Tools for Teachers, *by Teachers*

The Literacy Design Collaborative

The Math Design Collaborative

Investing in Teaching

A priority for the Bill & Melinda Gates Foundation is ensuring that teachers have the tools and resources necessary to help students meet college-ready standards. Over the past five years, we have invested $152.8 million to support teachers in deepening their practice. These investments are anchored by two collaboratives—the Literacy Design Collaborative (LDC) and the Math Design Collaborative (MDC)—that focus on codesigning and implementing high-quality tools for rigorous literacy and math instruction. Starting with small bands of expert practitioners, LDC and MDC have grown to reach more than 400,000 teachers across all 50 states and the District of Columbia. Their collective efforts have resulted in a series of easy-to-adopt classroom tools that research studies confirm are improving teaching practice and resulting in measurable gains in student learning.

From the beginning, we sought to engage teachers as codesigners, tool users, experts, and colearners. The following principles guided the design of the LDC and MDC tools:

■ Be simple for teachers to use and adapt.

■ Honor the creative tensions of teaching, hardwiring college-ready standards into the tools while giving teachers creative license in how and what they teach.

■ Authentically connect literacy skills with content knowledge.

■ Provide actionable feedback on student learning from teachers looking at student work and students reflecting on their own work.

■ Be flexible so that teachers can choose how often to use the tools: once during the year, as the spine for a full course, or something in between.

■ Use template designs and common frameworks that facilitate teacher collaboration and the sharing of student work.

■ Improve over time, with teachers cocreating the tools and improving them based on the wisdom of their practice.

We wanted tools that teachers value, have ownership over, and use to help improve student learning. Our goal continues to be the expansion of LDC and MDC so that more teachers have access to these resources and to each other's expertise. In this brief, we share lessons learned during the first five years of the foundation's work with these collaboratives and highlight the impact of their tools on teaching and learning.

Tools that Travel Well

Created with and for teachers, LDC and MDC tools were designed to be easy to access and use—whether by participants in a statewide initiative or by individual teachers looking for college-ready resources on their own. The tools tap into teacher expertise and facilitate the travel of good practices, ideas, and strategies across classroom, school, district, and state boundaries.

LITERACY TASKS, MODULES, AND COURSES

LDC fosters the teaching of college-ready literacy within subject areas—so that literacy instruction is owned by all teachers, not just by English language arts educators. Based on research about the importance of quality assignments to student learning, LDC guides teachers in creating college-ready tasks that ask students to write *in response* to reading and that are *taught,* not just assigned.

LDC uses a template approach that establishes a common framework and language for teachers while giving them flexibility to make their own decisions based on their students, their local or state content standards, their discipline-specific texts and student products, and the instructional approaches they wish to use.

MATHEMATICAL CLASSROOM CHALLENGES

MDC classroom challenges help students develop the conceptual understanding of mathematics that is essential for college readiness. The challenges are built around a set of rich tasks connected to college-ready standards and can be inserted into any math curriculum as teachers see fit.

MDC challenges progress from individual student work through collaborative activities and whole-class discussion before students return to the initial task with the insights they've gained. The challenges help teachers gauge students' understanding and ability to apply what they are learning, facilitating immediate teacher feedback to students.

"I learn something every time I'm part of an LDC jurying process. Looking at other teachers' assignments and lessons forces me to reflect on my own teaching. It highlights the importance of intentional, deep planning for the assignments I teach. ... LDC jurying is really about the power of collaborating—with the other teachers who are jurying and with teachers who submit the modules—to make all of our work better."

SARAH WOODARD, ENGLISH TEACHER
DENVER PUBLIC SCHOOLS, CO

Educators Report Improved Practices

From the LDC and MDC pilot districts in 2010 to the current scale-up sites, educators consistently report that LDC and MDC improve teaching and learning. A number of research studies confirm that teachers find the LDC and MDC tools valuable and effective. Adoption of the tools continues to increase—both in the number of teachers who are using the tools and in the depth of their implementation.[1]

LDC and MDC tools help teaching to become more rigorous, more engaging, and more effective.

>80% of teachers say that the tools support students' college readiness

>80% of teachers report that the tools help raise their expectations for the level of work their students are capable of

>78% of teachers report that the tools result in higher-quality student writing and improved math reasoning by students

>90% of teachers say that the tools are effective in providing curricular resources for the Common Core State Standards

>78% of teachers, principals, and district administrators find that LDC and MDC are effective in making instruction more engaging for students

>80% of teachers agree that LDC and MDC are effective in encouraging the use of formative assessment to identify and act on students' strengths and weaknesses

LDC supports literacy *and* content instruction.

>80% of teachers, principals, and district administrators find LDC to be effective in encouraging literacy skills in science and social studies classrooms

~70% of teachers indicate that the LDC tools help them find effective strategies for teaching subject area content

MDC bolsters teaching of content *and* conceptual understanding.

>80% of teachers, principals, and district administrators find MDC effective in moving instruction toward conceptual understanding

>80% of teachers report that MDC helps them find effective strategies for teaching content

Not surprisingly, LDC and MDC are most effective when teachers implement the tools in a supportive environment. Teachers tell researchers that they look to district and school leaders to champion LDC and MDC and provide the necessary supports for implementation. They want to see explicit alignment of LDC and MDC with district and school policies and strategic plans. Teachers also want to participate in meaningful and ongoing professional development in which they collaborate and learn from each other.

In multiple studies, LDC and MDC teachers report that peer collaboration is beneficial in helping them become more skillful in using the tools.
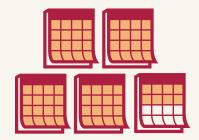
1   Research for Action, November 2013.

LDC and MDC Advance Student Learning

Early results from the first rigorous quasi-experimental study on LDC and MDC are promising.[2] Looking at a subset of teachers in Kentucky, an early LDC and MDC adopter with college-ready assessments, researchers found that the collaboratives' tools are having a positive impact on student achievement.

Both LDC and MDC led to statistically significant learning gains for students.[3]

Students in LDC classrooms gained, on average, an additional 2.2 months of learning for reading compared to a matched comparison group.

Students in MDC classrooms gained on average, an additional 4.6 months of learning in math compared to a matched comparison group.

All students benefitted from LDC and MDC.

- For LDC, low-income students benefitted slightly more than other students.

- For both LDC and MDC students, higher-achieving students benefitted slightly more than lower-achieving students.

It is important to note that LDC and MDC had a positive effect on student learning, even as teachers were relatively new to the tools and as students experienced only one to two LDC modules or MDC classroom challenges over the course of the year (equivalent to 4–6 weeks and 8–12 days, respectively).

While LDC and MDC clearly result in student learning gains, there is still much room for growth. College-ready standards are set high, and the majority of the students in the study are not there yet.[4] Special education students, in particular, continue to struggle. Moving forward, research will seek to isolate and understand the specific implementation factors and particular practices that lead to even greater teacher and student success with the LDC and MDC tools.

Literacy Versus Content? No, Literacy AND Content.

Initial research indicates that a focus on literacy in social studies courses does not result in students' loss of content knowledge.

Source: National Center for Research on Evaluation, Standards & Student Testing (CRESST) UCLA Graduate School of Education and Information Studies, 2014.

"From the first LDC teaching task they designed and implemented in their classrooms, our teachers reported that the kids were more challenged than from the regular assignments they gave. They were challenged to think differently, read more closely, and write more concisely."

DAVID YOUNG
ASSISTANT SUPERINTENDENT
BOYLE COUNTY SCHOOLS DISTRICT, KY

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2   National Center for Research on Evaluation, Standards & Student Testing (CRESST) UCLA Graduate School of Education and Information Studies, 2014.
3   Measured by Kentucky Performance Rating for Educational Progress reading test and ACT's PLAN assessment for math.
4   CRESST-designed assessments to measure college readiness.

A Closer Look at Tools and Tasks

Literacy: A Template Approach That Provides Flexibility

LDC's template approach establishes a common framework and language while giving teachers the flexibility to make their own decisions based on their students' needs and instructional approaches. The LDC framework and templates are organized around three components.

1. **Teaching Tasks (or assignments):** LDC offers collections of templates for teachers to design rich tasks. Collections are organized around informational or argumentation writing; allow for different types of reading; and hardwire in college-ready cognitive demands such as being able to compare, analyze, and evaluate.

2. **Modules (or instructional plans):** LDC provides teachers with templates to design two to four weeks of intentional literacy instruction that engages students in developing the skills necessary to complete the teaching task. Modules are not units; they are an important part of a unit that connects content to reading and writing instruction.

3. **Courses:** LDC modules can be used as standalone instructional plans or strategically linked to create literacy-rich courses.

   LDC offers teachers a continuum from "do-it-yourself" to adapting or adopting complete modules designed by colleagues. LDC also ensures quality task and module development through local and national jurying processes that bring teachers together to look at each other's work.

The same LDC template can be used to design assignments in different subjects and grade levels.

Template Task 4 — Argumentation/comparison
[Insert optional question] After reading [literature or informational texts], write [an essay or substitute] in which you compare [content] and argue [content]. Support your position with evidence from the text(s).

Science Teaching Task — Grades 9–10: Should electrical energy be generated from nuclear power or fossil fuels? After reading informational texts on how electrical energy is generated from these fuels, write an article for a scientific magazine in which you compare the chemistry behind the two methods to generate electricity and argue which is the better method for production of electricity in an urban environment. Support your position with evidence from the text(s).

Humanities or U.S. History Teaching Task — Grades 11–12: Should the Declaration of Independent Sentiments (Seneca Falls, 1848) be read as an extension of the Declaration of Independence (Philadelphia, 1776) or an entirely separate document? After reading the Declaration of Independence and the Declaration of Independent Sentiments, write an essay in which you compare the two and argue one side or the other. Support your position with evidence from the text(s).

Mathematics: Challenges That Build Conceptual Knowledge

MDC classroom challenges transition from individual to collaborative activities and whole-class discussion to help cement student understanding of complex concepts.

- Students begin by individually working on a math problem without direct instruction from the teacher. This allows teachers to get a sense of where each student is in their understanding of the given concept.

- Students then talk about their answers and engage in collaborative activities—such as working in small groups or examining each other's work—to delve into the math concepts of the initial assignment. This approach fosters student responsibility for their own learning, while teachers provide feedback as necessary to move their learning forward.

- Students then engage in a whole-class discussion so that the teacher can learn more about how students are doing and provide additional feedback.

- Finally, students return to the initial assessment and see if they can improve their work with the new insights they've gained.

MDC math challenges ask students to grapple with real-world math problems, as this example from 8th grade demonstrates.

Bill wants to order new jerseys for his baseball team. He sees the following advertisements for two printing companies, Print It and Top Print. Bill doesn't know which company to choose.

Print It: Get your baseball jerseys printed with your own team names here. Only $21 per jersey.

Top Print: We will print your baseball jerseys—just supply us with your design. Pay a one-off setting up cost of $45; we will then print each jersey for only $18!

1. Give Bill some advice on which company he should buy from. When should he choose Print It? When should he choose Top Print? Explain your answer fully.

2. A third company called Value Printing wants to start trading. It wants its prices to be between those of Print It and Top Print. This company never wants to be the most expensive and never wants to be the cheapest. Can you complete this poster for the new company?

   Value Printing: We print baseball jerseys. Pay a one-off set up cost of $_____, then each jersey will cost $_____.

> "I first thought of MDC as a hands-off approach, but it isn't. You actually need to be very hands-on—moving around the room and interacting with each group of students to see what they are doing and thinking. You quickly pick up on who knows what to do and who needs more individual assistance. Some students don't want or need me to guide them. Those who do are able to ask me questions when they couldn't before. It's really differentiated instruction within the same lesson. Students can work at different paces and in different ways. And they have plenty of opportunities to practice what they learn."

CHRISTA LEMILY, MATH TEACHER
WARREN COUNTY PUBLIC SCHOOLS, KY

Find Out More

Literacy Design Collaborative

LDC is a loose network of partnering organizations, districts, states, and individuals that is facilitated by the LDC organization. Visit ldc.org to learn more.

- Watch how-to videos and see LDC in action in *Literacy Matters:* ldc.org/resources.

- Delve deeply into LDC through the *LDC Guidebook:* ldc.org/sites/default/files/LDCBook_web.pdf.

- Check out the exemplar LDC modules and create your own: coretools.ldc.org.

- Learn about how LDC ensures quality and alignment with college-ready standards through their national jurying system: ldc.org/how-ldc-works/tools-to-ensure-ccss-alignment.

- Get to know the LDC partners: ldc.org/about-us/our-partners.

- Join LDC at an upcoming event: ldc.org/about-us/events.

Math Design Collaborative

MDC resources are available through the Math Assessment Project. You can find examples and detailed information about the MDC math challenges at map.mathshell.org.

- Learn more about the history and work of MDC partners: http://map.mathshell.org/materials/background.php.

- See MDC in action through the Math Matters video: www.sreb.org/page/1768/mdc.html.

- Try out the MDC math challenge materials for grades 6–12, including student lessons, examples of student work, expert tasks, summative assessments, and specific guidance for teachers: http://map.mathshell.org/materials/index.php.

- Download MDC professional materials: map.mathshell.org/materials/pd.php.

- Check out partners who provide MDC training, such as the Southern Regional Education Board: www.sreb.org/page/1763/sreb_training_in_the_states.html.

> "I think new ideas come out in education all the time. But for teachers who have been teaching for 20 years, or even just five years, anything new usually feels like, 'Oh, this is just the next thing.' But LDC is not a 'new thing.' This is how we should have been teaching all along—more student discussions, more student thinking. It gives you the resources to incorporate literacy in a short amount of time."
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> MARK WEESE, SCIENCE TEACHER
> EFFINGHAM COUNTY SCHOOLS, GA

> "I had one student who had his head down for almost a semester; I think he had a D average for the class and I just wasn't connecting with him. When we did our first MDC formative assessment task, the class became stuck on one part of the problem. When I called them back together as a class to discuss the issue, this student picked his head up and explained to the entire class the math concept they were missing. From then on, he started to engage with the [math challenges]. He was able to work alone on the problems, he could ask me questions when he needed to, and I could give him extensions to make the challenges even more difficult. I realize now that before we did the [challenges], I didn't truly understand how skilled he was in math and how much he already knew. He was able to turn his grade around and pass the class."
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> MICHELLE HONEYCUTT, MATH TEACHER
> JESSAMINE COUNTY SCHOOLS, KY

Read about LDC and MDC teachers at Impatient Optimists:
www.impatientoptimists.org/Authors/P/Vicki-Phillips

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