

Streamline to Mastery: personalizing professional development

Imagine your boss approaching you and saying, “I trust that you know what you need to do to grow professionally. What resources do you need?”

One effective approach is Streamline to Mastery, a teacher-led professional community in which faculty and graduate students from the University of Colorado Boulder School of Education collaborate with a select group of teachers. Envisioned by School of Education Associate Professor Valerie Otero, Streamline to Mastery provides a unique opportunity for public school teachers new to the profession to discuss their practice and work together to develop into educational leaders and agents of change.

The concept is that teachers know best what they need to know and, by sharing questions and ideas, can evolve their own professional development. In Streamline to Mastery, the participants immerse themselves in the challenges they face and find solutions.



Valerie Otero

“Streamline to Mastery is a professional development program intended to draw on the expertise and experiences of the teachers. Too often, we undervalue, underestimate and underutilize the vast knowledge, experience and expertise that resides within teachers,” said Otero. Streamline to Mastery follows an experiential learning model. A high level of trust and a small amount of guidance (which is ultimately removed) are provided to cultivate environments in which openness, honesty and skepticism result in generating knowledge that is relevant to all participants.

“When we think about teacher professional development, we often think about how to *help* teachers change. Instead, we might begin to think about how to create teacher-led

communities in which change is likely to happen. When we think about resources necessary for creating a professional development program we often think about bringing expertise and resources *to the* teachers. We might instead take the view that the resources necessary for professional development reside in the teachers and their everyday experiences,” Otero said.

Mike Ross, who taught physics in Colorado high schools for five years and is now a science education doctoral student involved in Streamline to Mastery, appreciates the program’s novel approach. “It’s naïve for school district personnel to think one professional development goal would be appropriate for even a team, much less an entire district,” he said. “That runs contrary to what we know about how students learn and the best ways to serve students. We don’t all have the same trajectory so why would we think that way about teachers?”

In order to avoid the one-size-fits-all professional development approach, Streamline to Mastery teachers contribute to their own learning. This integrated vision for teacher education involves pre- and in-service teachers, students and professors—every piece of the teacher pipeline.

Here's how it works.

Four area science teachers were invited to participate in the initial Streamline to Mastery cohort in 2010, with doctoral candidates Ben Van Dusen and Ross and faculty lead Otero serving as facilitators, and undergraduate student Sam Sherman aiding in data collection. A second cohort that began this summer involves six more teachers. The Streamline to Mastery group meets every two weeks in a peer-oriented environment, rather than in an academic-teacher configuration.



Mike Ross

Ross noted that Streamline to Mastery offers a unique arena in which the teachers can be quite open with what's happening in their classrooms. "They don't have another venue where they can walk in and say, 'I taught this lesson and it was a disaster.' Here, they can share their challenges, explore solutions and learn ways to grow in various teaching areas."

For Ross, one of the biggest rewards of Streamline to Mastery is the opportunity to work directly with extremely talented and highly qualified teachers. The experience has expanded his awareness regarding the dilemmas new teachers face. "It strikes me that, given these teachers' resumes, they face so many incredible challenges in their practices. If these teachers are struggling to meet their students' needs and feel a sense of efficacy, then we really need to think hard about the way that we prepare and support our teachers. It's time that policymakers stop talking only about holding teachers accountable and start thinking and acting on how best to support young teachers like these who choose to work in some of the most challenging settings. If we fail to do this, we'll continue to see our most dedicated and passionate teachers either leave the profession or leave the schools that need them the most."

Shelly Belleau is one of the initial four teachers in the program. A chemistry and physics teacher at Mapleton Expeditionary School of the Arts in Thornton, Colo., she earned her degree in biochemistry at the University of Colorado Boulder and became a Noyce Fellow. She was invited to participate in Streamline to Mastery by Otero.

"The biggest need for teachers was to have a place to authentically and vulnerably share what is happening in our classrooms so we could improve our teaching practice," she said.

The results have exceeded expectations. "Oh, my gosh, the discussions are so rich that we don't want to leave!" Belleau enthused. "It's the one place I want to be if I have to have a meeting after school. I leave feeling empowered and uplifted and really ready to conquer my classroom and conquer the challenges."

She said the three-hour meetings, which the teachers run, include “chat and chew” for the first half hour. This time is devoted to sharing what is going on in their classrooms and what they are struggling with in terms of how to effectively prepare students—for exams, for instance. Or, the conversation may include how they feel stretched thin and are exhausted. Following the open discussion, the group moves to its formal agenda, which is typically set by the teachers.

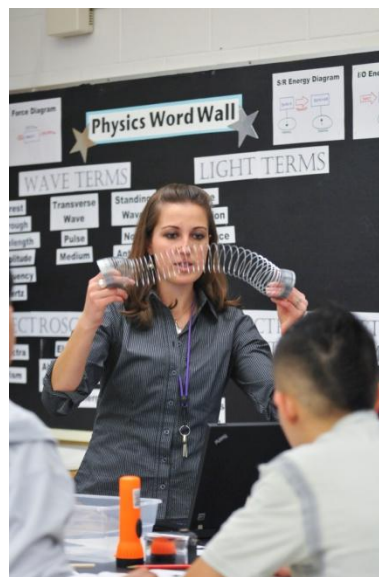
When the first cohort started in the spring of 2010, the participants focused on inquiry-based science instruction. A different teacher shared a favorite lesson at every meeting, followed by a debrief in which they discussed what was inquiry-based and what was not and how the lesson could be improved. In inquiry-based instruction, the teacher is not the giver of the knowledge, Belleau explained. The teacher acts instead as a facilitator and provides a meaningful sequence of questions and lab activities to help students build their own understanding of the science topics.

Belleau said the Streamline to Mastery environment provided a safe place to work through science lessons and to dive deeper into the rationale behind lab questions and other assignments. Sometimes, the teachers brought in students’ work to review.

“One of the huge benefits of Streamline to Mastery is that it is so uplifting that it keeps me optimistic,” said Belleau. “I believe my kids can do science, even after a bad day. I feel like a good teacher and Streamline helps me see I’m working toward what works best for kids.”

Last summer, the teachers, along with Otero, Ross, Van Dusen and Sherman, started developing action research plans, which involves designing their own research questions and conducting the discipline-based educational research necessary to answer them. Ultimately, the purpose of this research is to deeply investigate how learning takes place in their classrooms. Each teacher conducted a project last year and the Streamline teachers presented their papers at the national Physics Education Research Conference in late July.

The Streamline to Mastery teachers each receive a \$15,000 stipend per year for five years from the National Science Foundation that supports their attending and presenting at national education conferences and pursuing other professional growth opportunities, such as graduate-level courses.



Shelly Belleau

Ben Van Dusen is a former high school physics teacher who used a lot of technology in his classes. Awarded an Albert Einstein Distinguished Educator Fellow in Washington, D.C., he left the classroom to work at the National Science Foundation’s Engineering Directorate. Now a graduate student at CU’s School of Education, Van Dusen’s research focuses on integrating the iPad into physics.

Van Dusen views his role in Streamline to Mastery as that of a resource person for the teachers as they conduct their action research. He offers support on data collection and overall research processes and prepares the teachers for attending professional conferences.

All of the Streamline to Mastery meetings are videotaped and become the data source for the group's research. Van Dusen said the doctoral students look at how the teachers' conceptions of inquiry change through this process and how they define inquiry and apply it personally, to their students and in their classrooms.

"The teachers' definition has really matured through this process," he said.

Two themes that dominate the group's regular meetings are inquiry and community. According to Van Dusen, the community conversations focus on how the teachers see themselves as community and "how their self-efficacy is changing—how their leadership skills change through this process and then in their schools. We hope they will become advocates for their own classrooms and for educational reform."



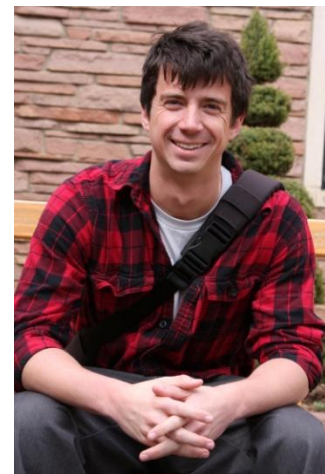
Van Dusen said his involvement in Streamline to Mastery has resulted in his learning additional research techniques in the social science arena, especially in education research, that go beyond his former research capabilities in physics. Additionally, he is working with one of the Streamline to Mastery teachers to integrate the iPad in her classroom. He will also conduct pilot work this fall that he intends to use for his dissertation prospectus.

Ben Van Dusen

The Streamline to Mastery team includes undergraduate Sam Sherman, who is also a Noyce Fellowship awardee. One of his roles is to review and transcribe the videos taken of the Streamline to Mastery meetings and any taken in school classrooms. He looks for changes in the way various topics are discussed, particularly scientific inquiry.

"I'm also curious about the community they build," Sherman said, "how they become more comfortable with each other and use each other as collaborators to become better teachers. I would like to see these teachers take on leadership roles."

In addition, Sherman is intrigued by the issue of vulnerability among the teachers. "Vulnerability is a really interesting topic. The teachers are becoming comfortable enough to admit when they have a bad day or



Sam Sherman

don't know about a topic. On the flip side, it has been just as hard for them to say what they are good at, to be able to admit, 'I rocked this lesson.' I now see a lot of comfort for them to recognize their own expertise."

Sherman worked with Belleau in her classroom for the school year, some days mingling and chatting with the students, other days assisting with labs or videotaping sessions for use in the Streamline to Mastery data collection.

"Doing research for the first time is a trick—it can be really stressful," Sherman admitted. "When I first started working with Valerie and Mike I had no idea what they were talking about. I didn't know what coding meant, I didn't know the acronyms for the conferences. I felt so out of my element. Education research was tough, but getting exposure to that as an undergrad prepares me in case I want to continue research as a graduate student. As an undergrad, I feel I can peek behind the curtain a bit to see what real teaching is like—the real world of what teachers face."

He admits that seeing teaching up close and personal as he does has its unsettling moments—especially if a teacher happens to cry during a Streamline to Mastery meeting. "I think, wow, that might be me in a few years!"



Streamline to Mastery School of Education participants, from left, Sam Sherman, Mike Ross, Ben Van Dusen and Valerie Otero, meet regularly to review research findings