CCSS Literacy and Math Tools

An Interim Report on Implementation and Sustainability during the Pilot Year

Research for Action

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About Research for Action

Research for Action (RFA) is a Philadelphia-based nonprofit organization. We seek to use research as the basis for the improvement of educational opportunities and outcomes for traditionally underserved students. Our work is designed to strengthen public schools and postsecondary institutions; provide research-based recommendations to policymakers, practitioners and the public at the local, state and national levels; and enrich the civic and community dialogue about public education. For more information, please visit our website at www.researchforaction.org.

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Overview

This document summarizes the findings from the initial round of research on the development and piloting of two types of instructional tools designed to support teachers' integration of the Common Core State Standards (CCSS) in literacy and math. In this interim report, Research for Action (RFA) presents key findings from the first half of the 2010-2011 school year in the following five categories:

- Literacy and math theories of action
- Strategy for the development and implementation of literacy and math tools
- Tool implementation and use
- Sustainability
- Recommendations

Research Methods

The report is based on the following data:

Data Source	Literacy Initiative	Math Initiative
Teacher Surveys	4 sites 50 surveys	1 site 18 surveys
Interviews with Teachers[1]	4 sites 50 interview respondents	1 site 20 interview respondents
Interviews with Principals and District Administrators	4 sites 19 interview respondents	1 site 2 interview respondents
Classroom Observations	4 sites 24 observations	1 site 15 observations
Professional Development Observations	3 sites	2 sites

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[1] Note: Teacher interviews about the literacy initiative include 9 reading coaches, 2 special education teachers, and 1 reading specialist. Teacher interviews about the math initiative include 2 special education teachers.

Literacy and Math Theories of Action

The Foundation's strategy in this initiative is driven by theories of action (TOAs) that presume a supportive and ready context; extensive pilot testing in early adopter sites to test, refine and scale the use of the tools; robust implementation; and growing impact of the tools on classroom practice and student learning. (See the full report the two TOAs that highlight aspects unique to literacy or math.)

Strategy for the Development and Implementation of Literacy and Math Tools

The Foundation's strategy for the development of literacy and math tools provides some commonality across the literacy and math tools, but also accommodates flexibility in the program developers' approach so that the tools meet the distinct needs of the literacy and math initiatives. Common strategy elements include:

- The Foundation partnered with program developers with expertise in literacy and math to create tools.
- The Foundation selected pilot sites through two approaches.
- The Foundation supported the development of tools designed to address core activities of teaching and learning in literacy and math.
- The Foundation supported tools requiring teachers to adopt new instructional practices.
- The Foundation provided support for sustained professional development during the pilot year.
- The Foundation supported a rigorous evaluation of the pilot phase.

Findings

1. Literacy Tool Implementation and Use

Literacy Tools in Action

- 92%[2] of teachers in the pilot sites believed that Task 11 was a good fit for their curriculum and 82% reported that Task 11 was a good fit for their students.
- Literacy tools were aligned with the pedagogical practices of most English teachers.
- Science and social studies teachers appreciated the opportunity to integrate writing into their classes.

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[2] All percentages refer to survey data.

- At some sites, collaboration around the Literacy Design Collaborative (LDC) work broadened to include other educators, including librarians, special education teachers and/or reading specialists.

Challenging Aspects of Literacy Tool Development

- Many teachers found the current template for creating modules difficult to navigate, especially while developing their first module.

- In initial module development, most teachers/coaches had questions about how to use the instructional ladder.

- Teachers wanted the flexibility to add a few words or revise the wording of the template task.

- Most science and social studies teachers experienced difficulties finding high quality content reading material that met the needs of students with a range of reading levels.

Challenging Aspects of Literacy Tool Use

- Some science and social studies teachers voiced concern about the amount of time spent on writing at the expense of covering content.

- Teachers found it more difficult to implement modules when they were not involved in the module development process.

Using Literacy Tools to Meet a Range of Student Needs

- Teachers reported that the modules were flexible enough to adapt to the range of academic abilities of their students, but they wanted more support in differentiating instruction.

- Teachers with a significant English Language Learner (ELL) student population struggled to differentiate instruction.

- Teachers reported that they could use the tools with their special education students, but reported feeling more successful if they had additional support.

2. Math Tools Implementation and Use

Math Tools in Action

- Teachers are using the Formative Assessment Lessons (FALs) and most (94%) believe that they are aligned to their curriculum.

- All teachers reported that tools are accessible to all students, regardless of their math skill level.

- Teachers facilitated student learning by conferencing with students at the group or pair level during the collaborative activity rather than provide direct instruction.

Challenging Aspects of Math Tool Use

- The robust implementation of the math initiative was hampered by the limited number of FALs available for teacher use.

- Teachers found it challenging and time-consuming to prepare class materials prior to lessons.

- Teachers were unable to complete an entire FAL in one class period.

3. Sustainability

Sustainability refers to a reform's ability to endure beyond the short-term and the initial infusion of outside support.

Buy-in: Literacy

- Most teachers (92%) reported that the LDC framework is a strong model for teaching literacy in the content areas.

- 92% of teachers using literacy tools reported that the tools provide them with new information about students' knowledge of subject matter and about students' skills.

- Some teachers reported early perceptions of tool benefits, including that they provided a better understanding of students' strengths and weaknesses as readers and writers, and that the resulting student work increased their expectations for what students can do.

- 88% of teachers using the literacy tools reported that they increase student engagement in literacy learning.

Buy-in: Math

- All math teachers (100%) reported that the FALs provided them with a strong and engaging model for teaching mathematics to high school students.

- All teachers (100%) using FALs reported that the tools provided them with new information about students' mathematical thinking skills and said that the FALs gave them useful information about what their students know and do not know.

- Teachers reported that tools also reach those students whose mathematical knowledge and understanding is not particularly strong.

Tool Alignment: Literacy

- Districts and states are currently in the very early stages of their work with the CCSS, and, in many literacy sites, most teachers have had little contact with the CCSS.

- Some literacy sites are able to integrate the new tools with literacy approaches they are already using district-wide.

- In two districts, teachers were concerned about alignment between the template task and/or the module framework and the state standardized assessment.

Tool Alignment: Math

- When considering whether to adopt new initiatives, textbooks, etc., administrators and teachers looked for alignment, compatibility, and consistency with the Gates work.

Human & Social Capital: Literacy

- More than 80% of teachers reported that the support they received in developing and implementing the modules was helpful.

- More than three-quarters of teachers agreed that they wanted professional development on adapting instruction for different populations such as ELL, special needs and gifted learners, and on developing modules and scoring student writing.

- Participating teachers identified peer collaboration as one of the most valued aspects of this initiative's professional development.

- The tool developers' professional development role varied by site as they responded to the different contexts and structures in each site.

- In general, district administrators were more deeply involved in professional development and overall project coordination than were building principals.

Human & Social Capital: Math

- All math teachers (100%) surveyed reported that professional development was helpful.

- While all teachers reported feeling supported by their district to use the FALs (100%), 78% percent reported that they have what they need to use the FALs in their classroom.

- The large majority of teachers using the math tools reported wanting *more* professional development (83%).

- Professional development sometimes competed with instructional time.

- There is both buy-in and engagement from principals about the math work.

Funding and Long-Term Commitment

- At this early stage of the initiative, it is unclear what level of funding is needed to sustain this work once it is established; this has not been an area of focus for our research thus far.

- Individuals in both the math and literacy sites expressed concern about whether there would be enough funding to sustain and scale up this initiative.

Recommendations

RFA has developed an initial set of recommendations intended to strengthen and support how teachers use the tools, and to enhance the prospects for sustaining and scaling-up this initiative.

1. Recommendations for the Literacy Initiative

- Continue providing teachers with robust professional development, focused on building their expertise in developing modules.

- Provide science and social studies teachers with additional support to locate rich, high content texts at appropriate reading levels and with strategies for providing feedback on student writing.

- Provide support for teachers to develop their facility in using insights from module instruction to inform ongoing teaching.

- Work with educators in specific sites to help them resolve conflicts they articulate between the modules and existing curricula, rubrics, or state assessments.

2. Recommendations for the Math Initiative

- Provide teachers with packaged sets of lessons to decrease the preparation time for FAL use.

- Provide teachers with more direction about how to group students and arrange seating during the collaborative activity.

- Facilitate more discussion about both formative assessment strategies and how to instructionally respond to the information collected from tasks.

3. Recommendations for Initiative Sustainability and Scale-Up

- Develop and support principal involvement in and knowledge of the initiatives to preserve tool use in schools.

- Involve practitioners in sharing learning and best practices across sites after the pilot year ends.

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I. Introduction

The Bill and Melinda Gates Foundation played an instrumental role in the development of the Common Core State Standards (CCSS) as part of its College-Ready Work (CRW) initiative. The CCSS outline the necessary skills and knowledge that students need to be prepared to enter college or the work force. Since their release, 42 states, the District of Columbia, and the U.S. Virgin Islands have adopted the CCSS.[3] As a next step in the CRW initiative, the Foundation funded the development and piloting of two types of instructional tools to support teachers' integration of the CCSS in literacy and math. Additionally, the Foundation provided funding for research to examine the implementation and utility of the tools in the pilot sites, which is designed to lay the groundwork for successful implementation and improve the next iteration of piloting during the 2011-2012 school year.

In this interim report, Research for Action (RFA) presents key findings to date about the pilot phase of the instructional tools. Overall, our research presents an encouraging picture of early implementation. At the mid-point of the first pilot year of the initiative, implementation activities have laid a strong foundation for expanding and deepening use of the tools.

The report includes findings from four literacy sites where district staff and teachers participated in professional development and developed and implemented the literacy tools. District staff, principals and teachers were interviewed about their experiences in the initiative, while RFA staff also observed professional development and classrooms of teachers during tool implementation. Math sites are at a different phase of implementation. Last year, math sites received several sessions

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[3] http://www.corestandards.org/in-the-states

of "readying" professional development, which focused on formative assessment strategies that teachers can use on an everyday basis in the classroom. This school year, teachers received the first set of math tools through professional development, though only one district received the tools in time for RFA to conduct fieldwork at the site and include the resulting data in the report. Figure 1 below provides more detailed information about our primary research questions, data sources and research methods.

Figure 1. Guiding Research Questions, Methodology and Data Sources

Research Questions

- What is the theory of action of the Gates initiative focused on the instructional tools?
- Do teachers believe that the tools are strong models for teaching literacy and math?
- What were the experiences of teachers as they developed and implemented the literacy and math tools? What were their successes and what were their challenges?
- What kinds of supports did teachers receive and how did this vary (e.g., by content area, school, district)?
- What are the conditions necessary to best support the successful adoption of the tools at the building level? District and local level?

Research Methodology: Sources of Data

Data Source	Literacy Initiative	Math Initiative
Teacher Surveys	4 sites 50 surveys	1 site 18 surveys
Interviews with Teachers*	4 sites 50 interview respondents	1 site 20 interview respondents
Interviews with Principals and District Administrators	4 sites 19 interview respondents	1 site 2 interview respondents
Classroom Observations	4 sites 24 observations	1 site 15 observations
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*Note: Teacher interviews about the literacy initiative include 9 reading coaches, 2 special education teachers, and 1 reading specialist. Teacher interviews about the math initiative include 2 special education teachers.

A. Structure of the Report

We begin the report by describing the theories of action (TOAs) that drive the Foundation's strategy for the development and implementation of the literacy and math tools. We then describe critical aspects of the development of the tools and their early implementation in educational settings. Next, we focus on three elements of the TOAs. The first two sections address the Implementation

Strategies seen in Column C of the TOAs. We describe the Foundation's strategy for piloting the tools and initial successes and challenges of tool use. We also begin to examine teachers' perceptions of some early Short-Term Outcomes (Column E) in the literacy sites. Due to the fact that we were only able to collect data from one math site, we are unable to make any broad statements about early short-term outcomes of the math initiative. In the Sustainability section of the report, we present findings about teacher buy-in, tool alignment with other initiatives, and the supports needed to continue and expand the initiative, among other key findings. These relate to Column D – Characteristics of Robust Implementation – of the TOAs. The last section provides recommendations for mid-course corrections and next steps.

II. Theory of Action

The Foundation's strategy in this initiative is driven by TOAs that presume a supportive and ready context; extensive pilot testing in early adopter sites to test, refine and scale the use of the tools; robust implementation; and growing impact of the tools on classroom practice and student learning. Although the theory of action for each arm of the initiative – math and literacy – varies to some degree to reflect the differences in both the instruments and their piloting, the implementation and scale-up plans for the two sets of instruments have much in common. Below, we provide a broad overview of each core element of the TOAs (which are represented as columns A-F in Figures 2 and 3). We then summarize the ways in which the TOAs vary.

A. Core Elements of the Theory of Action

i. **Theoretical and Contextual Assumptions**. The initiative is based on a number of theoretical and contextual assumptions that are necessary for the success of the initiative. Assumptions include:

- The TOAs themselves are sound
- The Common Core State Standards (CCSS) accurately reflect the knowledge and skills needed for college and career readiness
- There are adequate resources at the state, district and school level to adequately support the tools and their implementation
- Research, when used strategically, will improve the quality of the tools and their implementation

- The school environment—including teachers, school leaders, and students themselves—is open to change

- Policies at the national, state, and local level are aligned to support the initiative

ii. **Characteristics of the Tools.** Although different by design, both the math and literacy tools must align to the CCSS, provide teachers with flexible, engaging opportunities to operationalize the common core in a classroom setting, and create opportunities for deeper, more meaningful learning.

iii. **Implementation Strategies.** Implementation strategies for both sets of tools involve piloting during the 2011-2012 school year in districts and other settings that are interested in being early adopters; providing intensive professional development to participating teachers; engaging teachers in the co-development and/or refinement of the tools; and identifying national partners who can support this work.

iv. **Characteristics of Robust Implementation.** Key indicators of robust implementation of the initiative include growing buy-in from a broad array of educational stakeholders, sustained and effective professional development and support, and evidence that the tools engage both teachers and students in deeper and more meaningful teaching and learning.

v. **Short-Term Outcomes.** The TOAs identify three levels of short-term outcomes that should emerge one to two years after the initiative has begun:

- <u>Teachers</u> become more effective in the classroom, using the tools broadly to inform curriculum, pedagogy and assessment. Communities of practice emerge in the schools, providing support and encouragement for the use of the tools.

- <u>Students</u> become more engaged learners, demonstrating enthusiasm and engagement in the subject matter, as well as a sense of efficacy and ownership as learners. Assessments of their learning indicate that they are on a trajectory of being better prepared for college and career success.

- <u>At the program level</u>, we would expect to see that the use of tools expands to additional sites. The tools themselves would improve as the piloting reveals strengths and weaknesses, and tool developers respond with a new generation of tools; and support for the initiative would grow, as evidence of the tools' effectiveness is disseminated via research and word-of-mouth.

vi. Long-Term Impact. Presuming that the tools and their implementation continue to improve and become refined, longer-term impacts would begin to emerge three to four years after the launch of the initiative. We would expect to see robust, concrete evidence of improved instruction of both math and literacy; significantly improved student learning; and broad dissemination of the tools across many sites and settings.

B. Differences in the Literacy and Math TOAs

The Foundation is working with two separate organizations – the Literacy Design Collaborative (LDC) and the Shell Centre – to develop the literacy and math tools, respectively. Although they share the same goal of improving student learning by providing robust tools that help teachers align their instruction to the CCSS, LDC and Shell have varied their approach to the development of the formative tools to reflect differences in the two target disciplines, and to also reflect differences in the ways in which these disciplines are taught in schools. In Figures 3 and 4 below, the bolded text indicates aspects of the TOAs that are unique for either literacy or math. These differences exist in the specific characteristics of the tools themselves (Column B); in variations in the implementation strategies used to pilot and refine the tools (Columns C); in the markers of robust implementation (Column D); and in several short- and long-term outcomes (Columns E and F).

Figure 2   Bill and Melinda Gates Foundation Pilot Literacy Initiative: Theory of Action

A	B	C	D	E	F
Theoretical and Contextual Assumptions	**Characteristics of Literacy Tools**	**Implementation Strategies**	**Characteristics of Robust Implementation**	**Short-Term Outcomes at Three Levels**	**Long-Term Impact**
Sound theoretical foundation and theory of action for literacy initiative	LDC builds templates for literacy tasks and modules from theoretical foundation	Identify and recruit districts interested in piloting the tools	District and/or school administrators participate in professional development	**Teachers** • Effectively use tasks and modules to inform curriculum, teaching, and assessment • Provide promising evidence of change in instructional practice • **Communities of practice emerge**	• Broad dissemination of tools and resources (scale up at the national level and beyond)
Common Core State Standards (CCSS) focus on college and career readiness and prepare students for postsecondary success	Templates are linked to CCSS and support students' literacy learning	National and local partners support teachers' development and adoption of tools	Professional development takes place over time (not a one-time event)		• **Improved literacy instruction across the curriculum that is aligned to CCSS**
Adequate funding source(s) support tool development and foster capacity to use them	Templates are adaptable so teachers can develop tasks and modules customized to meet their individual classroom needs	Teachers in recruited districts receive PD related to tool development and use	Continued institutional support and commitment	**Students** • **Actively engage in literacy learning** • **Demonstrate improved literacy skills** • Provide promising evidence that they are better prepared for entry-level college coursework and/or meaningful employment	• **Increased literacy learning for all students**
Research community supports development of literacy-focused tools and resources and use of data for formative purposes	Templates are flexible so teachers can use them across content areas	Engage teachers in co-developing tools	Sufficient time built in to pilot test tools and modules and solicit feedback		• Widespread changes in curriculum and instructional and assessment practices
Local (school) culture or environment is open to change	Tasks and modules signal to teachers what needs to be taught and actively engage students in literacy-focused learning	Teacher-developed tasks & modules are pilot tested and screened through referee system	Teachers employing LDC-type activities during non-module instruction	**Program** • Use of LDC tools and resources at pilot sites and beyond expands (scales up at local levels) • Bank of validated tasks & modules grows • Tasks, modules and PD improve due to formative use of findings from evaluation studies • Support for initiative from state and national experts increases	• More students graduate high school ready for entry-level college coursework and/or meaningful employment
National, state, and/or local policies support a literacy initiative		BMGF partners with organizations to validate alignment of tools to CCSS, assess quality of tools, and evaluate implementation	Teachers across content areas view themselves as "teachers of literacy"		• **Teachers in ELA, science and social studies own responsibility for literacy instruction**
			Teachers have opportunities to collaborate on creating modules and to respond to each other's work		• Initiative is sustainable

CONTINUOUS IMPROVEMENT

* **Bold text** indicates items unique to literacy.

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Figure 3   Bill and Melinda Gates Foundation Pilot Math Initiative: Theory of Action

A	B	C	D	E	F
Theoretical and Contextual Assumptions	**Characteristics of Math Tools**	**Implementation Strategies**	**Characteristics of Robust Implementation**	**Short-Term Outcomes at Three Levels**	**Long-Term Impact**

A — Theoretical and Contextual Assumptions

Theory of action rooted in formative assessment strategies and instructional practices

Common Core State Standards (CCSS) focus on college and career readiness and prepare students for post-secondary success

Adequate funding source(s) support tool development and foster capacity to use them

Research community supports development of math-focused tools and resources and use of data for formative purposes

Local (school) culture or environment is open to change

National, state, and/or local policies support a math initiative

B — Characteristics of Math Tools

Shell Centre develops tools

The tools, designed to align with CCSS, signal what needs to be taught and learned

Tasks are released to teachers once they have received PD around how to use each individual task

Good tools help teachers engage students and provide feedback to improve their math skills

C — Implementation Strategies

Identify and recruit districts interested in using the tools

National and local partners support teachers' adoption of tools

Teachers in recruited districts receive "readying" PD related to formative assessment strategies and tool use

Redefine teachers' roles as coach, facilitator and orchestrator

Tools are pilot tested and screened through referee system

BMGF partners with organizations to validate alignment of tools to CCSS, assess quality of tools, and evaluate implementation

D — Characteristics of Robust Implementation

District and/or school administrators participate in professional development

Professional development takes place over time (not a one-time event)

Continued institutional support and commitment

Sufficient time built in to pilot test tools and solicit feedback

Teachers implement formative assessment strategies throughout the week; not just on those days when formal FALs are used

Teachers are comfortable and confident in assuming classroom roles as instructional coaches, facilitators, and orchestrators

E — Short-Term Outcomes at Three Levels

Teachers
- Effectively use lessons to inform curriculum, teaching, and assessment
- Provide promising evidence of change in instructional practice
- **Give assignments that enable students to struggle productively with math**

Students
- **Actively engage in mathematical reasoning individually and through discussion**
- **Identify their own learning needs**
- **Demonstrate increased math skills and confidence**
- Provide promising evidence that they are better prepared for college entry and/or meaningful employment

Program
- Use of tools and resources at pilot sites and beyond expands (scales up at local levels)
- Bank of validated tools grows
- Tools and PD improve due to formative use of findings from evaluation studies
- Support for initiative from state and national experts increases

F — Long-Term Impact

- Broad dissemination of tools and resources (scale up at the national level and beyond)
- **Improved math instruction across the curriculum that is aligned to CCSS**
- **Increased math learning for all students**
- Widespread changes in curriculum and instructional and assessment practices
- More students graduate high school ready for entry-level college coursework and/or meaningful employment
- **More students interested in STEM careers, majors**
- Initiative is sustainable

CONTINUOUS IMPROVEMENT

* **Bold text** indicates items unique to math.

III. Strategy for the Development and Implementation of Literacy and Math Tools

This section outlines the Foundation's strategy for the development of literacy and math tools that will support secondary educators' implementation of the CCSS. The strategy provides some commonality across the literacy and math tools, but also accommodates flexibility in the program developers' approach so that the tools meet the distinct needs of the literacy and math initiatives. Below are common strategy elements:

- **The Foundation partnered with program developers with expertise in literacy and math to create tools.** The Foundation worked with two program developers. Literacy Design Collaborative (LDC), which began as a small design team, developed the framework for teachers to create lessons that incorporate literacy instruction across three content areas (English/language arts, science, and social studies). As the tools moved into the implementation phase, teachers have joined the collaboration by co-developing and piloting the tools. The teachers' feedback during the pilot phase has led to at least one change in a template task. The Shell Centre, a long-established organization that focuses on math education, developed the math formative assessment lessons or FALs. The use of the word "tools" in this report refers to the tools created by program developers. LDC created the module framework and template tasks in literacy, while the Shell Centre created FALs in math.

- **The Foundation selected pilot sites through two approaches.** The first approach was the selection of school districts to pilot the tools. Districts developed their own processes for engaging individual teachers in the work. The second approach was the selection of national networks with a particular expertise, such as project-based learning or writing instruction. All sites were selected on the basis of "readiness," defined as early adopters of CCSS, possessors of strong human capital, teacher/network knowledge and interest in the initiative, and the capacity to support the work of teachers.

- **The Foundation supported the development of tools designed to address core activities of teaching and learning in literacy and math.** The literacy tools are designed to allow English/language arts, social studies, and science teachers to increase students' literacy skills and content knowledge through their use of relevant content reading and writing activities. In math, the tools are intended to increase students' mathematical reasoning and problem-solving abilities. Both LDC and the Shell Centre developed the learning tasks to align with the CCSS.

Additionally, the tools should provide teachers and students with feedback about students' progress toward meeting new standards.

- **The Foundation supported tools that required teachers to adopt new instructional practices.** The learning tasks in both literacy and math require teachers to change the way they teach. The literacy tools require secondary-level science and social studies teachers to become teachers of literacy and also affect the way English/language arts (ELA) teachers teach their content. ELA teachers, for example, explored writing genres beyond the personal narrative and infused a more structured approach to developing student writing. Math teachers have to adjust their instructional practices to assume the role of, in the words of the math program developers, "coach," "facilitator," and "orchestrator" as they teach math through collaborative activities, allow students to present their work to the class, and encourage students to discuss mathematical problems and processes.

- **The Foundation provided support for sustained professional development.** Sustained professional development for participating teachers and administrators is offered throughout the pilot year. Tool developers and other experts provide ongoing professional development. Within each site, a district administrator manages the grant and supports the teachers' use of the tools. Additionally, across the research sites, district staff supported teachers' use of tools in a range of ways, including professional development sessions, weekly meetings, co-teaching lessons, and observing instruction and providing feedback.

- **The Foundation supported a rigorous evaluation of the pilot phase.** The Foundation recruited several research partners to provide formative and summative feedback about educators' experiences participating in this initiative and to study the tools' alignment with the CCSS.

Though many elements of the Foundation's strategy to develop and support the tools cut across both literacy and math, the strategy has also allowed the program developers flexibility to customize tools and professional development for their content areas and according to their expert knowledge. The strategy elements unique to the literacy and math efforts are outlined in Figure 4.

Figure 4. Strategy elements unique to literacy and math

	Literacy Strategy	Math Strategy
Positioning of Formative Assessment	LDC has placed central emphasis on the tools as instruments of instruction and does not use the language of formative assessment. Though the tools can also be used for formative assessment, this has not been a major emphasis in the initial professional development.	Formative assessment is the central feature of the math tools; lessons are called FALs (Formative Assessment Lessons).
Tool Relationship to Curricula	Literacy tools lead to the creation of modules, which usually last a few weeks. They can be part of a curricular unit or used to construct a full unit.	Math tools are individual lessons which usually last two to three class periods; teachers choose where to insert them in their curriculum.
Approach to Tool Development	Literacy tools consist of frameworks and templates for developing learning tasks embedded in curriculum modules; teachers play a central role by using frameworks and templates to develop the curriculum modules and learning tasks.	Math tools are learning tasks created by the Shell Centre and delivered to teachers during sustained professional development. Teachers do not use them to develop curriculum.
What Tools Ask of Teachers	The literacy approach demands that teachers as they become co-developers of tools; they also gain skills and knowledge that position them to continue developing modules after the grant ends. The literacy modules are more complex and usually encompass multiple lessons and mini-tasks, building to a larger task.	In math, the concepts behind the FALs are likely familiar to teachers even if the lessons themselves are not. The FALs represent a new way for students to access and learn math concepts. The math lessons can be taught in the span of a couple of class periods.
Communities of Practice	In part because of the collaborative nature of tool development and the examination of the resulting student work, development of strong communities of practice is a more explicit goal of the literacy work.	Developing communities of practice has not emerged as an essential strategy of the math initiative.

IV. Tool Implementation and Use

In this section, we present findings from surveys of and interviews with teachers about their experiences implementing the tools. In the case of literacy, implementation refers to both the development and the teaching of the modules. In contrast, math teachers were provided with copies

of the math tools during professional development, so no development component took place. Because of these differences, we describe implementation of literacy and math tools separately. Each section also presents a number of challenges teachers experienced while participating in this pilot phase of the initiative.

A. Literacy Tool Implementation and Use

LDC developed 29 different types of tasks for teachers to use to teach content while increasing their students' literacy skills. This section focuses on the core elements of implementation for developing and teaching a module, which are highlighted in Figure 5. We also present findings about teachers' perceptions of the literacy framework and how teachers used the tools, with a section devoted to using the tools with different student populations. The last two sections focus on the challenges teachers experienced developing and teaching the modules.

Teachers across the pilot sites have completed implementing Task 11, and, in some sites, teachers developed and implemented other tasks prior to its completion. Figure 6 provides samples of Task 11 from each content area. Here, we present findings based on site visits to the four school districts, and brief surveys administered to all participating teachers. It is important to note that all participating teachers and reading coaches who developed modules either self-selected into the pilot phase or were chosen by an administrator.

> *The purpose of the initiative is to have the students understand that they are reading and writing not just in my class, but in all their classes and it is the same structures – the same requirements – that they are held to the same standard. I really like that it gets them thinking about the writing. We're so used to doing a unit and giving the writing assignment at the end of the unit, but now we give the writing assignment at the beginning of it. We went over it every day, so every time they were thinking, 'what do I know more now to complete my task,' which is something we never did before.*
> - Teacher

Figure 5. Core Elements of the Literacy Tool Implementation Process

LDC Modules: Core Elements of Implementation

- **Complete Template Task.** Teachers choose a template task that prompts students to develop a certain type of writing (i.e. expository essay). Teachers complete the task by filling in their content, which includes reading materials, the genre of writing (i.e. essay or article), and the topic of the writing assignment.[1]

- **Create Module.** The module includes an instructional ladder that provides strategies for building literacy skills, writing skills and content knowledge that are necessary for completing the template task. Teachers create mini-assignments for students to complete as they work towards and complete the final writing assignment. Teachers also note which district/state content standards their modules address.

- **Instruct Module.** Modules may become an entire content unit or part of a unit. Module instruction most often lasts from two to three weeks.

- **Score Student Work.** During module instruction, teachers score students' mini tasks. Teachers also score the students' completed template task based on a rubric.

- **Analyze Data.** The mini assignments provide teachers with formative information about students' strengths and weaknesses. They are able to assess students' understanding of content, writing skills, and reading skills.

[1]This process is outlined in the "Literacy Design Collaborative Working Session" notebook produced for the convening in Baltimore, MD in July 2010.

Figure 6. LDC Template Task

LDC Template Task 11 Examples: Informational or Explanatory Tasks

- **Blank Template Task.** After researching _____ (informational texts) on_____ (content), write a _____ (report or substitute) that defines_____ and explains _____ (content). Support your discussion with evidence from your research. What implications can you draw?

- **Middle School English/Language Arts Task.** After reading informational texts on dystopias, write an essay that defines dystopian fiction and explain how The Hunger Games by Suzanne Collins is an example of this type of genre. Support your discussion with evidence from your research.

- **Middle School Social Studies Task.** After researching the textbook and secondary resources on Mesopotamia, write a report that defines "civilization" and explains the development of civilization as a result of population growth in Mesopotamia. Support your discussion with evidence from your research. What implications can you draw?

- **Middle School Science Task.** After researching scientific articles, lab reports, and other assigned documents on scientific method, write an essay that defines scientific method and explains its development, steps, and importance. Support your discussion with evidence from the research.

Note: All teachers were asked to develop and implement a Task 11 module in the fall of 2010.

i.   Literacy Tools in Action

- **Ninety-two percent (92%) of teachers in the pilot sites believed that Task 11 was a good fit for their curriculum and 82% reported that Task 11 was a good fit for their students** (see Figure 7). In the few instances that teachers stated it was not a good fit, they reported that Task 11 required them to teach skills that did not align with their curriculum pacing.

Figure 7. Teacher perceptions of literacy tool fit

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

The teaching /template task(s) that I am using/ have used is a good fit for my curriculum. **92%** — n=49

The teaching/ template task(s) that I am using /have used is a good fit for my students. **82%** — n=49
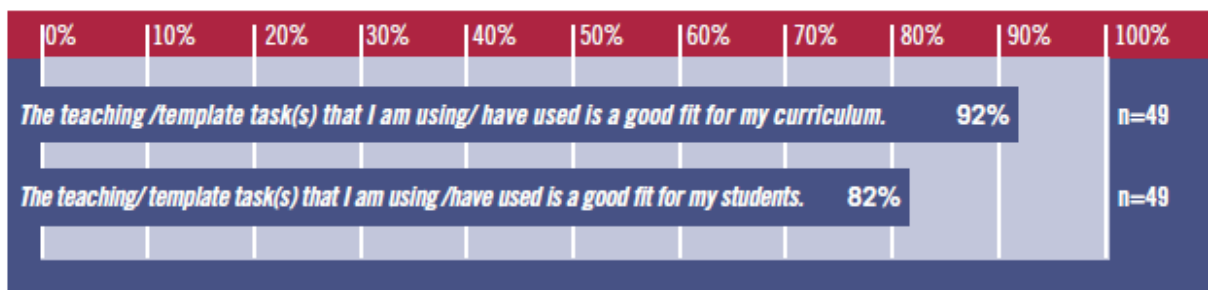
- **Literacy tools were aligned with the pedagogical practices of most English/language arts teachers.** English/language arts teachers experienced fewer challenges developing and teaching the modules than social studies and science teachers, because of their experiences reading literature with their students, creating writing assignments, and grading students' writing. The LDC tools for teachers were often closely aligned with their current instructional practices and existing curriculum.

- **Science and social studies teachers appreciated the opportunity to integrate writing into their classes.** Many teachers reported that they saw the value in teaching literacy in conjunction with their content areas, and they believed that the LDC framework provided them with a model for doing so. A middle school social studies teacher remarked:

    One of the things I always struggled with was teaching writing and when I found out that we had an opportunity to sign up and learn some skills to help my kids write, I jumped on it for that reason – just to become better at teaching literacy and writing in my social studies classes.

- **At some sites, collaboration around the LDC work broadened to include other educators, including librarians, special education teachers and/or reading specialists.** Inclusion of such participants seemed to strengthen teachers' module development and implementation. These educators assisted teachers in various ways, including by finding reading materials at the appropriate reading level, by teaching a short unit on plagiarism, or by helping teachers develop or implement parts of the module.

ii. Challenging Aspects of Literacy Tool Development

Participation in the literacy tool pilot phase required teachers to engage in two processes. In the first process, teachers developed the literacy tools by infusing the template task with their content and developing a module by creating mini-tasks, which are a series of instructional activities that allow the teacher to scaffold the skills students need to complete the template task. In the second, teachers used these tasks in the classroom. The following section presents the challenges that teachers experienced as they developed the module.

- **Teachers and reading coaches[4] found the initial work of developing modules challenging.** Most teachers voiced more confidence about creating modules once they had some experience working with them. Most teachers also stated that finding the time to develop modules was difficult, but that they enjoyed the intellectual challenge of developing the modules.

- **Teachers had difficulty developing modules without grade level/content peers.** Many teachers developed modules with their grade level/content peers and teachers reported that this collaboration and support was extremely beneficial during development and implementation. Yet teachers who did not have a grade level/content peer often reported that module development was more challenging because they did not have anyone to collaborate with to find reading materials or develop grade level and content-appropriate mini lessons.

- **Teachers found the current template for creating modules difficult to navigate.** Most teachers requested a simpler, more user-friendly template to construct their module. They found the current format redundant and cumbersome to build their module:

  The format that they gave us [the actual module and module pre-sheet builder] – they need to make an informational page to have next to you [while you] use the module builder. The other one is too cluttered with too much information. There are 9-11 pages. That's a little much. The builder is the better format, especially once you get used to the module. You don't need the explanation of everything on there. And a lot of it is jargon. (High school ELA teacher)

- **Teachers were unclear about how the instructional ladder should be used.** In initial module development, most teachers had questions about how to use the instructional ladder. Teachers were confused about which aspects of the instructional ladder were fixed and which could be altered. Many teachers had the perception that deviating from the ladder framework was not allowed; the message that customizing for one's context is both allowed and desired is

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[4] In one site, reading coaches developed modules. All of the bulleted findings in this section apply to both teachers and reading coaches.

only slowly reaching the sites. Additionally, some teachers want to make further modifications to meet the needs of their special education or ELL students:

> *We were so enthusiastic about the idea and the process and as the days went on it became a little bit overwhelming. When we left, I still had so many questions. A lot of it has to do with filling out the instructional ladder. That seems to be really tough. I get what they want us to do. I think we need a list of our strategies – reading strategies, graphic organizers – we like to use and then get specific with that. In the entire instructional ladder it seems like they already give an answer but should I change that? A lot of it was unclear.* (Middle school ELA teacher)

- **Some teachers wanted to make changes to the template task to better fit their curriculum unit**. During the pilot phase, teachers were directed not to alter the template tasks. Teachers wanted the flexibility to add a few words or revise the wording of the template task.

- **Most science and social studies teachers experienced difficulties finding high quality content reading material that met the needs of students with a range of reading levels.** Locating informational text with relevant content but on the right reading level for middle or high school students was challenging, especially in science. In one site, a librarian rewrote text so that students could access high-level content on their reading level.

iii.   Challenging Aspects of Literacy Tool Use

The second step in the literacy tool implementation process involves using the tools in the classroom. This section summarizes challenges that teachers identified as they embarked on this process.

- **Teachers found it difficult to estimate the pacing of the module.** Many teachers often had to adjust the amount of time allotted for mini lessons and the entire module. In most cases, the module lasted longer than originally planned. When teachers implemented modules they did not develop, pacing seemed to be even more difficult.

- **Some science and social studies teachers voiced concern about the amount of time spent on writing at the expense of covering content.** Most teachers reported that they are assigning more writing than usual while teaching a module. Teachers also commented that providing feedback on student writing was time-consuming, but was a necessary activity. Considering the increased time spent on writing, many teachers felt pressure to move forward in their curriculum. One teacher noted the tradeoff of covering less content because of the module, but emphasized the overall benefits of focusing on writing:

> *Another challenge is I am so crunched for time. I don't have as much time as we would like. In the past I would not necessarily have had them write a paper on this. That took time. I had to conference with every*

student on rough draft and first paragraph. If I'm not teaching content every single day, then I'm behind. I had to cut out content to get this in. It was a good investment. (High school social studies teacher)

- **Teachers found it more difficult to implement modules when they were not involved in the module development process.** When teachers taught modules they did not develop, most found implementation more challenging than did teachers who developed their own modules. Particular areas of confusion included clarity of directions for instructional activities for both teachers and students, and pacing of mini tasks.

- **Schools with limited access to reliable technology experienced additional challenges during module implementation**. Teachers who had access to computers felt that it enhanced their students' ability to search for information and write drafts of the template task. Teachers also reported that access to computers allowed them to provide electronic feedback to students in a timely manner. Some teachers reported that their school did not have enough computers for teachers to use with their students during module instruction, while other teachers reported a lack of access to functioning computers. This limited access to computers hindered module implementation for some teachers.

- **Scoring of student writing presented a challenge for most teachers.** Several challenges emerged with regard to scoring student writing. Some teachers found that the LDC rubric aligned well with existing school district criteria for student writing. Others felt the need to adapt it and to resolve perceived conflict between the rubric and existing grading expectations. Some middle school teachers reported that the rubric was too advanced for their students.

iv.   Using Literacy Tools to Meet a Range of Student Needs

Differentiating instruction while using the literacy tools with students with differing academic abilities presented teachers with a unique challenge. Some teachers described successes in this area, while others felt they needed additional support. This section presents findings based on teachers' experiences using the tools with different types of students, including ELL students, and special education students, examines how they addressed the issue of differentiation, and identifies areas for additional teacher supports.

- **Overall, teachers reported that the modules were flexible enough to adapt to the range of academic abilities of their students.** Several teachers who taught advanced courses, mostly in high school, stated that the tools were an excellent fit. A few teachers purposely piloted the tools with their advanced students before using the LDC tools with students of average academic

ability. Teachers across all secondary levels commented that they had to differentiate instruction for their average to lower level students during module and non-module instruction. Some wanted more guidance on how to differentiate instruction for their struggling students during module implementation. When asked how the tools fit the needs of the range of students, a high school science teacher stated that, "It's very difficult. We talk about differentiation and we know we need to do it but it's really challenging to scaffold all of that material [in the mini lessons]."

- **Teachers with a significant ELL student population struggled to differentiate instruction.** Teachers with ELL students found it challenging to create a writing assignment and find reading materials that fit their students' varying levels of English language proficiency. Teachers were unclear about how to set expectations for the quality and quantity of work ELL students should produce and wanted more guidance on how to develop modules that met their needs.

- **Teachers who used the tools with their special education students felt more successful if they had support from a collaborator or a special education teacher.** Teachers reported that they could use the tools with their special education students. Teachers who had another educator assisting them in the classroom during module instruction were enthusiastic about their students' ability to complete the mini lessons and the final task. A few teachers had a special education background and were able to work with special education students without the assistance of an aide. However, like teachers who had no support, they felt that implementation of the module would have been more successful if they had additional support. Teachers also had questions about how much they could adapt the materials to meet the needs of special education students.

B. Math Tool Implementation and Use

Similar to the literacy section, this section describes the core elements that math teachers need to complete in order to use the Formative Assessment Lessons (FALs), which are outlined in Figure 8 below. We also present findings about teachers' perceptions of the tools, how teachers used the tools, and the challenges they experienced preparing and using the FALs in the classroom.

I think the purpose of doing the tasks that the Gates Foundation has given us is to create students that have a foundation of understanding and they can look at any problem and know how to attach it in their own way. I also think that one of the things that the Gates Foundation is trying to do with their tasks is to create retention in students so that when they are faced with something that they have seen before they can at least bring up an experience in their mind of how to do it again.

- Teacher's interpretation of the math initiative's purpose

Figure 8. Core Elements of the Math Tools Implementation Process

Shell Centre Math Formative Assessment Lessons: Core Elements of Implementation

- **Preparation of FALs.** All lessons require teachers to photo-copy class sets of the initial assessments and worksheets of the collaborative activity. Some lessons require teachers to make class sets of manipulatives, which often includes copying, cutting, laminating, and gathering other special supplies (i.e. dry erase markers).

- **Initial Assessment.** Students are to complete an initial assessment of the math content individually. The assessment takes approximately 10 minutes to complete. Teachers may circulate and review students' work in real time.

- **Collaborative Activity with Plenary Discussion.** Students work in pairs or groups to solve the math problem. The structure of the math problem allows the teacher to scaffold student knowledge by extending the problem to increasing levels of rigor as students complete each step. The teacher may mini-conference with individual groups, ask students to present part of the problem, and/or bring the entire class together to discuss the problem in order to share the knowledge gained from the activity.

- **Post-Assessment.** Students return to their initial assessment to answer incomplete items or correct wrong answers. Teachers can request students complete the post assessment in a different color pen in order to assess learning.

i. Math Tools in Action

At the time of the field visit, teachers in one site[5] had been given four FALs through the professional development provided by the Foundation-funded consultants. Interviews, classroom observations, and surveys revealed the following about teachers' use of the FALs:

- **Teachers are using the FALs and most (94%) believe that they are aligned to their curriculum** (see Figure 9)**.** The tools are not designed to be used in class every day; rather, teachers strategically plan where the tools fit best in their curriculum. During the site visit, RFA observed 10 teachers using FALs in the following five content classes: Algebra I, Geometry, Algebra II, Pre-Calculus, and Probability and Statistics. These FALs included Shell Centre FALs and a similar lesson developed by a Foundation-supported math consultant who provided professional development to the site.

Figure 9. Teacher perceptions of math tool fit

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
The FALS that I am using/have used are a good fit for my curriculum.									94%	n=18
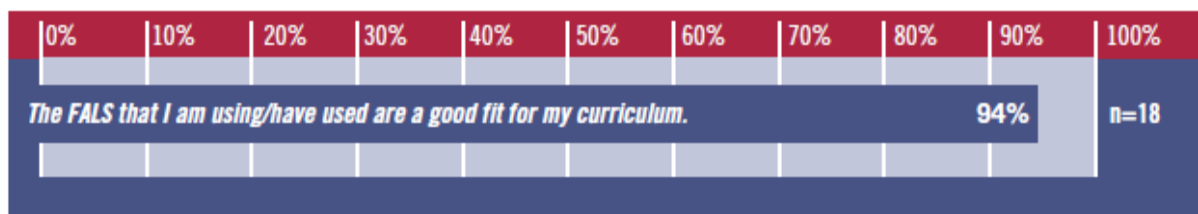
Teachers reported that tools are accessible to all students. All teachers reported that all of their students are able to engage in the FALs, regardless of their math skill level. Furthermore, teachers reported that the tools increase their students' engagement in math class when the tools are used. One geometry teacher stated:

> *I think there is just an entry level in these activities for everyone. Everyone is able to get started and do something and then build on that to do something else. Then they build at their own rate and I think that shows.*

- **Teachers had latitude in using FALs.** Interviews and observations revealed that teachers have flexibility with regard to which pieces of the tools they use; thus, they can make a FAL more challenging for advanced classes. Teachers can also increase or decrease the level of rigor of the FALs when using the tools with a class of students that have a range of mathematical

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[5] This section of the interim report only focuses on one site visit.

knowledge. Teachers were observed using the FALs to reinforce content and to prepare students for an upcoming high-stakes standardized test.

- **Teachers understood that the lessons required that they facilitate student learning rather than provide direct instruction.** Observations and interviews revealed that teachers facilitated learning by conferencing with students at the group or pair level during the collaborative activity. They provided very little direct instruction and teachers reported that they enjoyed taking on this new role.

- **Teachers encouraged students to present their work to the class.** Many teachers encouraged students to share their new knowledge with the class by presenting, explaining, and defending their work on document cameras and smart boards. Students shared information that could push the entire class forward during the collaborative activity.

- **Teachers reported that it was easier to use the FALs when they had additional support in the classroom.** Some teachers had a second person in the classroom – either a special education teacher or a student aide. Teachers noted that having a second person in the classroom was very helpful during the collaborative activity. These individuals helped to disseminate class sets of manipulatives, answer questions, and the special education teacher conferenced with students as they completed the activity.

- **Teachers did not distinguish between the Shell FALs and the Shell-like lessons developed by professional development consultants.** Teachers were given Shell FALs, as well as non-Shell FALs. The latter were developed for use during the readying professional development last year and the FAL professional development this year. The Shell FALs have the four-part structure that is outlined in Figure 8; the non-Shell FALs only seem to include the collaborative activity. During interviews and observations with teachers, they did not distinguish between the two types of FALs. Additionally, some teachers had also begun developing their own tasks modeled after the Shell FALs.

ii.   Challenging Aspects of Math Tool Use

This section summarizes challenges teachers identified while using the FALs.

- **The robust implementation of the math initiative was hampered by the limited number of FALs available for teacher use.** Teachers received a year of readying professional development to prepare them to use the FALs, and also to educate them about how to use formative assessment in their classrooms "day-to-day" and "minute-to-minute." Because

teachers only had four FALs to use, implementation is limited to occasional "Gates days" when teachers are using the FALs and strategies, and a larger number of "non-Gates days" when teachers are not using the FALs or the strategies.

- **Teachers found it challenging to prepare class sets of materials prior to lessons.** Some activities required multiple sets of laminated cards, transparencies, and markers that teachers had to prepare. Teacher supports for preparing FALs for classroom use varied across sites. Some had to prepare the activities themselves, while others had assistance from a student aide. Nonetheless, the process of preparing the FALs was time-consuming.

- **Teachers were unable to complete an entire FAL in one class period.** Length of classes varied from 56 to 90 minute blocks, and most teachers expressed concern about the time it takes to complete the four-part FAL. Most teachers reported that the amount of time needed to complete the lesson can take away from teaching math content and preparing students for their state tests. One pre-calculus teacher remarked:

  I would like when activities are developed if they could fit appropriately into a one hour class period. That would be helpful to teachers to be able to say, 'I'm going to take a day and do this'… If they can't fit in one class period, there is a lot of reset-up. You would have to set everything back up and then get back into it. I think you would lose a lot of class time that you could be more effectively using if you did that.

- **Teachers found it difficult to meaningfully facilitate discussion with every pair or small group of students during the collaborative activity.** Teachers had approximately 30 students in their classes, which resulted in 7-15 groups or pairs of students for the collaborative activity. Many teachers found it challenging to visit every group to provide students with individual guidance. Teachers found it easier when they had an additional person in the room (i.e. special education teacher or student aide).

- **Observations revealed variation in grouping students for the collaborate activity, which presented challenges for student participation**. Student groups ranged from a pair to as many as five students working on the collaborative activity. When students were working in groups, some teachers requested that pairs sit side-by-side, while other teachers allowed students to work with the manipulatives sitting across from one another. When students sat across from one another in pairs or groups, at least one student was interacting with the manipulative upside down and this seating arrangement hindered the student's full participation.

V. Sustainability

Sustainability refers to a reform's ability to endure beyond the short-term and the initial infusion of outside support. Long after the formal professional development has ended and other initiatives are introduced, the intent is for the literacy and math tools – and more importantly, for teachers' use of the tools – to deepen, strengthen, and endure. The goal, ultimately, is for teachers to confidently and meaningfully incorporate the tools into their classroom routines and instructional practices, and to use them to engage students, to align their instruction with the CCSS, to increase rigor, and to better prepare students for both post-secondary education and careers.

The quotes below feature two administrators reflecting on aspects of sustainability:

A principal commenting on the LITERACY work

They are at varying levels of buy-in, but the positive feedback about students' engagement is taking hold… Teachers are seeing their students get excited about reading, and this module gives them ways to differentiate instruction and it gives them tools and strategies that are aligned with what the districts expects them to be doing… Teachers are more excited, because students are more excited.

A district administrator commenting on MATH work

When we did the trainings the first year, there was a lot of theory talk and a few application pieces and a lot of time for teachers to process and…that included a lot of teachers really, really struggling with the way they taught and the things they were asked to do and it was painful for lack of a better term. But you could almost see them switching over but it took days, not hours and not minutes, for them to start thinking differently and we are only now…seeing those people switching over those philosophies.

This section examines factors that are critical to sustaining teachers' use of the literacy and math tools in the pilot sites. These factors are also important in planning the expansion of tool use.

Forces at many levels (federal, state, reform design teams, district, school, classroom) interact to shape the longevity of reform[6]. Here, we focus on four factors that are especially important in the pilot phase of a reform initiative designed to be sustained in existing sites and expanded to additional sites.

First, research indicates that "schools that dropped their reforms almost always exhibited an absence of staff *buy-in* initially."[7] Sustainability is also affected by the degree to which reforms are *aligned* with existing policies[8], as well as by issues such as the degree to which teachers perceive reforms are aligned with accountability systems[9] In terms of *human and social capital*, teacher depth of knowledge about the reform is key,[10] as is a supportive, school-based professional community of colleagues[11] and knowledgeable and supportive school and district leadership.[12] *Funding* became part of this initial group of factors, in part due to the urgency with which participants raised questions about the level of on-going funding. A brief description of the importance of each aspect of sustainability can be seen in Figure 10.

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[6] Datnow, A., Hubbard, L., & Mehan, H. (2002). *Extending Educational Reform: From One School to Many.* New York: RoutledgeFalmer.

[7] Datnow, A., Hubbard, L., & Mehan, H., 2002, 135, emphasis added.

[8] Coburn, C. (2003). "Rethinking Scale: Moving Beyond Numbers to Deep and Lasting Change." *Educational Researcher*, Vol. 23, No. 6, pp. 3-12.

[9] Datnow, A., Hubbard, L., & Mehan, H., 2002.

[10] Coburn, C., 2003; Datnow, A., Hubbard, L., & Mehan, H., 2002.

[11] Coburn, C., 2003.

[12] Coburn, C., 2003; Datnow, A., Hubbard, L., & Mehan, H., 2002.

Figure 10. Factors Affecting Sustainability of Tool Use

Factors Crucial to Sustaining Teachers' Use of Literacy and Math Tools in Pilot Sites

- **Buy -in.** Buy in refers to teachers' commitment to and ownership of the reform. If teachers do not perceive the tools contributing to student success, they are less likely to sustain their use.
- **Alignment with other initiatives and policies.** Reforms are more likely to gain traction and endure when policies at multiple levels are aligned to support the reform, and when existing accountability systems and other curricular initiatives are also aligned. Equally important is the alignment of teacher, administrator, and district personnel roles within the reform.
- **Human and social capital.** *Human capital* refers to the knowledge, attitudes, and skills of individual actors, such as teachers, principals, and district personnel. An initiative is more likely to be sustained if teachers and principals receive effective support to build knowledge and skills relevant to implementing the initiative. When schools have strong *social capital*, professional relationships are characterized by trust and collective responsibility for improved organizational outcomes.
- **Funding.** Unstable or insufficient funding can place a reform at risk. At the same time, a key question is, once a reform has been established, what aspects of the reform process can be supported without additional funding or by redirecting existing funding?

A. Buy-in

At this early pilot stage, our research reveals initial signs of teacher buy-in, including positive perceptions of the literacy and math tools and of their usefulness in intellectually engaging students, as well as teacher experiences of student success with the tools. Below we first describe the status of buy-in for literacy, and follow with a description of math buy-in.

i. Buy-in: Literacy

- **Most teachers (92%) reported that the LDC framework is a strong model for teaching literacy in the content areas** (see Figure 11). Teachers who attended the initial summer 2010 cross-site training in Baltimore and developed their own module were more likely to view the LDC framework as a strong model than teachers who did not attend and did not develop their own modules.

Figure 11. Teacher perceptions of the literacy framework

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
The LDC Framework and accompanying tools provide a strong model for teaching literacy in the content areas.								92%		n=50
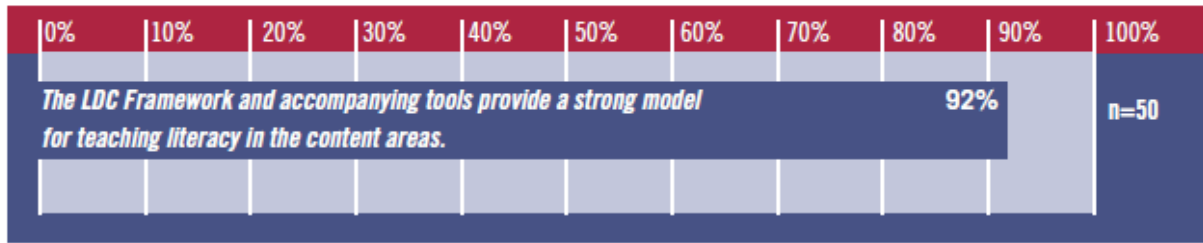
- **Teachers reported that the tools enable them to learn new information about their students**. As Figure 12 indicates:
  - Ninety-two percent (92%) of teachers using literacy tools reported that the tools provide them with new information about students' knowledge of subject matter.
  - Ninety-two percent (92%) also said that the tools gave them new information about students' literacy skills.
- **Teachers also reported that the tools effectively engaged students.**
  - Eighty-eight percent (88%) of teachers using the literacy tools reported that they increase student engagement in literacy learning (see Figure 12).

Figure 12. Teacher perceptions of literacy tool utility

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
The literacy tools are helpful for increasing my students' engagement in literacy learning 88%										n=49
The literacy tools enable me to learn new information about my students' knowledge of subject matter. 92%										n=48
The literacy tools enable me to learn new information about my students' literacy skills.								92%		n=49
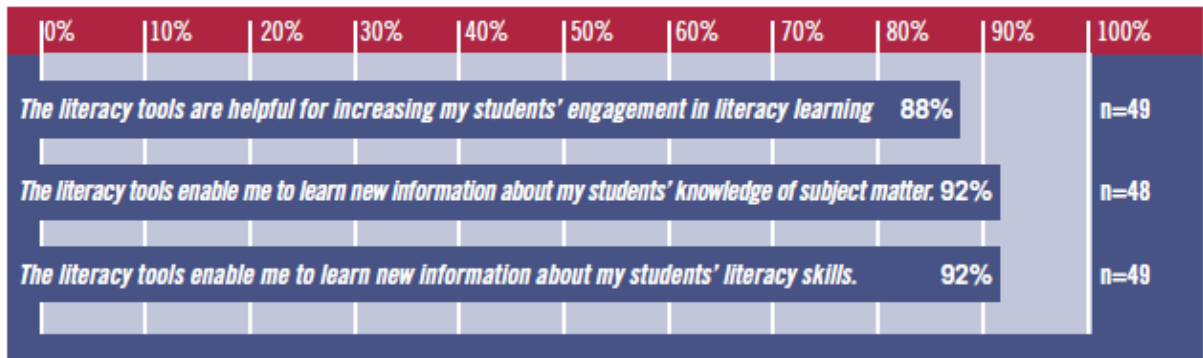
- **Some teachers reported that the modules gave them a more nuanced understanding of students' strengths and weaknesses as readers and writers.** One English teacher said, "Because there was so much writing, you start to see what kind of stuff sticks, what kind of stuff they find interesting, and what they are actually getting from the reading." A science teacher explained:

It's really told me what kind of writers they are. It's really given me an insight to their struggles in their other classes. A lot of times in science they do really well…and in communication arts they have an F…this has really brought to light some of their weaknesses and has enabled me to help them as their ally, because they like science and don't consider it writing class….I've also learned a lot about their strengths…I have some really strong writers that I would have never suspected.

- **Some teachers reported that their students were writing more and producing noticeably stronger writing.** These quotations from educators we interviewed are illustrative:

  They are writing so much more and [they] don't realize how much better they are getting at it. I see them getting more comfortable with it. (Librarian)

  The results that I got were so much better…What I have here is amazing compared to what I would have gotten in the past. The difference between when they first saw the task and when they did all the reading and looked at it, then [they] felt they could do it. (High school social studies teacher)

  The kids actually wrote…. the expectation used to be that they write five paragraphs but try[ing] to get five out of a majority of our students was very difficult. But all of a sudden some of our lowest achieving students in the past are now writing six paragraphs. (Middle school social studies teacher)

- **Some teachers said that the student work that resulted from the modules increased their expectations for what students can do.** One teacher said, "I don't think I was expecting enough from some of these folks." Another said:

  You challenge the kids and they are going to do it and they are going to try to rise to the expectation for the most part and I am seeing that on a much larger scale for this year. So that is a great thing to be learning and understanding about our student population here.

- **Tool use and buy-in are extending beyond the initial participants and the contracted modules.** This expansion points to increasing depth and breadth of initiative implementation. Examples include:
  - **Some teachers are expanding their use of LDC-like activities beyond the modules that they developed for the Gates initiative.** Administrators in one site reported seeing evidence of module-like approaches (e.g., the overall structure, mini tasks or pre-assessments) in their general classroom observations. One teacher said, "Even outside the module, I'm using those other writing skills that we've been working [on]. We're still doing pre-writes, we're still doing highlighting and outlining."
  - **Librarians, special education teachers and literacy specialists supported literacy tool development and implementation in some schools.** Such wide participation is helping to create deeper knowledge about and buy-in for the tools among more teachers.

o **In a few instances, teachers shared modules with colleagues not part of the initiative, who then also used the modules.** A literacy consultant in one district said:

We have people engaged in this work that are able to do it and they have shared their resources with others. [One participant] and the 6th grade teacher who is not directly involved in the Collaborative did the module and shared the resource and that means the entire 6th grade population in science at that school got to participate in these high- end, highly engaging totally relevant experiences.

ii. Buy-in: Math

- **All math teachers (100%) reported that the FALs provided them with a strong and engaging model for teaching mathematics to high school students** (see Figure 13). Following an observation of a FAL, a teacher was asked how she thought it went and she replied, "What definitely went well was that everybody did something, which is nice because that doesn't always happen. Nobody was sleeping or putting their heads down." Math teachers also reported that their students liked the FALs. In class observations, students were observed asking their teachers, "Can we do this tomorrow?" One beginning teacher remarked that the FALs demanded more intellectually of both teachers and students:

  I like the idea of the students being pushed to be learners and not just sitting there and given answers and information to regurgitate. For me, it was a neat way to change the way you teach, we can change the way students learn. That was the most exciting thing.

Figure 13. Teacher perceptions of the math framework
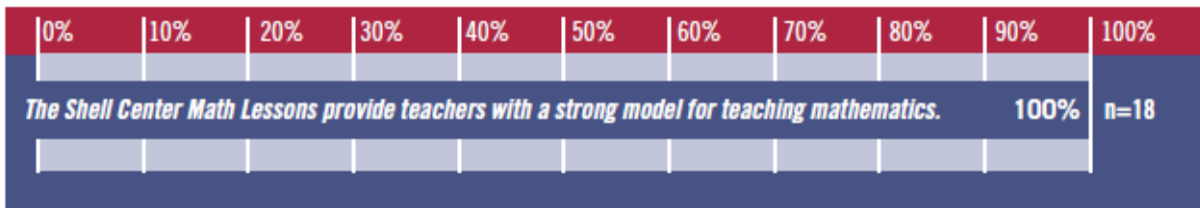
0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

The Shell Center Math Lessons provide teachers with a strong model for teaching mathematics. 100% | n=18
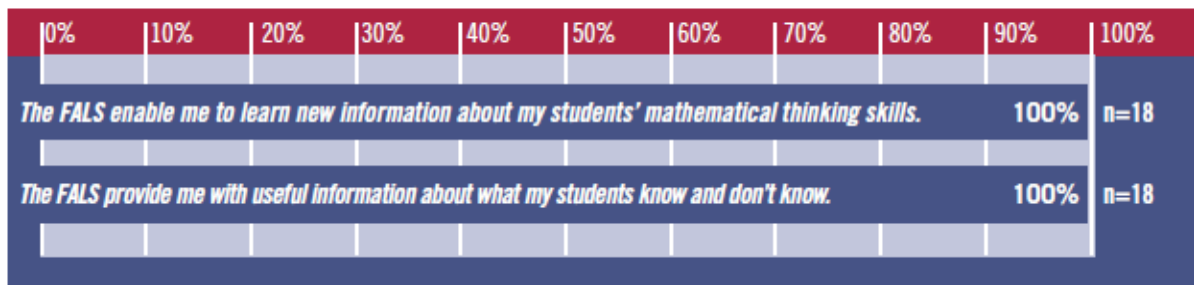
- **All teachers (100%) using FALs reported that the tools provided them with new information about students' mathematical thinking skills and said that the FALs gave them useful information about what their students know and do not know** (see Figure 14). A high school principal confirmed that the FALs were providing teachers with additional knowledge about their students' mathematical thinking:

  You can go down and ask any teacher right now, and give them the name of a student and they can tell you what that student can and cannot do. They won't tell you if the student has an A, B, C, or D but they will

tell you what skills they are weak in, yes, they have a much deeper understanding of their students' knowledge.

Figure 14. Teacher perceptions of math tool utility

0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%

The FALS enable me to learn new information about my students' mathematical thinking skills. **100%** n=18

The FALS provide me with useful information about what my students know and don't know. **100%** n=18

- **Teachers in one school attributed an increase in math test scores to the professional development provided in preparation for the math tools**. Notably, all the math teachers at this particular school had participated in the readying professional development.

- **Teachers reported that tools also reach those students whose mathematical knowledge and understanding is not particularly strong.** One teacher described two girls in her class, students who were typically reticent and not considered especially strong mathematically. The teacher asked the students, who were working on a lesson about positive and negative slopes, to present one of their findings to the class. In the teacher's words:

  > *They spoke right up in front of the class and stood up there proud. And this is a goal of [the FALs], creating those student-experts and giving them the confidence to come in here the next day and do more math. They just about turned inside out when they found out that they got to be the 'smart ones.' They went nuts! They said, 'We get to be the smart ones?!'*

B. Tool alignment with other initiatives and policies

When all levels of school staff and operations are aligned with the reform, it becomes an integral part of a district's and/or school's comprehensive strategic vision and is viewed as complementing and strengthening other initiatives and programs.

i. Alignment: Literacy

- **Districts and states are currently in the very early stages of their work with the CCSS, and, in many literacy sites, most teachers have had little contact with the CCSS.** Most teachers welcome the tools as one way to start learning about the new standards. But because teachers vary in their knowledge of the CCSS, they may not yet see the connection between the tools and the new standards.

- **Some literacy sites are able to integrate the new tools with literacy approaches they are already using district-wide.** These approaches (i.e. Collins writing, Reading Apprenticeship, Creating Independence through Student-owned Strategies, etc.) provide a bank of strategies for integrating into the modules' instructional ladder, as well as another layer of shared knowledge and language to inform teacher collaboration and discussion. Two participants explained:

  Participant One: *When we fleshed it out, we tried to incorporate teaching strategies from our district to move thru the ladder.*

  Participant Two: *That's deliberate--trying to use familiar [strategies]; it makes buy-in easier.*

- **In two districts, teachers were concerned about alignment between the template task and/or the module framework and the state standardized assessment.** For example, the writing structure for the template task differed from the one used by teachers to prepare for the state test. A reading coach said, "[Students are getting] a mixed message about writing from different teachers. In language arts we're still writing for the test that you need to pass." In another district, a teacher said:

  We stayed true to the template task, but there were definitely some things that we wanted o change. Our state assessment asks for their writing prompts in a very certain way. I would like to have been able to switch it around so that it mirrored that a little more.

ii. Alignment: Math

The math tools are consistent with mathematics curricular reform that has been underway in the United States for nearly 20 years, and has been led by both the National Science Foundation and the National Council of Teachers of Mathematics. The tools are also strongly aligned with the CCSS. Many mathematics textbooks and other curriculum materials provide a similar framework for mathematics teaching and learning.

- **When considering whether to adopt new initiatives, texts, etc., administrators and teachers looked for alignment, compatibility, and consistency with the Gates work.** That is, they considered a proposed initiative in comparison with the existing Gates' tools. In discussions with and among administrators and teachers about adopting a new math text, there were comments such as, "It fits well with the Gates tasks." One approach teachers and administrators discussed was "live scoring," an instructional activity that provides students with opportunities to become familiar and successful with open-response test items by working

through and discussing sample problems as a class and in small groups. They noted that live scoring reinforced the formative assessment foundation of the Gates math initiative. One administrator noted the philosophical link between the Gates initiative and the direction the school's math department was headed:

> *…the Gates work we are doing functions around the same philosophy as a Professional Learning Community functions on. I don't know if that was on purpose but I mean that is the way it is…the whole sharing, showing new stuff, try this, make a plan, is very much in the spirit of the way [we have] been running the math stuff this year.*

C. Human and Social Capital

Human and social capital are not static dimensions; individual actors come and go and professional relationships change as a result of multiple factors. However, reforms are more likely to be sustained in settings with strong human and social capital. Below, we examine these factors by focusing on the professional development experiences and needs of teachers, and on the scope of opportunities for collaboration, support and networking.

- **Participating districts, and educators,[13] are a select, high-capacity group who have received high levels of support and resources to do the work.** In both the literacy and math pilot phases, the Foundation has selected districts with high interest in and capacity to do the work; in many cases, strong teachers within individual sites were specifically identified to participate. Teachers have received intensive professional development, and, in some sites, stipends and technology to support the work. These districts and educators are likely to be characterized by high human and social capacity. This group of "experts" will be key to sustainability and scale-up of the work, as they can serve as coaches and leaders who have made these new ideas routine in their practice. Sustaining and/or expanding the initiative will mean involving a second wave of educators, who may not receive such intensive supports.

i.   Human & Social Capital: Literacy

The literacy tools have especially high human capital demands because teachers have become tool developers as well as implementers. Strong professional development builds a deep understanding of the purposes and uses of the tools and strengthens teachers' capacity to meet the multiple demands of module development and implementation.

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[13] In one literacy site, individual teachers were not selected for participation. Instead, all reading teachers at the participating schools taught the modules.

The literacy initiative is built on extensive professional development, including an introductory multi-day meeting in Baltimore in July 2010, cross-site meetings in some states, ongoing professional development by LDC at the site, and site-run professional development and collaboration. During 2010-11, LDC is continuing to provide professional development to each site. In addition, in some sites, regional or state partner groups play a role in coordinating professional development across sites within their states. Some sites are working with additional partners (e.g., National Writing Project, Metametrics), who provide professional development to support tool use. The findings below reflect teachers' experiences with professional development thus far.

- **More than 80% of teachers reported that the support they received in developing and implementing the modules was helpful** (see Figure 15). This support included professional development sessions with LDC and district-run professional development, as well as support from district staff and colleagues.
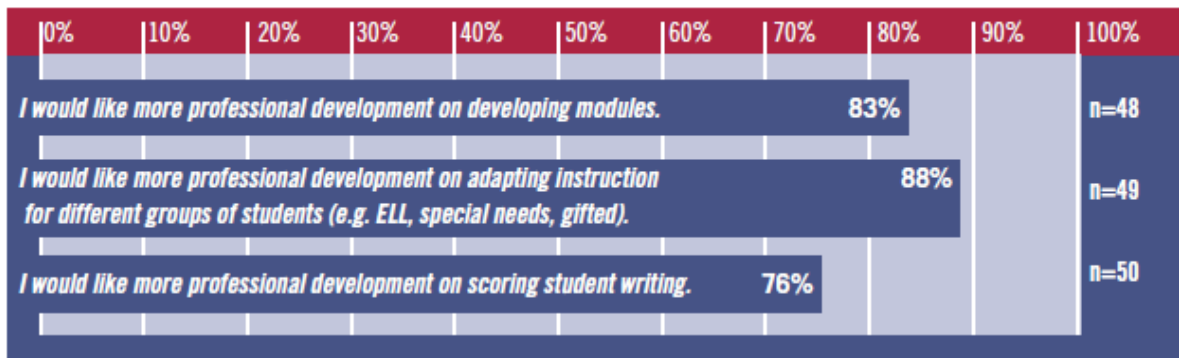
Figure 15. Teacher opinions about support provided to implement literacy tools

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%
The support that I received in developing the module(s) was helpful.									85%		n=47
The support I received in implementing the module(s) was helpful.									86%		n=49
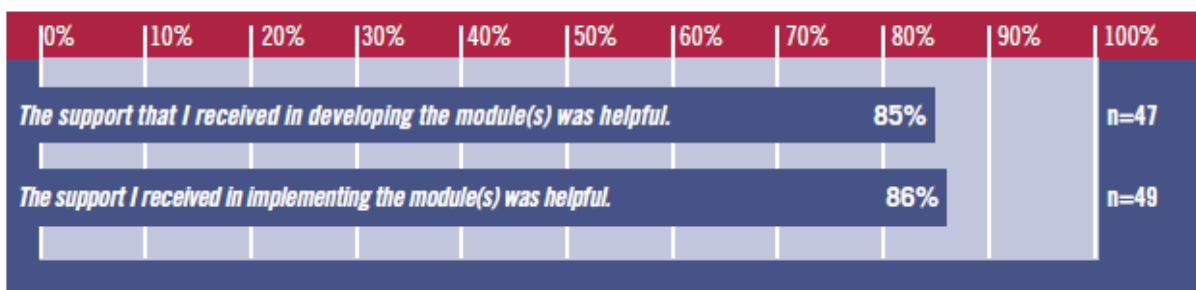
- **While teachers found the support they received helpful, most teachers using literacy tools requested additional professional development.** Eighty-eight percent of teachers agreed that they wanted professional development on adapting instruction for different populations such as ELL, special needs and gifted learners (see Figure 16). More than three-quarters of survey respondents also wanted more professional development focused on developing modules and on scoring student writing.

Figure 16. Teacher requests for additional literacy professional development

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
I would like more professional development on developing modules.									83%			n=48
I would like more professional development on adapting instruction for different groups of students (e.g. ELL, special needs, gifted).									88%			n=49
I would like more professional development on scoring student writing.								76%				n=50

- **Participating teachers identified peer collaboration as one of the most valued aspects of this initiative's professional development.** Teachers noted repeatedly how useful it was to collaborate with their colleagues on all aspects of the module process, including development, implementation, scoring student work, and ongoing reflection on the development and implementation. In some sites, administrators and teachers met weekly to discuss module development, implementation, and scoring student work. In interviews, teachers identified these collaborative opportunities as the aspect of professional development that had been most helpful:

  o *The work with the colleagues. Being able to sit down and hear what other people were trying and doing and being able to share ideas.* (Middle school science teacher)
  o *It's really helpful to have that time to create with other teachers. Sometimes I feel I learn things at professional development and I don't get to implement.* (High school English teacher)
  o *Actually working with our group, sitting together and looking through the ladder and trying to put it in our terms.* (High school social studies teacher)
  o *These teachers are phenomenal. I get so many ideas for my classroom just sitting around talking about our modules. We steal and take from each other. I wish there was a way we could do that as teachers all the time.* (High school English teacher)

- **Professional development sometimes competed with instructional time.** In one site, teachers expressed that professional development is causing them to miss too much instructional time. This concern manifested itself in a few ways. First, teachers reported that the amount of preparation for a substitute teacher was burdensome. Secondly, teachers are anxious about covering content and preparing students for their state assessments.

- **The tool developers' professional development role varied by site as they responded to the different contexts and structures in each site.** LDC customized its approach and visits according to sites' needs and their requests. This meant that, since the beginning of the school

year, districts have had different levels of site-based interaction with LDC. In one site, LDC primarily provided professional development to reading coaches. In another, they have provided multiple sessions for participating teachers. In a third, they have consulted with the point of contact and provided one several-hour session to participating teachers.

- **Some schools and districts worked with external partners; such partnerships have the potential to help catalyze a richer and more complex level of learning and collaboration.** Some sites with two or more participating districts within their state worked with regional or state level partner groups, which added another layer to the professional development options. For example, in one site, a regional agency responsible for providing multiple school districts with educational support:
  - brought in the program developer for professional development meetings with the two districts;
  - coordinated monthly leadership meetings with key players from both sites;
  - coordinated tools and processes across districts, i.e. a walk-through protocol and online communication and reflection tools;
  - generally played a clearinghouse and coordination role that assisted both sites; and
  - helped organize a review process for completed modules.

- **The combination of significant professional development and module creation seemed to create a rich level of understanding for teachers that experienced both.** In one site, teachers did not attend the initial cross-site professional development and implemented modules created for them by reading coaches. In that site, teachers also had fewer district level professional development sessions than did teachers from other sites and little contact with program developers. While these teachers were generally positive about the modules, they also seemed to have a less-developed understanding of the module's purpose and more trouble with implementation, compared to teachers in other sites who developed their own modules and participated in extensive professional development.

- **In general, district administrators were more deeply involved in professional development and overall project coordination than were building principals.** Most districts have a point of contact for the initiative; this person was usually from the district central office (i.e. an assistant superintendant). At all the sites visited, these points of contact have been heavily involved by attending the Baltimore and other sessions led by the tool developer; serving as the main contact with the tool developer; providing valuable support to participants; and

trouble-shooting issues as they arose. The points of contact also coordinated frequent meetings for the initiative participants. Building principals, in contrast, were all supportive of the initiative at the building level, but often had less developed knowledge about it and less direct involvement.

- **The engagement of educators with specialized expertise (special educators, reading specialists, librarians) as well as the gradual involvement of some classroom teachers not in the pilot group, are strengthening human and social capital to support the ongoing work.** These collaborations build a broader base of knowledge across the school, enable more significant networks for collaboration, and create possibilities for the work to go deeper. For example, these collaborations support experimentation with differentiating instruction to meet the needs of more students and with helping teachers find and use materials in ways that make the modules richer and more engaging to students. These collaborations can both better address the needs of students and help teachers to address gaps in their own knowledge and experience.

ii.   Human & Social Capital: Math

The readying year of professional development in the math initiative consisted of bringing teachers together for approximately eight days over the course of the school year. During these eight days, professional development focused on formative assessment strategies. In the current school year, teachers have had one day of professional development during which the first set of FALs were released. Teachers had the opportunity to work on the FALs together and to discuss the activities with the professional development consultants. The following findings describe teachers' experiences with professional development during the readying year, the FAL-specific professional development they received this year, and any district professional development they received that focused on tool use.
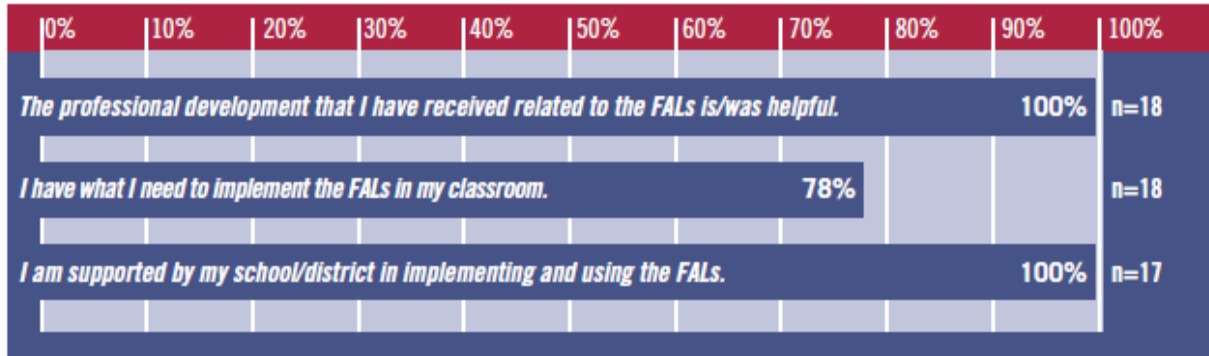
- **All math teachers (100%) surveyed reported that professional development was helpful** (see Figure 17). Expressing the views of many, one teacher noted:

  I'm enjoying it tremendously because we go to so many PDs - they tell you what you should be doing, but they don't tell you how. This PD not only tells you 'what' but it tells you 'how.' It gives you a lot of support and I'm hoping that it continues and it doesn't just fall by the wayside. That happens sometimes too with new things. I'm just really glad to be part of this.

- **While all teachers reported feeling supported by their district to use the FALs (100%), seventy-eight (78%) percent reported that they have what they need to use the FALs in their classroom** (see Figure 17)**.** This difference in responses could be a result of the amount of
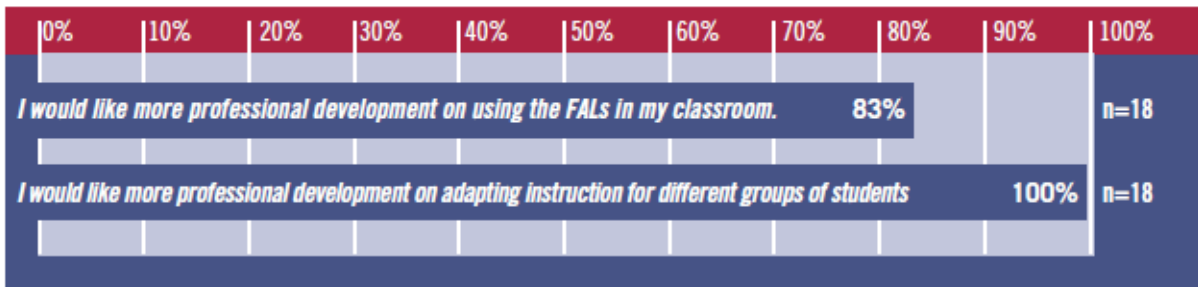
preparation needed to use the FALs. Teachers reported that it was challenging to obtain and prepare the materials to use for the FALs.

Figure 17. Teacher opinions about support provided to use math tools

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
The professional development that I have received related to the FALs is/was helpful.											100%	n=18
I have what I need to implement the FALs in my classroom.								78%				n=18
I am supported by my school/district in implementing and using the FALs.											100%	n=17

- **The large majority of teachers using the math tools reported wanting *more* professional development (83%)**. All teachers (100%) surveyed wanted to learn more about adapting instruction for diverse learners (see Figure 18). Teachers were especially interested in observing a professional development consultant using a FAL in their class, watching a video of the consultant modeling instruction using a FAL, and more guidance about how to use the FAL over the course of two to three class periods.

Figure 18. Teacher requests for additional math professional development

	0%	10%	20%	30%	40%	50%	60%	70%	80%	90%	100%	
I would like more professional development on using the FALs in my classroom.									83%			n=18
I would like more professional development on adapting instruction for different groups of students											100%	n=18

- **Professional development sometimes competed with instructional time.** During the readying year, teachers missed eight days of instruction to attend professional development and they were concerned with the amount of instruction time that was missed. They also missed a day of instruction during the 2010-2011 school year due to professional development focused on the FALs. Teachers were often anxious about covering content and preparing students for their state assessments. Teachers also reported that students are pulled out of the classroom for

testing too often and they cannot afford to miss class time to attend professional development when all or most of their students are present. Administrators also echoed this concerned.

- **There is both buy-in and engagement from principals about the math work.** Principals attended professional development activities and observed math classes. One principal stated that:

  From the very beginning with math [initiative], I went to just about every training they did and learned it along with them. And then I have done several classroom visits to see how it's being implemented and worked with the teachers ... I think if I had missed the trainings and just went in and observed and tried to figure out what was going on I would be behind. But by doing the trainings right along with them I know what to look for and the strategies that have the most impact. I have a better understanding.

- **Several administrators made a connection between highly collaborative mathematics departments and the successes teachers were having in using the FALs.** A principal described the math faculty as "very collaborative" and quick to share ideas and strategies with each other. A district administrator also noted the collaborative nature of the high school, saying that in one school:

  The math culture is very much "we are in this together, we are sharing together" even before this started. In another they do a lot of sharing but they are traditional and that has been a challenge. The ironic thing is that now that they have decided to buy-in, they are moving unbelievably fast because they are so tight knit.

- **Delivery of professional development to math teachers varied across sites.** More specifically, professional development sessions were delivered by two different consultants and their staff. Furthermore, some consultants have developed their own math tools to share with teachers. It is important to note that RFA observed professional development for the math tools at two sites, but the findings presented above only reflect the site where full data collection activities were completed (i.e. teacher interviews, surveys and observations).

D. Funding and Long-Term Commitment

At this early stage of the initiative, it is unclear what level of funding is needed to sustain this work once it is established, nor has this been an area of focus for our research thus far. Yet we felt it important to note that in the pilot year, **individuals in both the math and literacy sites expressed concern about whether there would be enough funding to sustain and scale up this initiative**.

The comments below reflect the uncertainty that many teachers and administrators are experiencing:

I have been around for 18 years, and you see things come and go. Where's this going as far as the teachers' role in it or are we being used for writing them [modules] and then what are they going to do with them, sell them? I don't know. Is there a next year? We're all 100% invested in it. And we're doing a good job but only because it's benefitting the kids. (Teacher)

I just really hope it doesn't go away. And it's just because teachers are always used to something else, here's something else, here's the next new thing. And so I'm just really hoping that it maintains. (Principal)

VI. Recommendations and Next Steps

Based on this initial research about teachers' use of the literacy and math tools, RFA has developed an initial set of recommendations intended to strengthen and support not only how teachers use the tools, but also to enhance the prospects for sustaining and scaling-up this initiative. Notably, many of these recommendations were suggested by teachers and administrators in our interviews across the different sites. Other recommendations were generated by the research team. The list is by no means exhaustive; rather, it is a starting point. Teachers and administrators were vocal both in their praise of the tools and the professional development, and in their thoughts about how to improve them. The first recommendations are literacy-specific, followed by math-specific recommendations, and then recommendations focused on sustainability and scale-up across both initiatives. The section concludes with a focus on next steps for the research.

A. Recommendations for the Literacy Initiative

- **Continue providing teachers with robust professional development, focused on building their expertise in developing modules.** In particular, many teachers continue to raise questions about how to use the instructional ladder and about differentiating instruction within the module structure. Teachers need additional training around the instructional ladder in order to effectively develop and implement modules, but also to help their colleagues do the same, especially in time for districts to expand this initiative beyond the pilot group. They also need professional development on and opportunities to collaborate on using the modules with populations such as special education and ELL students. They need feedback on questions about what aspects of the module are "fixed," as opposed to which aspects can be adjusted to meet the needs of differing students. This continued support for teachers will contribute to the development of an in-house LDC specialist(s) in each pilot school.

- **Provide science and social studies teachers with additional support to locate rich, high content texts at appropriate reading levels and with strategies for providing feedback on**

student writing. Some sites are working with Metametrics with a pilot version of their online repository of texts. Other sites experimented with approaches such as rewriting texts to ensure that their reading level is accessible to students. Appropriate texts are key to the success of the modules. Additionally, teachers should continue to share best practices and technology across sites.

- **Provide teachers with support to integrate ongoing student writing feedback into their practice.** Many teachers found that time to respond to multiple drafts posed a particular challenge, though they knew this practice supported student learning. Some sites found that existing writing frameworks being used district-wide were very helpful in guiding their feedback to student writing. Again, teachers should share best practices in this area across sites.

- **Provide support for teachers to develop their facility in using insights from module instruction to inform ongoing teaching.** As teachers work through more modules with students and students generate more module-related writing, teachers can analyze and interpret student work to systematically generate information about what students know and can do, as well as where there are gaps in knowledge or skills. Incorporating this nuanced knowledge into instruction will support students' growth as readers and writers.

- **Create a more user-friendly document for module development and sharing.** Many teachers and district administrators commented about the cumbersome structure of the template module framework, which is a document that explains the module framework but also provides space for teachers to develop the various parts of the module. Teachers repeatedly requested a more streamlined format to develop the modules. Also, as districts begin to plan to expand this initiative to include other teachers, they have requested a format that can be easily navigated and is also conducive to comprehending the instructional activities and mini tasks. A more user-friendly document will also help teachers share their modules with other teachers using the tools across the country. Some teachers have developed their own more streamlined model format for creating modules; these, along with other feedback from teachers, could be collected to help shape the next version.

- **Work with educators in specific sites to help them resolve conflicts they articulate between the modules and existing curricula, rubrics, or state assessments.** A first step is to identify where educators perceive these conflicts and then to work collaboratively to understand the conflicts and how they can be resolved. This report identifies conflicts such as

lack of alignment between LDC scoring rubrics and other forms of grading that teachers use and differing foci and structures for module assignments and for state assessments. The goal is to resolve these conflicts so that they do not become barriers to implementation.

B. Recommendations for the Math Initiative

- **Provide teachers with packaged sets of lessons to decrease the preparation time for FAL use.** A common challenge for teachers was the amount of time needed to prepare class sets of the FAL manipulatives for the collaborative activity portion of the FAL. Providing teachers or math departments with prepared class sets of the materials would allow them to focus more on their instructional responsibilities.

- **Provide teachers with more direction about how to group students and arrange seating during the collaborative activity.** We recommend that students work in pairs or in groups of three if there is an odd number of students in the class. We also suggest that students sit side-by-side instead of sitting across from one another. In sum, pairing and grouping of students should be more purposeful and less random.

- **Increase the pace of professional development.** Teachers commented that the initial pace of the readying professional development was too slow. Teachers stated that they had very few tasks to work with and that, on a few occasions, an entire day was devoted to working through one task. While teachers enjoyed working through the FALs with colleagues across the district, they felt the professional development was most beneficial when professional development consultants gave them multiple tasks to use in a single session. One math teacher stated:

  When we first got into it, we would spend like six hours doing one task and it was kind of rough at the beginning. It seemed like once they moved into creating more tasks, getting more tasks…[during the professional development] has been a little more helpful.

- **Facilitate more discussion about both formative assessment strategies and how to instructionally respond to the information collected from tasks.** It is unclear whether teachers possess an instructional repertoire that allows them to respond to students' individual mathematical misconceptions and weaknesses. Put simply, do teachers know what to do next? Teachers need more support and training on how to use the student information they collect from the FALs.

C. Recommendations for Initiative Sustainability and Scale-Up

- **Develop and support principal involvement and knowledge of the initiatives to preserve tool use in schools.** Many principals at schools involved in the literacy work did not have deep knowledge about the LDC framework or their teachers' experiences developing and implementing the modules. On the other hand, principals at the math site were very knowledgeable about the initiative and had even attended professional development and observed teachers' using the tools. For principals to become leaders to support literacy tool implementation in their schools and districts, they will need to be more deeply engaged with at least some professional development activities and with ongoing implementation in their buildings. This increased involvement could start in the remaining part of this school and continue in year two. District administrators and principals involved in both initiatives, along with tool developers and Foundation program officers as appropriate, need to create a clear plan for principals' role in supporting ongoing and even expanded implementation in year two. Administrators' roles may vary somewhat across sites, depending on local context.

- **Develop a strategy to provide tool training for new teachers or teachers who were not part of the pilot group.** As the initiative continues, it may expand to include additional teachers, grades, and content areas. Because teacher turnover is also likely, it will be important to develop a strategy for bringing new teachers into the initiative. For example, the Foundation could support the development of DVDs that provide instructional lessons on how to develop and/or use the tools in the classroom. Videos of teachers using the tools in the classroom would be especially helpful for new math teachers.

- **Involve practitioners in sharing learning and best practices across sites after the pilot year ends.** This report identifies some existing promising practices. LDC staff and points of contact from each site, as well as practitioners, will have ideas for other strong practices to share. Create opportunities for participants to learn from each other in a range of ways, through in-person meetings and virtual means of communication, for example.

- **Communicate to schools and districts that support for teacher collaboration and sharing of strategies, ideas and practices will enhance tool development and use.** Teachers involved in the literacy initiative stated that time to collaborate with their peers was highly useful professional development. Additionally, some teachers involved in the math tool development mentioned collaborating with their peers around a number of initiatives, including the math

work. As the Foundation looks for ways to support teachers during scale-up of this initiative, they could consider how development of strong and collaborative school or department cultures can facilitate tool use.

- **Develop a strategy for communicating with program developers, professional development consultants, and site points of contact.** RFA has received many questions about site expectations for grant participation next year and what sites can expect in terms of professional development and financial support. In the math initiative, there has been much confusion about when more tools will be released. The lack of timely communication can inhibit a site's ability to plan for expanding the initiative.

- **Explore ways to provide professional development outside of class time.** Teachers overwhelmingly reported that professional development sessions were useful in deepening their understanding of the tools and ability to integrate them into existing curriculum. However, when professional development competes with instructional time, other modes of delivery should be explored.

D. Research Next Steps

The research on the development, implementation and use of the literacy tools is still in its earliest phases. RFA will be adjusting its focus in the spring and will continue to refine it as new findings and developments come to light. We will also consult with Foundation staff to shape our work so that it continues to be of high utility for key stakeholders. Based on the first phase of implementation and research, we anticipate that we will:

- **Continue to examine tool implementation in literacy and math district sites.** RFA will also expand the research focus to include tool implementation by school and teacher network sites (i.e. National Council of La Raza, New Tech, National Writing Project).

- **Explore how varied iterations of the literacy and math implementation affect roll out and teacher uptake**. In particular, there is much to learn from examining how iterations involving less intensive funding and teacher participation in professional development play out. For example, as noted above, in one literacy site, reading coaches have attended professional development, and then developed modules for teachers to implement. Teachers receive some professional development but less than other sites.

- **Track buy-in as sites begin to include non-pilot teachers in the initiative next year**. Buy-in to the initiative might decrease as a result of the selective nature of the pilot group and the

resources provided to the pilot group. Across both the literacy and math sites, only one school in one site involved all of their teachers in their respective initiative. Everyone else involved in the pilot phase was selected by their principal, which could have affected the high buy-in to the initiative. Furthermore, teachers in both the literacy and math pilot groups received a range of resources and compensation for their time. Teachers who begin to use the tools next year may not be as enthusiastic about their participation in the initiative as a result of the different selection process, resources and compensation.

- **Explore how curricula and strategies already in place in the pilot sites affect tool implementation and buy-in**. For example, in what ways are district-specific literacy approaches supporting use of the modules and in what ways, if any, do some conflict with the module approach?

- **Examine what teachers are learning about their students and how teachers are using this knowledge**. The math and literacy TOAs suggest that as teachers develop more experience with using the tools, they will begin using the information and insights gained about what students know and are able to do to guide future instruction.