CLOUD COACHING

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WEB-BASED LEARNING HOLDS PROMISE, ESPECIALLY FOR DISTRICTS WITH LIMITED RESOURCES

Web-based coaching shows significant promise for linking teachers to highly expert practitioners. This is especially important in districts that cannot afford to hire full-time school-based coaches or to train and support coaches to be experts in all content areas.

Web-based coaching also offers special affordances that may not be available in face-to-face coaching. In particular, the opportunity for coaches and teachers to reflect on video together is a powerful way to focus attention on the student thinking shown in classroom interactions and small but significant instructional decisions.

While web-based teacher professional development shows a great deal of potential for improving practice, research is in the early stages of determining how to best design these experiences to further teaching and learning. Here we describe what we are learning about designing a web-based literacy coaching program based on our work translating the Institute for Learning's Content-Focused Coaching program (Bickel, Berstein-Danis, & Matsumura, 2015) to an online format.

This project is motivated by our past research showing that the program is effective at improving reading comprehension instruction and students' reading achievement in high-poverty elementary schools (Matsumura, Garnier, & Spybrook, 2013).

Implementing the program would be impossible for districts that have neither school-based coaches nor resources to provide in-depth training to coaches to develop their teaching and coaching skills. Supported by the Department of Education's Institute for Education Sciences, we are developing a web-based version of Content-Focused Coaching comprised of an eight-week workshop followed by online coaching that has the potential to serve districts with varying professional development resources and needs.

Moving from face-to-face to web-based delivery raised many questions about our work. We wondered: Would teachers feel comfortable digging deeply into their instruction with a web-based coach — a person they have never met before? How might the program help teachers improve their instruction? How would teachers respond to the challenges of using new technology? In the following sections we describe our project and what we are

> **Would teachers feel comfortable digging deeply into their instruction with a web-based coach?**

EXCERPT FROM THE FRAMEWORK FOR TEACHER AND STUDENT TEXT INTERACTIONS		
DIMENSIONS	TEACHER MOVES	STUDENT MOVES
Posing questions to construct the gist	• Ask open-ended questions that require students to respond in more elaborate ways to explain idea in the text. • Ask questions that surface students' potential misunderstandings. • Ask questions in sequence that help students construct understanding of the key ideas in the text.	• Demonstrate understanding of key ideas in the text. • Respond using own words rather than repeating the text verbatim. • Respond in longer ways that connect ideas within the text.

learning so far in response to these questions.

We are developing this web-based coaching program through a series of design cycles where we try it out, get feedback from teachers, and revise accordingly. In the first year of the program, we worked with seven teachers from three schools in a large urban school district. This past academic year, we worked with 15 additional teachers in two districts.

All of the teachers are in schools that serve large numbers of students from low-income backgrounds. To learn from our work with teachers, we ask teachers to complete multiple surveys and interviews, and we study videotapes of teachers' classroom text discussions taken before the workshop, right after the workshop, and following coaching.

LAY THE GROUNDWORK

While Content-Focused Coaching can be applied in any content area, the in-person research project coaches worked with teachers in grade-level teams in targeted ways to study two techniques — Questioning the Author (Beck & McKeown, 2006) and Accountable Talk — to increase the quality of classroom text discussions. The goal for meeting in grade-level teams was to establish a shared vision for instruction around particular content and language to talk about that instruction.

The eight-week online workshop plays a similar function in that it lays the groundwork for coaching. Teachers participate in a weekly routine where they read books and articles to build their knowledge, study models of text discussions and Institute for Learning-developed lesson plans, provide feedback to other teachers on their lesson plans, and reflect with other teachers about their experience on a discussion board.

Because teachers in the project do not necessarily know one another nor share a common curriculum, teachers plan lessons using common texts (e.g. *A Long Walk to Water* by Linda Sue Park). Working from the same texts enables teachers to compare lesson plans and learn from each other.

APPLY KNOWLEDGE TO PRACTICE

Upon completing the online workshop, teachers engage in web-based coaching with a Content-Focused Coaching coach to apply what they learned in the workshop in their own classroom. Using a gradual release of responsibility approach, the coaching begins with teachers teaching one of the model lessons they analyzed in the online workshop. In subsequent cycles, teachers move on to implementing lessons they planned in the workshop, and then to implementing the model using the texts they normally use in their school.

A key feature of web-based coaching is the use of a conceptual tool we developed called the Framework for Teacher and Student Text Interactions. The framework summarizes key dimensions of Questioning the Author and Accountable Talk, such as identifying stopping points in texts to pose a question, asking questions that help students construct an understanding (the gist) of a text, crafting cognitively demanding questions, holding students accountable to rigorous thinking, and creating a positive classroom learning community.

The framework describes teacher and student actions, called talk moves, in a discussion. (See excerpt above.) This descriptive language for a particular dimension is used as a lens through which coach and teacher reflect on a discussion. For example, evidence that students are constructing the gist of a text (one of the framework dimensions) is apparent when students identify key ideas in the text, use their own language to discuss the text, and connect ideas. Teacher moves associated with this dimension include asking open-ended questions that support students to respond in longer ways, surface misunderstandings, and focus students' attention on key ideas.

Each coaching cycle consists of three phases:

• **Prelesson coaching conference to determine instructional goals.** A coaching cycle begins with teachers emailing the coach a lesson plan. During individual prelesson phone conferences, the coach and teacher decide together what dimensions of the framework to focus on in the coaching cycle.

• **Written reflection on instruction.** Subsequently, teachers videotape themselves enacting the planned lesson (about 30 minutes) and upload the videos to a secure server. The coach then views and edits teachers' videotaped lessons using QuickTime Pro to identify three short segments (two to three minutes each) that highlight specific and valued events in the instruction. The coach uploads the video clips to the online coaching interface from the University of Virginia's Center for Advanced Study of Teach-

ing and Learning, then writes comments and reflective questions for each lesson segment to draw attention to particular teacher-student interactions in the discussion.

When the clips are uploaded, the teacher is notified and invited to generate a short written response to the coach's comments. The goal of the written feedback is to provide an opportunity for teachers to gather questions and ideas before the post-lesson conference. Teachers' written responses serve a similar function for the coach in that it provides the coach insight into teachers' instruction and intentions to better tailor comments to teachers in the post-conference.

• **Post-lesson conference:** Joint reflection on the video-taped lesson. A coaching cycle ends with individual post-lesson phone conferences (about 45 minutes). During the conference, coach and teacher watch and reflect on the lesson segments guided by the framework. The coach and teacher also determine next steps, including identifying the framework dimensions that are to be the focus of the next coaching cycle.

COACHING IN ACTION

To get a sense of what teachers experience in the coaching, here we describe a coaching cycle for one teacher. Kathleen Johnson taught for many years in an urban district. The majority of her students were from low-income families and transitioning from bilingual education.

Johnson was interested in focusing on two dimensions of the framework: Posing questions to construct the gist and accountability to rigorous thinking. During the first coaching cycle, she worked to apply the concept of planning open-ended questions at particular stopping points in the text *A Long Walk to Water* by Linda Sue Park. Johnson's videotaped lesson indicated that she was asking many traditional, closed-ended questions during discussion that directed student talk in less productive ways.

In her written reflection, the coach invited Johnson to consider the kinds of student responses she received to particular types of questions. For example, one of the selected video clips focused on a moment when a student brought in tangential information. Johnson asked the coach to think about different questions she could have asked the student in response to his seemingly off-topic comment.

This written conversation continued by phone in the post-conference, when Johnson requested that they begin discussion with this video clip. After viewing the video clip together, the coach proposed that they answer Johnson's question collaboratively by considering possible talk moves that could be used in such a situation. They tried different talk moves at various junctures of the video clip, pausing the video and discussing how a particular talk move might assist student thinking and understanding.

Finally, the issue of the initial question became the focus. The box above right shows a portion of the coaching conversa-

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COACHING CONVERSATION

Coach: If you begin with a really open-ended question like, "So, what are we learning here? What is the author telling us about this war?," the kids have to start to talk about the war. They have to make some claims about it.

Johnson: I got more into those questions after the first chapter. "What was he thinking when that happened? How does this new information affect Salva?" I think those are more the open ones that you're thinking about.

Coach: Sometimes, when we're asking a question, we're actually inserting some of the answer in our question, like how does such and such affect Salva? If we do that, we're actually alerting them to the fact that something affected Salva. If we just say, "What are we learning here?" or "What's happening here?" or "What new information is the author telling us?," then they have to come up with the fact that something has affected Salva. The students might not have realized that, and that's information for us as teachers that something just went right over their heads. We're learning that something we thought was going to be really easy for them to digest is not.

Johnson: I see a pattern here. The online workshop facilitator talked about the same thing. We're so used to asking what we believe is open-ended, because to me open-ended is where they have to give you information, not just a yes/no. But you're asking for them to really delve into what's going on. I guess I'm looking for more concrete information.

Coach: You want that concrete information to come from the kids.

Johnson: I want them to think more rigorously or get into it but I also want to make sure that they understand the fundamental things that are going on that they may not.

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tion in which Johnson considers why she asked the kind of questions she asked and begins to make connections between theory she studied during the online workshop and the observations she is making with video during her coaching phase.

This conversation explored the continuum of open-ended questions and how some questions, while allowing for longer responses, provide students with teacher-generated information rather than allowing them to surface the key ideas from the text themselves.

The nuance that not all open-ended questions are created equal and that small differences in the wording of a question affect the opportunities students have to think and grapple with text is an example of the substantive coaching conversations that occur when pre- and post-conferences are built on reflection and use video as the vehicle for co-study.

ESTABLISHING TRUST

One of the surprises for us was the ease with which teachers established trust with a web-based coach. One 4th-grade teacher said, "I always felt like … something would be more beneficial for me if I had that interaction with the person face-to-face, but this [experience] made me think a little bit differently because … even though I wasn't face-to-face with [the coach], I feel like we always stayed in contact, and if I needed anything, I knew I could come to her."

Teachers also reported that they appreciated the focused attention they received from the coach. Another 4th-grade teacher remarked, "When I was on the phone with [the coach] … she actually took the time to go through the chapter with me … . So to me, it didn't matter if she was sitting there or I was on the phone with her because she still did the same thing, or maybe even more than someone would do if they were sitting with me."

Interestingly, other teachers also commented that they received more focused attention from the online coach than from their school-based coach. One 5th-grade teacher said, "I don't see my [district's] literacy coach that often, and we don't have in-depth conversations like with the online coach."

While the comparison between district and online coaching might be an artifact of the particular schools we were working in and might not be the case in a different district, it is notable that all of the teachers reported that they felt at least as comfortable and supported by the web-based coach as from their school's literacy coach.

EVIDENCE OF CHANGE

Teachers were positive overall about the amount that they learned from the project (workshop plus coaching) and the usefulness of what they learned for improving their practice.

In surveys, all teachers agreed that the coach's written comments focused on issues that were relevant to their practice, easy to understand, and worth the time it took to read and respond to the comments. They also noted that the experience increased their confidence in their teaching.

As one 5th-grade teacher wrote, "This program made you look at the way that you were teaching, made you look at instruction, and made you look at the questions that you were asking, and made you look at student engagement, and if they're really learning."

Another 4th-grade teacher wrote, "Even though [the program] was a lot of work, it definitely has helped me become a better teacher. And the way I looked at comprehension is so totally different than I did stepping into the classroom in September."

Our early study of teachers' videotaped lessons likewise suggests that teachers are improving their instruction. At the end of the first coaching cycle, compared to baseline, teachers were more inclined to segment the text during discussion and pose questions that guide students toward constructing a coherent representation of the text. Furthermore, there was an increase in the extent to which teachers showed how students' ideas related to one another in the discussion.

Promising trends are evident for the general rigor of the discussion, which includes teachers posing more cognitively demanding questions, as well as for students linking contributions, providing more extended explanations, and providing text-based evidence to support their responses.

TEACHER RESPONSE

Learning online is not without its trials. We were pleased to see that most of the teachers, although slightly apprehensive at first, were mostly very positive about viewing themselves on video. We were surprised to learn that some teachers lack computer literacy skills that made engagement in the online workshop more time-consuming and frustrating than we anticipated.

During problem-solving technical issues with teachers over the phone, we learned that some teachers did not know which browser they were using, were unsure about how to download (and then locate those) files, or how to work on and save a downloaded document and then upload it to a website.

Some teachers do not own a home computer and experienced difficulty with district firewalls when uploading text and video files or viewing videos. Based on teacher feedback, we are considering greater initial support to reduce these problems through a combination of additional visual aids, and more technology training for less tech-savvy teachers in advance of the workshop.

PROMISING DEVELOPMENT

Online professional learning holds great promise as a way to deliver powerful learning to more teachers at lower cost. As our research base grows, districts can become more confident about outsourcing some professional learning that addresses particular instructional goals. Our work suggests that, instead of districts hiring and training district-level content-specific coaches, teachers can work effectively with other teachers beyond their grade-level team, school, or district and form meaningful learning partnerships.

This has special implications for rural districts and schools with few teachers who teach the same grade and subject matter. Teachers can form trusting, positive relationships with a remote coach and learn to use cognitive tools to guide self-reflection on teaching and learning.

Online learning that combines opportunities for teachers to build new knowledge and apply that learning with feedback from other teachers and a highly qualified coach shows real potential for improving teaching and learning.

Of course, these online efforts would need to be integrated with other professional learning in a district, and administrators will need to acknowledge and value the time and effort teachers commit to this work in meaningful ways (e.g. to count

sometimes difficult situations."

- "I feel that I have developed relationships with the teachers on the wall and collaborated more here than in my actual algebra 1 team at my school."

IMPACT ON STUDENT ACHIEVEMENT

Algebra Nation has had a significant impact on student achievement in algebra 1. Schools in Florida that were frequent users of Algebra Nation during the 2014-15 school year experienced an average Algebra 1 End-of-Course exam score of 83% — 20 percentage points above the average score of schools with a low usage rate (63%).

The success of Algebra Nation has led to expansion into other mathematics courses. Math Nation launched in January 2016 to support mathematics students and teachers in grades 6-12. So far, Math Nation has provided teachers and students with resources similar to those on Algebra Nation for pre-algebra, algebra 1, geometry, and algebra 2, with plans to add grades 6-8 mathematics, pre-calculus, calculus, and statistics.

CHALLENGES

Developing a professional development component to Algebra Nation has had its challenges. For example, when creating classroom videos to demonstrate the development of mathematical practices, we recorded a diverse range of students that included classrooms with struggling learners and also some with advanced or gifted learners. When teachers with classrooms of struggling learners viewed a video that showed advanced students, they dismissed what they were seeing, stating that their students could not do what they were seeing students in the video do. This lack of buy-in was motivation for recording the remainder of the videos in classrooms with struggling learners.

Another challenge for Algebra Nation faced was low traffic on the Teacher Wall when it first launched. The launch of the Teacher Area coincided with the implementation of new state standards. We expected this to be a driving force for teachers to use the Teacher Area, especially the Teacher Wall. We hadn't considered just how much teachers had on their plate at the time. They had trouble finding time to post on the Teacher Wall.

To solve this problem, we designated several of the strongest teacher users as guides who would post questions or comments to the Teacher Wall to elicit responses from other teachers. This allowed new teachers to jump easily into the conversation and has helped to build a virtual community of algebra teachers that support and trust one another.

The Teacher area has evolved with time and increasing use. Through an environment built on trust and equity, Algebra Nation uses both positive and negative feedback received from stakeholders to grow and improve its professional development offerings and innovations.

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Cloud coaching

toward state-level continuing education requirements or career advancement).

Our work and the work of others show that web-based formats have the potential to increase teachers' access to expert coaching.

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