

The Reading Apprenticeship Professional Development Model Prepares Secondary Subject Area Teachers

RA PD provides a uniquely designed, inquiry-based and content area-focused professional development approach that transforms teachers' understanding of their role in adolescent literacy development and builds enduring capacity for literacy instruction in the academic disciplines (Greenleaf & Schoenbach, 2004; Greenleaf, et al., 2011). RA professional development is designed to address teachers' conceptual understandings as well as practical implementation needs. In RA PD, teachers participate in carefully designed inquiries to help them unlock their own disciplinary literacy expertise and to appropriate new approaches from their peers. They

learn to identify the features of disciplinary texts that might present stumbling blocks to learners. In professional development sessions, they practice with classroom routines to build student engagement, support student collaboration, and foster authentic discussion and problem solving around course texts. Most importantly, they gain new expectations of what their students can accomplish and learn new ways to support students' thinking and learning with academic materials. By implementing RA routines, they transform their classrooms into engaging, intellectual learning spaces.

Science teachers, for instance, inquire deeply into what they do to derive meaning with complex science texts, including explanation and exposition in scholarly journals, as well as the diagrams, data arrays, mathematical expressions, and graphs that convey information. They learn to identify features of disciplinary texts that present stumbling blocks to learners. Teachers experience and practice classroom routines for engaging students in active inquiry and sense-making with such texts—routines for mentoring students in productive reasoning processes, for fostering metacognitive awareness of comprehension problems and problem-solving processes, and for promoting collaborative discussions of science texts. They work to develop models and explanations of scientific phenomena and unpack their own explanation construction processes to learn how to support students in explanation writing.

Teachers of history or literature experience similar deep dives into their own reading and writing processes. Inquiries into the demands of text, as well as the structural components and complexities of different texts allow English/language arts teachers to consider ways in which these same types of inquiries might support students to better understand the rhetorical structure of a text they are reading in order to translate this knowledge to their own constructions of argument in response to multiple texts. Teachers of history inquire into the different ways they

can help students access complex text and make meaning of it in order to craft careful responses using historical ways of thinking and writing. Across subject areas, teachers are then able to compare and contrast their literacy knowledge and see the vital role they each play in developing their students into strong readers, writers, and learners.

C. Importance or Magnitude of the Results or Outcomes Likely to be Attained by the Proposed Project

Since 1995, nine research studies have been conducted to evaluate the effectiveness of RA. These studies collectively suggest that the RA intervention proposed in this application effectively improves student achievement on state-mandated norm-referenced tests in English language arts, reading comprehension, history, and science. These studies have also demonstrated strong positive effects on teacher practice resulting from the RA professional development—most notably, teachers’ increased use of reading comprehension strategy instruction, metacognitive inquiry routines, and collaborative learning structures in their classrooms. Three of the studies utilized an external evaluation team and a strong experimental design to gauge program impacts (Greenleaf, et al., 2009; Greenleaf, et al., 2011a; Greenleaf, et al., 2011b; Kemple et al., 2008; Somers, et al., 2010).

In an NSF-funded study of Reading Apprenticeship effects in high school biology, multiple measures including surveys of instructional practice, interviews, and classroom observations demonstrated robust changes in teacher knowledge and practice, with large effect sizes: English language arts (ES = 0.23), reading comprehension (ES = 0.24), and biology (ES = 0.28). Students in RA biology classrooms were on average more than a year ahead of those in the control classes in their English language arts, reading comprehension, and biology knowledge by the end of the year.

In the IES-funded Enhanced Reading Opportunities study, in year 1, researchers found that the grade 9 Reading Apprenticeship Academic Literacy course improved reading comprehension test scores by 1.4 standard score points and this impact was statistically significant. The impact of 1.4 points on reading comprehension test scores represents a 33 percent improvement. In year 2, the impact of RAAL was 1.2 points (ES = 0.12). The RAAL course had a positive and statistically significant impact on students' state test scores in both English language arts (ES = 0.15) and science (ES = 0.14) and fewer students who took the course were suspended in the following year (ES = 0.09), indicating changes in students' engagement in school.

In another IES-funded study, of Reading Apprenticeship effects in high school history and biology, multiple measures including surveys of instructional practice, interviews, and classroom observations demonstrated robust changes in teacher knowledge and practice, with large effect sizes. Students in treatment schools exhibited higher scores in history (ES=0.25), reading comprehension (ES=.22), and English language arts (ES=0.26). For the biology sample, students in treatment schools exhibited higher scores in biology only (ES=0.29).

The three experimental studies *provide moderate to strong evidence* of the effectiveness of the RA model in strengthening teacher practices in content area literacy instruction and improving both student literacy skills and student achievement in 9th/10th grade biology, 11th grade U.S. history, and a 9th grade literacy course. These studies also show positive effects on students' literacy achievement, motivation, and engagement and that English learners benefited disproportionately from RA instruction.

Overall, we have *moderate to strong evidence that RA professional development strengthens literacy instruction and improves student achievement in both literacy and content*

area skills and knowledge, with effect sizes for achievement that constitute educationally meaningful gains. In addition, our studies demonstrate a moderate degree of *external validity*, that is, the RA intervention has been tested in multiple and varying contexts with diverse student and teacher populations, moderately large sample sizes, and different subject areas. Several studies using quasi-experimental designs and a mix of quantitative and qualitative methods, including case studies, show positive outcomes for middle school and high school students and their teachers (Greenleaf, et al., 2001; Greenleaf, 2002; Greenleaf, Litman, & Braunger, 2004; Greenleaf & Schoenbach, 2001; Strategic Literacy Initiative, 2004; 2009). See study outcomes in Appendix E.

Based on this record of success, in this proposal, SLI anticipates making a set of significant contributions to knowledge in the overlapping fields of literacy education, professional development, school change, and online professional development. To date, efficacy studies of RA have linked teacher improvement in literacy instruction to increased engagement and achievement in students' *reading and content area learning*. The proposed project will investigate the efficacy of this model to produce changes in teachers' *reading and writing instruction* using metacognitive discourse routines and pedagogies, and the relationship of these changes to students' *reading and writing proficiencies*. The project thus promises to build a deeper understanding in the field about how secondary teachers can support student growth in both reading and writing, alongside and in support of subject area learning.

In addition, we anticipate that this project will yield new understandings in relation to the design of what is sometimes referred to as “constructivist online professional development.” These lessons are likely to include both very specific findings—such as the specific affordances of various online interactions for inquiry—and more general lessons about the ways in which the

opportunities of online professional development—including flexible scheduling, cost-effectiveness, differentiation, and affordances of novel web-based technologies are balanced with the potential trade-offs, losses, or constraints of online versus face-to-face PD. We also anticipate learning more about differences in the ways different teachers use the online learning and about the kinds of interactions and innovations they themselves develop using social network approaches to building their own learning.

III. QUALITY OF PROJECT DESIGN AND SERVICES

The proposed SEED project will build on and expand local RA literacy work in the four partner states. The four goals of this project, each described in more detail below are 1) to improve middle and high school teachers' effectiveness by implementing Reading Apprenticeship instructional routines in secondary school science, history/social studies, and English; 2) to improve students' capacity to read, comprehend, and write academic texts in secondary school science, history/social studies, and English; 3) to increase school-based support for strong and sustained implementation of effective reading and writing practices in the participating schools; and 4) to develop new online professional development modules to support online learning for teachers, teacher leaders, and school administrators in participating schools serving high-need students. There is both high need and demand for RA PD in the states selected for this study, as evidenced by the many letters of support for this proposal (Appendix D).

Goal 1: Improve middle and high school teachers' effectiveness by implementing Reading Apprenticeship instructional routines in secondary science, history/social studies, and English. One thousand teachers from 180 schools from four states will participate.

The SLI SEED program will support the expansion of RA professional development to develop middle school/high school feeder patterns in the four partner states currently

implementing RA professional development through the i3 scale-up grant, RAISE. As in the RAISE grant, state coordinators who have been working intensively with school, district, and state leadership will recruit the 180 schools serving high-need populations to participate in RA professional development. The project will aim to select high-need middle schools that feed into participating high schools so that students begin to experience RA earlier and more consistently, increasing the likelihood of their internalizing the habits, strategies, and dispositions of writing and reading to learn, and thus their overall literacy proficiencies. At the same time, this targeted recruitment will support the development of stronger teacher and administrator communities of practice, leading to greater depth, breadth, and sustainability at district or regional levels.

An average of six teachers per school will participate, including teachers from each subject area: ELA, science, and history/social studies. Each subject area teacher will receive the equivalent of 60 hours of professional development in a hybrid manner—a mix of face-to-face and online with on-site follow-up, as described in Goal 3. See Appendix I.5 for PD schedule.

The professional development will be built on existing resources that have been developed, field-tested, and refined by SLI over the past 15 years. These include:

- *RA resource materials* including student case studies, work, and interviews; RA teacher implementation work in varied subject areas, assessment tools and rubrics, videos of classroom literacy interactions, lesson models, and demonstrations of RA teaching approaches;
- *RA training materials* including detailed facilitator and participant manuals that have been carefully developed and continuously improved to document and standardize professional development methods (sample Agenda Overviews in Appendix I.6);

- A core text authored by SLI's Co-Directors and used nationally in the literacy education of teachers: *Reading for Understanding: How Reading Apprenticeship Improves Disciplinary Learning in Secondary and College Classrooms*, as well as ancillary professional readings about subject-specific reading and writing instruction;
- Web-based communities and materials for sharing and supporting local implementation (more details in Goal 4).

In addition to the making use of the established RA resources noted above, SEED will support the development and integration of new tools and materials that expand RA writing components for history and science teachers. This work will build on existing writing-to-learn and learning-to-write strategies that have always been an integral part of RA professional development. These include 1) metacognitive learning logs and journals, response to text, summaries, and reflective writing; 2) writing in canonical forms, such as the response to literature essay writing that is part of the RAISE ELA training; 3) extensively developed lessons on writing across multiple texts in science and in history that are part of SLI's 9th grade Reading Apprenticeship Academic Literacy course (see Fielding, Schoenbach & Jordan, 2003 and Appendix I.3); and 4) evidence-based argument writing lessons that are part of SLI's design work in a national IES R&D project under the Reading for Understanding Initiative (see abstract for Project READI, Appendix I.7). For this grant, we will integrate these resources into the existing RA PD. We estimate that this work may result in changes to about 10 percent of the ELA professional development materials and about 20 percent of the science and history professional development materials.

Participating teachers will gain a strong understanding of the RA framework and the “how” and “why” of discipline-based literacy practices to assist them in using RA instructional routines to increase effective instruction in subject area reading and writing.

Goal 2: Improve middle and high school students’ capacity to read, comprehend, and write academic texts in secondary school science, history/social studies, and English. About 60,000 students from 180 schools in 4 states will be impacted.

As teacher participants use the RA tools described above in their own classroom practice they will positively impact student reading, writing, and self-regulation. Students in RA classrooms will experience 1) an increase in the amount, variety, and complexity of texts they read and write; 2) repeated processes that make discipline-specific ways of thinking, reading, and writing visible; 3) greater metacognitive awareness about *how* and *why* they are making sense of text because they are continually asked to read, write, and talk about their thinking while also seeing their teachers repeatedly model this process; and 4) increased self-efficacy and confidence in their growing literacy abilities.

This increased use of literacy strategies and materials develops generative learning routines and strong school “habits” for students, but also importantly increases their sense of agency and authority over text. Thus, when they are asked to argue, discuss, or respond in writing to multiple texts—as they will be more and more given the demands of the CCSS—they now have 1) multiple ways to *understand* the text, 2) the ability to decide *what* they think about it, and, finally 3) the knowledge of forms and conventions that guide *how* to articulate their thinking in academic settings. These skills in turn develop students’ self-efficacy and motivation for reading, writing, and learning in the disciplines. Students’ use of metacognitive routines and literacy learning strategies together with their enhanced self-efficacy will improve their ability to

perform on writing assessments requiring them to read, summarize, critique and generate arguments under time constraints. (See CBAL assessment description, Appendix I.9).

Goal 3: Increase school-based support for strong and sustained implementation of effective reading and writing practices in the participating schools.

Through formative assessment of the i3 RAISE scale-up by the external evaluation team and from discussions with RAISE state coordinators, we have seen that the role of teacher leaders and site administrators is critical to the success of comprehensive change in a school community’s literacy practices. What we are learning underscores the importance of school-level support that combines a “bottom-up and top-down” mix. This includes school teams of teachers participating directly in the RA PD, as they work to implement new practices and meet regularly at school; teacher leaders who convene and facilitate these school-based meetings; and the site administrator (principal or assistant principal) who attends at least some of the professional development and some of the school-based team meetings. Providing school-level support for implementing new teaching practices that is cost-effective, suited to the local school culture and context, and still maintains fidelity to effective Reading Apprenticeship practices is a key challenge. This is especially so because the kinds of teaching changes we are encouraging—e.g., lecturing less and having students do the work of reading and writing in a guided but increasingly independent way—can threaten teachers’ past practices and identities, their concepts of their students’ capabilities, and their concepts and knowledge about the nature of the disciplines they teach.

We have found that the role of teacher leader can be pivotal in supporting school colleagues to make the nuanced changes that can transform classroom practices and opportunities for students’ learning. We find that to enact that role well, teacher leaders benefit

greatly from support in a community of other teacher leaders, convened and facilitated by state coordinators with input from the SLI national office. The most important element of the teacher leader meetings that will be part of this SEED grant is the opportunity for these teachers to share and deepen their own understandings of RA implementation in their own classrooms. The concept of *leading from practice* is at the heart of this teacher leader role. In addition, these meetings offer teacher leaders opportunities to share ideas and problem solve ways to support more effective team meetings and stronger collaboration with the school administration and other colleagues not yet involved in implementing RA. We help teacher leaders and their administrators by discussing ways to “map RA onto existing reforms” so that other teachers at the school can see how these practices dovetail with other school initiatives.

Building on lessons learned, tools, relationships, and local capacity for implementing RA instructional practice through the RAISE grant in the four states served by this grant, we plan to further develop local capacity for quality of implementation and sustainability through regular regional meetings of teacher leaders and administrators. Each participating school team will be asked to select a teacher leader to convene team members for a monthly meeting, facilitate these meetings, and serve as a liaison with the administration in supporting the implementation of the literacy improvement work (see Appendix I.8 for sample agendas). Teacher leaders have played a key role in keeping their teams on track. They also meet across schools and with the school administrators three times a year, coincident with the teacher professional development sessions.

To expand the impact of the professional development from the participating teachers to a larger number of teachers at participating schools, we anticipate expanding circles of impact beyond the six or so teachers per school in SEED. Although there will be no formal expectation that participating teachers “train other teachers” in what they are learning, teacher leaders will

have opportunities at teacher leader meetings to practice using protocols for sharing RA ideas with other interested teachers at their schools. These would include a range of “easy entry” ways to share the model, from sharing lessons that illustrate how students read and write in new ways to initiating book circles with the core text used in RA PD, *Reading for Understanding*, as a way to begin to dip into some of the core ideas and practices of RA.

Additionally, based on lessons learned in the RAISE grant, in this SEED grant, we intend to amplify and formalize the participation of site administrators in building successful implementation of RA in participating schools. Principals and/or assistant principals for curriculum and instruction will be required to participate in this grant in several ways, including by attending RA PD with their teams, participating in short online modules designed specifically for principals and assistant principals, and joining their schools’ teacher leaders for meetings three times a year.

Participating SEED schools will have a strong foundation for comprehensive academic literacy improvement through this set of capacity-building activities in combination: teams of teachers from a school engaged in PD (both face-to-face and on line); team meetings facilitated by teacher leaders and joined at times by administrators; and teacher leaders leading from their own deepening RA classroom practice, supported by a community of other teacher leaders, their state coordinator, and the SLI national office.

Goal 4: Develop new online professional development modules to support online learning for teachers, teacher leaders, and school administrators in participating schools serving high-need students.

To date, SLI has developed four online courses based on the RA framework for a variety of audiences: community college faculty, community college faculty coaches and campus

leaders, high school site administrators, and a “MOOC” open to an international audience of the general public. We have also received an Investing in Innovation development grant (iRAISE) to develop and test a year-long online version of our RAISE science PD for high school science teachers. Work on this online course began in early February 2013 and will continue (with evaluation, revisions, and re-design) through the end of 2016.

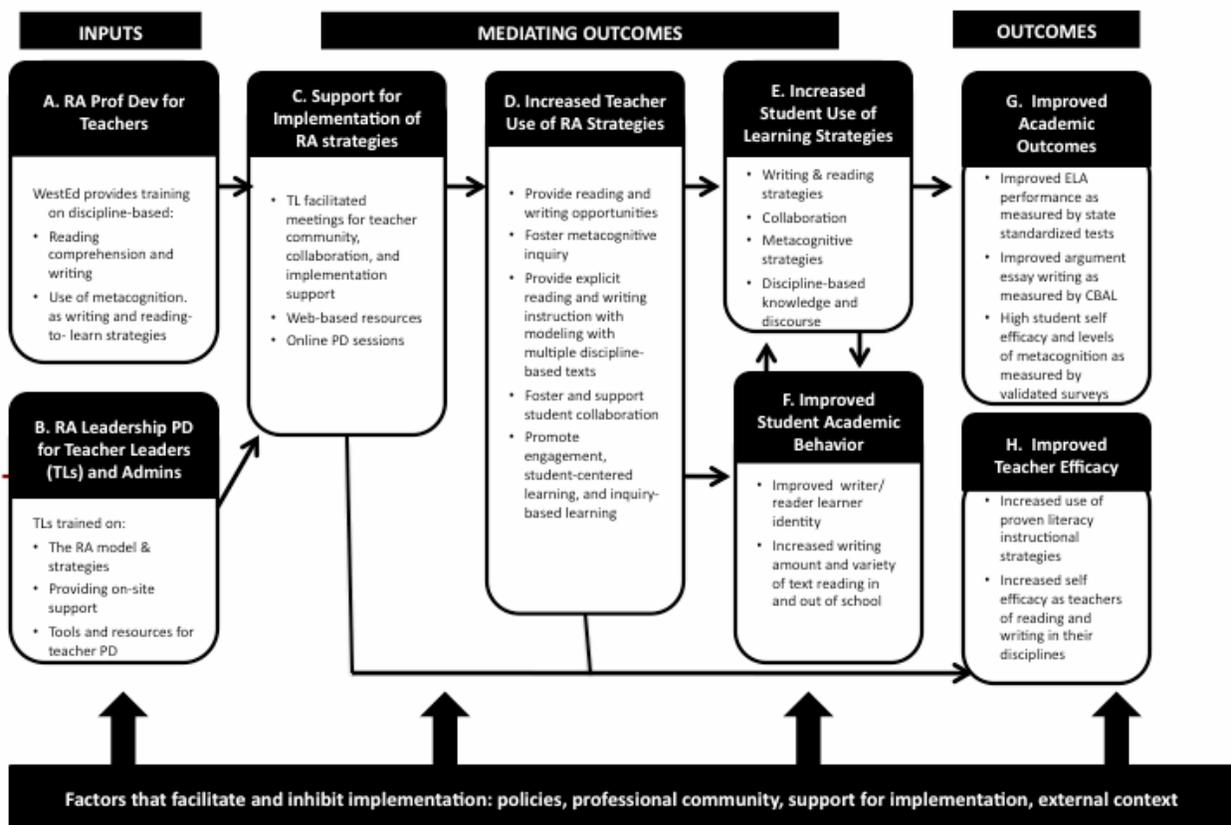
Through all of this work developing online courses based on RA, a set of learning design principles—based on our RA PD design principles—is emerging. Briefly, for these courses to affect people’s conceptions about literacy in their lives in ways that can have an impact on how they “do” literacy (in whatever setting, for whatever audience), we introduce them to core RA ideas through a combination of reading and reflecting on a range of key texts, exploring video models of core RA metacognitive routines. and inquiring into classroom videos of RA in action in varied instructional settings. We then ask participants to apply their learning through some kind of “make it real” activity. In these activities, they try out core RA routines (or for administrators, meet with their teams or learn by watching classrooms), report back, and then reflect again.

The online component of the RA PD we will develop for this SEED grant will present yet another opportunity for applying these principles in a new way. We plan to develop short modules and online social learning communities for teachers in participating schools to continue learning about and implementing RA between the three different face-to-face PD sessions.

The logic informing our project design, as shown in Figure 1, is as follows: Professional development in RA will enable middle and high school teachers of science, history/social studies, and ELA to integrate academic literacy instruction into ongoing content area teaching, thereby increasing the quality of students’ literacy learning opportunities, leading to increased

academic engagement and achievement, especially for high-need students. We will provide RA professional development for an average of six teachers per school, including teachers from each subject area: science, history/social studies, and ELA. Each subject area teacher will receive the equivalent of 10 days (60 hours) of subject-specific professional development in a hybrid manner—mix of face-to-face and on-line with on-site follow up over two years, with implementation support between sessions (see Appendix I.5).

Figure 1. Project Logic Model



The professional development will draw from SLI’s extensive toolbox of curriculum examples, lesson models, support materials, classroom videos, and assessments to support implementation. RA leadership development coupled with the support, knowledge, and resources

of our LEA partners will enable a consortium of participating LEAs in each region to develop leadership at the classroom and district level, building internal capacity to sustain, support, and further disseminate RA implementation. RA leadership development draws on recent understandings of the vital roles played by deep internalization of new practices by teachers (Coburn, 2003) and local buy-in and ownership in sustaining reform (Bryk & Schneider, 2002; Spillane, Reiser, & Reimer, 2002).

IV. QUALITY OF THE MANAGEMENT PLAN AND PERSONNEL

Past Performance Implementing Complex Projects

Beginning in 1995 as a teacher-research collaborative working with 20 high school teachers to investigate and address the sources of students' reading difficulties, SLI's Reading Apprenticeship (RA) project has grown exponentially to provide professional development and consultation services in adolescent and academic literacy to thousands of educators nationally, from middle school to postsecondary education. Since its inception, RA has been implemented in LEAs in 34 states. Over 77,000 teachers and 1,000 administrators, staff developers, and teacher leaders have participated in professional development. Through leadership development and the certification of consultants, the project manages many summer professional development institutes and annual national conferences, and delivers school-based professional development services to LEAs around the country. With the investment and partnership of local and national foundations, as well as the federal government and many LEAs, SLI has steadily expanded the reach and impact of RA. Additionally SLI has the ongoing support of an Advisory Board and business consultants who are assisting the organization in an update to its strategic plan which has an emphasis on building organizational infrastructure to support higher volume fee-for-service work with school districts throughout the nation.

While managing this growth, SLI Co-Directors Ruth Schoenbach and Cynthia Greenleaf have simultaneously published and presented the RA model broadly to education audiences, thereby influencing the field of adolescent and disciplinary literacy and building the visibility of this innovative approach (see Vitae, Appendix A). RA has received widespread recognition for its unique characteristics and effectiveness by leaders in the field, as the many publications citing it attest (e.g. Biancarosa & Snow, 2004; Deschler, et al., 2007; Lee & Spratley, 2010; Snow, Griffin, & Burns, 2006). To support RA implementation and professional development activities, the extraordinarily productive SLI home office has developed an extensive library of professional development resources, curriculum examples, assessment tools, videotapes of multidisciplinary classroom implementation serving a broad range of students with high needs, and facilitation guides that support professional developers to lead teacher learning with consistency and fidelity to the research-based model.

The SLI team has engaged in three large-scale RCT studies of RA. The co-directors have been involved as both the program developers and leaders of an implementation team charged with delivering quality products and services. They have also acted as Principal Investigators and Co-Principal Investigators on the research studies, with data firewalls between their content expertise and the collection and analysis of data. Thus they have simultaneously advanced teaching RA methods and learning about the efficacy of those methods. Greenleaf has managed two large federally funded research studies, including supervising the professional development team, instrument development, and management and coordination of external research and evaluation partners. During the National Science Foundation project, the professional development was provided to 60 high school teachers from 48 schools in 38 LEAs to implement

RA in classrooms serving a total of 5,346 students over a two-year period. The IES-funded 2006-2010 study reached a cohort of 124 teachers at 90 schools in 46 LEAs.

SLI's ability to carry out these two studies, as well as participate in another large-scale IES-funded study (see Section IIC), over the past five years, with multiple teacher cohorts from multiple studies being trained simultaneously, further demonstrates our capacity to implement complex, large-scale projects. Our two Investing in Innovation (i3) grants have allowed us to build deep partnerships and affiliations in the four states we will serve with this grant, extensively prepare over 80 subject area facilitators of our PD model, and develop state coordinators who sustain work in their regions. The proposed project will draw on this extensive experience and preexisting capacity in planning and carrying out the proposed SEED project.

WestEd

As a WestEd project, SLI is able to draw on the seasoned infrastructure (human resources, finance, contracts, IT, and communications), and resources of a \$120+ million national organization. WestEd is a preeminent educational research, development, and service organization with 600 employees and 17 offices nationwide. A Joint Powers Agency (JPA) authorized in 1995 by a California Joint Powers Agreement, WestEd is governed by public entities in Arizona, California, Nevada, and Utah, with board members representing agencies from these states and nationally.

WestEd has been a leader in moving research into practice by conducting research and development (R&D) programs, projects, and evaluations; by providing training and technical assistance; and by working with policymakers and practitioners at state and local levels to carry out large-scale school improvement and innovative change efforts. The agency's mission is to promote excellence, achieve equity, and improve learning for children, youth, and adults.

Since 2000, WestEd has carried out over 4,000 successful projects representing major contributions to the nation’s R&D resources, and has over 400 active contracts at any given time. In FY 2013, the agency is expecting to operate on program funding of approximately \$125 million. Funding for specific projects comes from sources including the U.S. Department of Education), National Science Foundation, and U.S. Department of Justice; state departments of education; and universities, school districts, foundations, and other state and local agencies across the country. This large variety of funding sources provides WestEd with a stable funding base and organizational structure.

Project Timeline and Responsibilities

SLI national staff based in Oakland, CA will work closely with regional affiliates in each participating state to carry out the project plans detailed in Table 1 below. The project will recruit 1,000 participants from an estimated 180 middle and high schools in Michigan, Pennsylvania, Indiana, and California, with an emphasis on schools serving high-need students. (See example of student demographics from RAISE schools, Appendix I.10.)

Table 1. Timeline of Professional Development and Evaluation Activities

Date	Activity	Milestone	Who
YEAR 1			
Sept. 2013- June 2014	PD refinement: <ul style="list-style-type: none"> - online development - history and science reading-writing connections modules 	PD hybrid model (in person & online) Facilitation guides, rubrics	SLI with content area specialists, online experts, and lead facilitators
Sept. 2013- June 2014	School & teacher leader recruitment <ul style="list-style-type: none"> - 2 cohorts recruited simultaneously for 2 years of PD -180 schools - School teams average 6 teachers from multiple content areas - Subset of 24 middle schools 	180 schools have committed to plans for 60+ hours of PD, with a subset of 24 schools also committed for evaluation for	SLI, regional affiliates, and Impaq recruit schools in 4 states (CA, IN, MI, PA)

Date	Activity	Milestone	Who
	in PA and IN recruited from total schools for evaluation and randomly assigned to Cohort 1 and Cohort 2 for comparison	2014-2017 and randomly assigned to cohorts; 180 teacher leaders identified	
July – August 2014	Cohort 1 teachers begin participation in PD	500+ teachers and administrators participate	SLI, consultants, and teacher/admin teams in networks of ~36 each
July – August 2014	Cohort 1 teacher leaders meet to schedule on-site and regional support meetings	90 teacher leaders and their administrators participate	SLI, consultants, regional affiliates
YEAR 2			
Fall 2014	Student writing assessment pre-test administered to ~100 students per evaluation school	2400 students of Cohort 1 and Cohort 2 middle school evaluation teachers take CBAL	ETS and Impaq
Sept 2014 – May 2015	Cohort 1 teachers continue participation in PD through online and face-to-face institute days	500+ teachers and administrators participate	SLI, consultants, and teacher/admin teams in networks of ~36 each
Sept 2014 – May 2015	Cohort 1 teachers implement RA in classrooms and participate in online sessions and on-site team meetings	All cohort 1 teachers integrate literacy instruction strategies into daily practice	500+ teachers
Sept 2014 – May 2015	Cohort 1 teacher leaders convene monthly on-site team meetings and meet 3 times in regional teacher leader networks to provide feedback on PD and gain strategies for effective team meetings	90 Cohort 1 teacher leaders participate in 3 day-long meetings	SLI, consultants, regional affiliates
Sept 2014 – May 2015	Cohort 1 and Cohort 2 middle school evaluation comparison group teachers take surveys of literacy instruction practices at time intervals	Cohort 1 and Cohort 2 middle school evaluation teachers take 3 surveys of literacy	Approximately 100 teachers, Impaq

Date	Activity	Milestone	Who
		instruction practices	
Sept 2014 – May 2015	Documentation of PD participation, online usage analytics, and evaluations of effectiveness for all participating Cohort 1 teachers	PD participation and local, available teacher effectiveness data are tracked for 500+ Cohort 1 teachers	SLI, regional affiliates, administrators
March/April 2015	IN and PA state assessments in reading and writing	Related state assessment data for 2400 students of Cohort 1 and Cohort 2 middle school evaluation teachers collected	PA and IN
April/May 2015	Student writing assessment (post test) and student surveys administered to ~100 students per evaluation school	2400 students of Cohort 1 and Cohort 2 middle school evaluation teachers take CBAL and surveys	ETS and Impaq
July – August 2015	Cohort 1 teachers prepare for sustained implementation at their sites	500+ teachers, teacher leaders, and administrators participate	SLI, consultants, and teacher/admin teams in networks of ~36 each
July – August 2015	Cohort 2 teachers begin participation in PD	500+ cohort 2 teachers and administrators participate	SLI, consultants, and teacher/admin teams in CA, IN, MI, PA
July – August 2015	Cohort 2 teacher leaders meet to schedule on-site and regional support meetings	90 Cohort 2 teacher leaders and their administrators participate	SLI, consultants, regional affiliates
YEAR 3			
Sept 2015 – May 2016	Cohort 2 teachers continue participation in PD	500+ teachers and administrators participate	SLI, consultants, and teacher/admin teams in networks of ~36 each

Date	Activity	Milestone	Who
Sept 2015 – May 2016	Cohort 1 and 2 teachers implement RA in classrooms	All Cohort 1 and Cohort 2 teachers implement literacy instructional strategies into daily practice	1000 teachers
Sept 2015 – May 2016	Cohort 1 and 2 teacher leaders convene monthly on-site team meetings and meet 3 times in regional teacher leader networks to provide feedback on PD and gain strategies for effective team meetings	180 Cohort 1 and 2 teacher leaders participate in 3 day-long meetings; additional 2000 teachers introduced to RA at their sites	SLI, consultants, regional affiliates
Sept 2015 – May 2016	Cohort 1 middle school evaluation group teachers take surveys of literacy instruction practices at time intervals	Continued growth of Cohort 1 teachers is tracked through 3 surveys of literacy instruction practices	Approximately 50 teachers, Impaq
Sept – August 2016	Analysis and reporting on teacher and student impact		Impaq, SLI, regional affiliates
July – August 2016	Cohort 2 teachers prepare for sustained implementation at their sites	500+ teachers and teacher leaders and administrators participate	SLI, consultants, and teacher/admin teams in networks of ~36 each
Aug 2015 – May 2016	Documentation of PD participation, online usage analytics, and evaluations of effectiveness for participating Cohort 2 teachers	PD participation and local teacher effectiveness data are tracked for 500+ Cohort 2 teachers	SLI, regional affiliates, administrators

V. SUSTAINABILITY

Comprehensive Stakeholder Buy-in and Advocacy

In implementing fundamental instructional change, teacher buy-in and ownership are key (Elmore, 1996; Bryk & Gomez, 2010). Because teachers have played a collaborative role in the cycles of RA design over time, RA translates easily to teachers and generates the teacher enthusiasm and advocacy that have driven the exponential growth of the RA model. A report comparing RA to other literacy programs for adolescents concluded that “involving administrators and situating [RA] implementation in the subject areas has created collaborative cultures of literacy with extensive administrative support” (Levin, Catlin, & Elson, 2010). RA leadership development draws on recent understandings of the vital roles played by deep internalization of new practices by teachers (Coburn, 2003) and local buy-in and ownership in sustaining reform (Bryk & Schneider, 2002; Spillane, Reiser, & Reimer, 2002). With the project’s focus on providing follow-up support for schools as teacher teams, teacher leaders and site administrators work together to build strong academic literacy support across their schools, creating greater likelihood that practices will be “owned” by the participating schools.

Supporting the sustainability of SEED work will be part of the work of the state coordinators, who are well-known and respected by a broad range of practitioners and stakeholders, in their respective states and beyond. SLI supports local RA affiliates through these state coordinators by developing and improving RA program materials; by providing technical assistance, quality assurance at the RA sites, and research on RA; as well as by disseminating the RA model across the country. SLI’s national office staff includes senior managers and staff developers who provide professional development and continuously refine and improve the

program and support the field. SLI staff also assists state coordinators with planning and management of RA PD sessions and teacher leader and administrator meetings.

Among the essential roles state coordinators play in implementation of the project—and perhaps their most important contribution in terms of sustainability—is their work to make connections between ongoing project initiatives and emerging local reforms, interests, and opportunities. We call this “planning with sustainability in mind.” Thus, the state coordinators for SEED will be asked to continually write and update sustainability plans, beginning at the start of the project. As in the RAISE project to date, that focus—and their leadership acumen—has led them to seek and develop opportunities ranging from creating a consortium of college and university faculty committed to supporting school teams implementing RA to taking an active role in seeking state credit for an online course on RA for administrators.

In addition to support from WestEd and our foundation partners, SLI has been able to expand its reach significantly, thanks to the support and commitment of key stakeholders at the school, district, county, and state levels. Over the past several years, SLI has seen increasing stakeholder support at higher levels of the educational system, such as county offices of education, intermediate units and state departments of education. While these groups are not always directly involved with the implementation of RA, they are able to use their own resources to convene teachers across multiple districts to build learning communities around RA, to provide technical assistance to schools and districts, and to disseminate information about RA to schools and districts in their region.

Given that much of RA takes place at the school and district level, this support is critical to the program’s sustainability beyond the grant period. As evidenced by the many letters of commitment in Appendix D, improving student literacy across high school content areas is a key

priority for our partner schools and districts. In the words of one of our partners, RA “is not just another initiative that the [district] would undertake,” rather, it is closely integrated into the district’s overall strategy for improving student achievement, and it is supported both by teachers, as well as by the highest levels of district administration.

During the SEED grant period, LEA partners will contribute in-kind resources in some or all of the following categories: meeting space and equipment, funds for teachers’ travel and lodging, and substitute pay. The incorporation of RA into the ongoing work of our partners will vary as their local contexts and infrastructure vary. For example, in Pennsylvania and Michigan, steps have already begun for significant long-term incorporation of Reading Apprenticeship at the state level. Pennsylvania has written RA into their Striving Readers grant as one of their key solutions for middle and high school literacy improvement as well as being a key Response-to-Instruction and Intervention (RTI) strategy for Tiers I and II. Michigan has selected RA as one of the few approved “evidence-based interventions” that program improvement schools can adopt. In Indiana, state department of education staff are currently in active discussions about creating a partnership with SLI to make Reading Apprenticeship more available as a standard instructional mode in middle and high schools throughout the state.

In short, we believe that the high level of support from stakeholders at the school, LEA, COE, and DOE levels, in combination with the school-level support and development described in this grant, increases the likelihood that RA implementation across the four states will be sustained beyond the grant period. Ultimately, the pressures for academically rigorous instruction with complex disciplinary texts will continue to drive education decision-makers and practitioners to look to the kinds of transformative solutions that RA represents.

Mechanisms to Broadly Disseminate Information

As an organization that develops networks among practitioners, researchers, and policy makers, WestEd has highly regarded outreach services, an award-winning website (www.wested.org), strong social media presence, and print products that disseminate information about its projects to a broad range of audiences. As a key program within WestEd, SLI is often featured in agency dissemination efforts and in addition distributes information about RA through books, book chapters, both popular and refereed articles, social media and presentations in conferences such as the Council of Great City Schools, AERA, National Science Teachers Association, National Title I conference. SLI's website (www.wested.org/SLI) is also a venue for dissemination and RA resources; it is currently being redesigned to also serve as a portal for SLI's growing online courses and participant networks. Lastly, as a recipient of several U.S. Department of Education research grants, SLI has been invited to present our findings in multiple venues, and our work is featured on the Doing What Works adolescent literacy website (dww.ed.gov).

SLI has also contracted with a communications firm that specializes in education to help increase the visibility of Reading Apprenticeship on a national level. Their work includes developing a comprehensive communications plan; placing articles and opinion pieces in leading publications, blogs, and online media outlets; and convening policy forums for leaders of relevant policy groups and legislators, as well as philanthropic and education organizations. For example, Reading Apprenticeship and the i3 RAISE grant will be the topic of a policy forum at the National Press Club in May 2013.

VI. EVALUATION

Purpose of the Evaluation

The evaluation of the proposed “Literacy Apprenticeship: Reading, Writing, and Learning in the Disciplines” project (Literacy Apprenticeship) is designed to serve formative and summative purposes, and to provide useful data on both the implementation and outcomes of the professional development model. To assess the promise of the online and writing modules developed for this project, formative feedback to developers will focus on teachers’ implementation of RA approaches, as well as teachers’ perceptions regarding their own comfort and skill levels in using the approaches. This data will allow developers the opportunity to refine training or support components of the model, in order to facilitate the best implementation possible. The summative purpose of this evaluation is to assess whether or not the project meets the goals of improving teachers’ ability to support academic literacy and improving student achievement in reading and writing. We will look at teacher growth in terms of implementation of RA approaches and student academic achievement growth. The evaluation will focus on a subset of teachers and students participating in the project and address goals 1 and 2 only, to keep evaluation costs down while providing independent information on the impact of the project for teachers and students. Documentation and assessment of progress on goals 3 and 4 will be carried out by SLI and state coordinators serving as consultants on the project, in collaboration with site administrators.

Primary Research Questions

1. To what extent do teachers participating in the Literacy Apprenticeship professional development change their instructional practices to include use of RA strategies and approaches (as described in the model’s theory of change)?

2. To what extent do students in Literacy Apprenticeship classes use RA learning strategies more than their comparison peers?
3. To what extent do students in Literacy Apprenticeship classrooms show more positive academic behaviors and dispositions (improved writer/reader identity, increased writing amount and variety of text reading for school) than their comparison peers?
4. What are the effects of Literacy Apprenticeship on students' reading and writing achievement?
5. To what extent do students in Literacy Apprenticeship classes achieve more growth on reading and writing assessments than their comparison peers?

Overall Design

IMPAQ International (IMPAQ), a social policy research and evaluation firm with experience conducting evaluations of teacher professional development in literacy, will conduct an independent, external evaluation of Literacy Apprenticeship. The evaluation will use a mixed-methods approach that combines a randomized controlled trial of teacher practices, student use of literacy strategies and academic behaviors and dispositions, and student achievement at schools with formative feedback on teachers' training and implementation of RA strategies.

A total of 24 schools from Pennsylvania and Indiana will be recruited from the overall sample of schools participating in Literacy Apprenticeship PD to participate in the external evaluation. Twelve of these schools will be randomly assigned to receive the PD during the 2014-15 school year and will serve as the treatment group. Teachers in these schools will attend the Literacy Apprenticeship Summer Institute in 2014 and begin implementing RA in their classrooms during the 2014-15 school year (C1). The remaining 12 schools will serve as the

control group. Teachers in these schools will participate in the Summer Institute in 2015 and implement RA in their classrooms throughout the 2015-16 school year (C2).

Student achievement will be measured using two assessments—ETS’ Cognitively Based Assessment of, for, and as Learning (CBAL) assessment of reading and writing and the Indiana and Pennsylvania standardized state reading and writing tests. Students’ academic behaviors and dispositions (e.g., writer/reader identity and perceived self-efficacy) and use of learning strategies, such as metacognitive strategies, will be assessed using a student survey. Data on teacher practices and perceptions will be collected from teachers using an online teacher survey and focus group interviews. Table 2 presents the evaluation and data collection timeline.

Table 2: Evaluation and Data Collection Timeline

	Summer 2014	Sept 2014-Aug 2015	Sept 2015-Aug 2016
Cohort 1 (C1)	2014 Summer Institute	Year 1 implementation	Year 2 implementation
Cohort 2 (C2)	--	2015 Summer Institute	Year 1 implementation
Evaluation Activities	- 2 teacher focus groups at each Summer Institute (2 in PA and 2 in IN)	- 2 teacher focus groups in each state (2 in PA and 2 in IN) - 3 teacher surveys (Sept, Feb, May) - CBAL ELA pre- and post-tests (fall, spring) - Student motivation survey (spring) - Collect state reading and writing test data	- 3 teacher surveys (Sept, Feb, May) - Data analysis and report writing

While this design is limited by the fact that student outcome data is not collected after the second year of implementation¹, it provides estimates of impact from one year of implementation that will be useful in determining the impact of Literacy Apprenticeship on teacher growth and

¹ The timing of the grant period does not allow for student data collection and analysis from schools in their second year of implementation because the grant ends two months after the end of the school year, before state test scores are available. Further, the grant period is not long enough to allow for a two-year delayed treatment of the control schools as a counterfactual to treatment schools in their second year of implementation.

student growth in achievement as well as on student dispositions and academic behaviors. It will also provide valuable empirical evidence that can be used to inform program improvements.

Student Outcomes

All 8th grade students whose teachers participate in Literacy Apprenticeship and whose parents provide consent will be eligible to participate in the study. IMPAQ researchers will collect the student data using the following measures:

- Student dispositions toward academic literacy (Motivation-in-Context survey)
- Strategy use for academic reading and writing (Motivation-in-Context survey)
- Reading and writing skills (CBAL test and state standardized tests)

Literacy Apprenticeship is designed to be multi-disciplinary and includes teachers from multiple subject areas; therefore, it is conceivable that students have multiple teachers participating in the study and could be asked to complete the survey and CBAL assessment multiple times (once for each teacher in the study). In order to avoid this, teachers will be asked to administer the survey and CBAL assessment during their third-period classes². IMPAQ researchers will also collect student demographics (e.g., race, ethnicity, English language learner status, and special education status) from districts and/or schools. These data will be used to assess baseline equivalence and will be included as level-1 covariates in the impact analyses. IMPAQ researchers will also collect school-level demographic and achievement data, which will be included as level-2 covariates in the impact analyses.

² If teachers do not have a third period class, or they do not teach an ELA, science, or history/social studies class during third period, they will be asked to administer the survey and assessment during their next consecutively numbered class period (e.g., 4th period).

Motivation-in-Context Student Survey

The Motivation-in-Context survey, developed and validated by researchers at the University of Michigan (Moje et al., 2008), examines a broad range of student perceptions of their own motivations and self-efficacy, as well as their use of strategies in multiple content areas. For this study, we will use the in-school survey questionnaire which contains 37 questions with responses recorded on a 7-point Likert scale. The survey covers topics including student motivations for reading and writing in content classes, student confidence in literacy-related activities in content classes, and text types read and written in school. The Motivation-in-Context scales have reliability estimates of 0.80 (Stockdill et al., 2011). This survey will be supplemented with items from other validated surveys such as the Metacognitive Awareness of Reading Strategies Inventory (Mokhtari & Reichard, 2002) and The Reader Self-Perception Scale 2 (Henk, Marinak, & Melnick, 2012). We will administer the online survey to students once, during the spring of the 2014-15 school year.

Cognitively Based Assessment of, for, and as Learning (CBAL)

To measure students' growth in reading and writing skills, IMPAQ will collaborate with ETS to administer the CBAL assessment, which is designed to assess deeper understanding and communication of that understanding through a scenario-based assessment approach. Rather than assessing reading and writing as separate tests, the CBAL assessments combine them into a larger construct of literacy. CBAL assessments provide students with a realistic goal for reading a collection of diverse sources that culminates in a specific writing activity. While the source materials are often diverse, they are theme-based and the student is required to integrate, synthesize, and evaluate the information based on the learning goal. Tasks and activities in the "scenario" design are scaffolded to build up students' understanding through the readings so that

they have adequate content from which they can write. For this project, ETS has selected a pair of assessments targeting persuasive, nonfiction content, since the underlying skills and constructs assessed by these forms are aligned with the general learning goals of the RA instructional model and, more generally, with the CCSS. One of the forms has been extensively piloted and has shown adequate reliability ($\alpha=.75$) and validity. The other is currently undergoing field testing by ETS, which will be completed prior to the fall of 2014.

The reading-writing literacy assessments are designed to be taken in two class sessions. The two sessions are united by a common scenario and topic, such as considering arguments on an issue. The first session consists of a series of lead-in tasks (a mixture of selected-response and constructed-response questions) intended to measure supporting skills and scaffold the students' understanding of, and engagement with, the topic and the content about which they would have to write in the second session. These tasks require engagement with texts that provide content on the topic about which the students will write, and thus require students to activate reading skills preparatory to writing. The lead-in section of a writing test may therefore include items that might be interpreted as reading or critical-thinking items, but in this context they also function as prewriting tasks. The second session is a single extended writing task in which students are expected to produce a multi-paragraph essay. The selection of lead-in tasks is governed by an analysis of the skills critical to a particular genre of writing. The Argumentation assessment has lead-in tasks focusing on the analysis of argument and creating summaries from sources, and culminates in a persuasive essay (Appendix I.9).

The tests will be administered to students in fall 2014 and spring 2015. Following each administration, ETS will score the tests. Scoring includes selected response (SR) and constructed response (CR) items (including essays). All CR and SR items will be combined to produce a

single total score for each student per test form. ETS will use a combination of human and automated scoring for the CR tasks. A subset of items will be double scored to ensure inter-rater reliability of raters sufficient to meet What Works Clearinghouse standards.

State Reading and Writing Assessments

Both Pennsylvania and Indiana administer state reading and writing tests to 8th graders in the spring. To investigate the impact of Literacy Apprenticeship on students' performance on tests measuring state standards, the evaluation team will collect student scores on the 2015 state reading and writing assessments: the Pennsylvania System of School Assessment (PSSA) and the Indiana Statewide Testing for Educational Progress Plus (ISTEP+). We will use the meta-analytic approach described in May and colleagues (2009) and Somers, Zhu, and Wong (2011) to combine results across states in order to take into account differences in scoring on the tests (see Appendix I.11 for model specifications). As implied by its name, this approach treats the estimated impact for each state as a separate "study." Analytically, this approach consists of:

1. Estimating the impact of Literacy Apprenticeship for each state, and then
2. Calculating the average program impact by taking a weighted average of these estimates

We will use a simple linear z-score transformation to rescale student test scores, and we will use fixed-effects precision weighting for our average impact estimation.

Analysis of Student Data

Evaluators will estimate the impact of Literacy Apprenticeship PD on student survey and CBAL assessment outcomes using a two-level, fixed-effects model with blocks (see Appendix I.11 for model specifications). We will estimate the effect of Literacy Apprenticeship in two ways:

1. Performance growth measured by CBAL pre- and post-test

2. Performance on the standardized state tests in reading and writing

Results will be presented in standard score (i.e., the estimated difference between treatment and control schools in the test score metric) and effect score metrics.

Expected Statistical Power

To improve the precision of our impact estimates, we will randomize schools into treatment and control conditions within blocks. Schools will be placed into blocks based on an index comprised of the following variables: state (PA or IN), average 8th grade reading and writing scores, and percent of students eligible for free/reduced price lunch. Each block will contain approximately four schools, and we will randomly assign two schools within each block to the treatment condition, with the remaining two schools allocated to the control condition. Since approximately twice as many schools from Pennsylvania will participate in the study, we expect that there will be four Pennsylvania blocks and two Indiana blocks. From each of our 24 middle schools, we expect to recruit approximately four teachers to participate in the study. We assume that each teacher will serve approximately 25 students in his/her targeted class period, for a total of 100 students per school.

The minimum detectable effect size (MDES) for this study was estimated using Optimal Design 2.0. We assume an interclass correlation of 0.15. We also assume that blocking will account for approximately 20 percent of the variance and that additional school-level covariates will account for an additional 20 percent of the variance. Combined with the study sample size (i.e., 6 blocks, 24 schools, and 100 students per school), these assumptions yield an estimated MDES of 0.19, ample power to detect effects for our student outcomes.

Teacher Outcomes

IMPAQ will collect teacher data on teachers' classroom practices and teachers' confidence in

using RA approaches for both formative and summative purposes. Additionally, teacher data will be used to assess fidelity of implementation. Teacher data will provide the following implementation information:

- The extent to which RA is implemented in a manner that is consistent with the program model and underlying theory of action,
- Contextual variables affecting program implementation,
- The effects of Literacy Apprenticeship PD on teacher practices and attitudes around literacy instruction, and
- The difference between Literacy Apprenticeship and comparison classroom practices.

Teacher data will be collected using a set of web-based surveys, as well as focus-groups.

Teacher Surveys

The teacher surveys for the Literacy Apprenticeship project will be based on the surveys developed and used by external evaluation teams for prior studies of SLI's RA PD. Teachers in C1 and C2 will receive three surveys each year throughout the 2014-15 and 2015-16 school years. The surveys contain a common core of questions regarding teachers' use of specific instructional practices, the frequency and duration of teachers' use of these practices, and how confident teachers feel in using various strategies and approaches. Treatment teachers will also be asked to rate the usefulness and quality of the Literacy Apprenticeship PD and supports and to comment on the pros and cons of online versus in-person training and support. Because RA is not a curriculum per se, but an instructional framework, the survey will be appropriate for both Literacy Apprenticeship and comparison teachers, and will allow evaluators to characterize practices in both C1 and C2 classrooms. This will allow evaluators to establish the treatment/control contrast. Surveys of C1 teachers in their second year of implementation will reveal the

extent to which they continue to develop RA practices over time. By comparing teacher practice reported in the fall of first year of implementation to teacher practice reported in the spring of the second year of implementation, evaluators will be able to assess teacher growth over time.

The survey will be web-based, allowing teachers the maximum flexibility in response time and place. Several strategies will be used to maximize the response rate on surveys. For example, IMPAQ will work with district superintendents to generate a letter from the district to introduce the surveys at the start of the 2014-15 school year. Teachers will receive e-mails notifying them before each survey is available, as well as weekly e-mails during the 30-day response window, for those who have not yet responded.

Focus Groups

Data collected using teacher surveys will be complemented by data from teacher focus groups. The focus group methodology offers two major advantages to surveys alone. First, because a focus group is based on peer dialogue, teachers have an opportunity to build on each other's ideas, as well as to express agreement or disagreement. Second, focus groups enable researchers to get more specific or sensitive information by asking "how" and "why" questions. For example, the evaluation team will ask teachers to describe their use of specific RA strategies and their students' response to these strategies, as well as how these have changed over time. Teachers will also be asked to detail the implementation support that they have needed and the support that they have received.

The IMPAQ evaluation team will conduct a total of eight focus groups. A team of two researchers will visit the Summer Institutes held in Pennsylvania and Indiana. During each of the Summer Institutes, the team will conduct two focus groups, for a total four Institute-based focus groups. These initial focus groups will center on themes of teacher preparedness, anticipation of

implementation success, and plans for fitting RA into the regular curriculum. A pair of researchers will also visit a convenience sample of two treatment schools in Pennsylvania and two in Indiana during the 2014-15 school year. This will allow them to follow up on those questions asked at the Institute, as well as to ask more detailed implementation questions. In each state, the pair will conduct two focus groups, for a total of four implementation-based focus groups. Each focus group will include 8 to 12 teachers.

Analysis of Teacher Data

The Literacy Apprenticeship teacher survey will yield quantitative and qualitative data. This allows the research team to report trends and patterns in the data as well as to share de-identified information in the teachers' words. Quantitative data will be analyzed to provide comparisons between C1 and C2 teacher practices and attitudes using t-tests to determine statistical significance.

Qualitative data, including the focus group data, will be analyzed using the NVivo software package. The IMPAQ evaluation team will use a Grounded Theory approach (Charmaz, 2006), which allows researchers to examine the data for pre-determined themes, but also for unexpected themes that may emerge organically from the data. Researchers will collect, review, and code the data iteratively. This means that data analysis will begin immediately after the first focus groups are conducted. This approach maximizes researchers' flexibility and responsiveness to the data and to stakeholders.

For references cited, see Appendix F.