Kaleidoscope

Educator Voices and Perspectives

![Knowles Teacher Initiative logo]

Transforming Mathematics & Science Education

KALEIDOSCOPE

EDUCATOR VOICES AND PERSPECTIVES

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Call For Submissions

The *Kaleidoscope* editorial staff accepts submissions on a rolling basis. We publish in a variety of formats, including print, podcast and video.

If you are interested in writing, or already have a piece in mind, contact **kaleidoscope@knowlesteachers.org** at any time for feedback, information, or guidance. Every submission, from idea to fully-developed piece, is assigned a peer advisor to help develop, build, and edit the piece before submission.

On our webpage, **www. knowlesteachers.org/kaleidoscope**, you can find other resources to help you develop your ideas, including
- a non-exhaustive list of the genres of stories we publish, including examples of pieces from *Kaleidoscope* and elsewhere;
- the rubric used for the final review of submissions; and
- past issues of *Kaleidoscope* to see what others have written.

We look forward to reading your work!

In This Issue

From the Editors' Desk:
Our Current Narratives Aren't Enough

You can tell from perusing this issue that we've been thinking quite a bit about "super-teacher" stories—the narratives surrounding what these teachers do, where those narratives come from, and how they affect our identities as teachers and learners.

Recently, Kirstin received a big, fancy award for teaching. She's having some complicated emotions about it: proud, yes, but also worried she's contributing to the public narrative that only a few teachers are worthy of recognition. Or the narrative that part of being a great teacher is taking on public leadership roles. Or—most insidiously—the common narrative that you can spot a great teacher from a mile away.

In reality, all teachers are learners, and we learn every day about how to make our practice better in ways that improve our students' educations. Even the most extraordinary among us don't always recognize the greatness in the work we do every day. And the world-changing, everyday work teachers do to change students' lives isn't the visible, high-profile work that often wins awards.

We have over two decades of experience in education between us, and—despite this issue's theme of teacher leadership—we're both still uncomfortable with the phrase "teacher leader." In the world outside education, a leader is someone in a position of power, someone who encourages and inspires others to follow. Leaders are the committee chairs, the organizers, the spokespeople. While all those archetypes exist in a school building, so do many others, and their work with students and colleagues can be incredibly powerful in building the experience of schooling.

Our staff dedicates this issue to the leaders of education who aren't always recognized. To the teachers who use their own personal or professional failures as examples for their students of how to recover from setbacks. The mentors who, year after year, are the ones whose sage words are sought out after the final bell has rung. The veteran educators who are always thinking about new teachers and how to support them along their career paths. The early-career teachers who reflect deeply on their experiences and develop plans to sustain their personal and professional growth.

All of us in education need to start to change the stories we tell ourselves and others about teaching. The *Kaleidoscope* staff hopes you'll read and share the stories published here, and that these teachers' honesty and bravery will motivate you to see the deep value you provide in your context and to tell your own stories.

Kate Blaske
Editor-in-Chief

Kirstin Milks
Editor-in-Chief

Citation

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Letter to the Editors:
Teaching With Technology

I wanted to thank you for running Beverly Stuckwisch's article on teaching in a one-to-one classroom in the Spring 2017 issue of *Kaleidoscope* ("An Honest Look at a One-to-One Classroom"). I was particularly impressed Beverly was able to identify the assumptions she held about what teaching in a digitally-rich environment would be like, as well as her ability to present the beginning of a framework for using technology in ways that truly support student learning.

Thanks to a recent bond passed in my school district, I am fortunate to have some say in how our technology money is spent as a member of my school's site technology committee. From the discussions that are held during our meetings, I think many teachers, administrators, and even district personnel would be wise to heed Beverly's cautions as they consider their own planning. I appreciate how Beverly models an inquiry process when considering the use of technology in her classroom—beginning with a question to test her assumptions, and collecting data through student surveys to help develop her thinking further. Again, this process is one from which our district technology team stands to learn.

Finally, Beverly's conclusion that when it comes to using technology, teachers should begin with asking how student learning will be affected is so basic a dimension, yet one we strangely seem to lose track of in these discussions. I appreciate Beverly's humility to remind her readers that it's okay to take a step back when things don't work out the way we assumed or hoped they might. It is an important reminder for me as an early-career teacher—one that will stay with me beyond the discussion of technology.

Sophie State
Senior Fellow

The editors of Kaleidoscope would love to hear from you! Reach us at **kaleidoscope@knowlesteachers.org.**

Raise Your Hand:
Changing Students' Lives

This issue, we asked teachers in the Knowles community to share stories of instances where a teacher's leadership in or out of the classroom had a direct influence on a student's life.

My colleagues have pushed to add a bunch of engineering classes, aquaponics, and the state's only marine biology course at our school of 700 students. It's incredible how excited some students get about this work and how deeply it makes them think about science, problem solving, and working together. I see kids coming in early, staying late, skipping lunch, etc., in order to work. That group includes many students who didn't love or excel in traditional science classes. Props to the teachers who went above and beyond to make these novel things happen!

Dan Voss, 2016 Teaching Fellow

My first year at a new school I had a student I was mentoring who was always late, skipping, rude to me and other teachers, and I had no idea how to support her. My principal gave me $10 and told me to take her to Starbucks. We walked together, got to know each other and just be outside of school. Our relationship started to improve after that day!

Camden Hanzlick-Burton, Senior Fellow

One of my colleagues started a teacher-student mentoring program from scratch this year, to help identify and support students who are struggling at our school. It's still in the pilot stage, but she's put together a group of 10 or so mentor teachers who are working hard to use research-based yet personalized interventions with our students. The group spent the first five weeks of school looking at student data and gathering teacher feedback to select the first group of student mentees. So far, each mentor has reached out on a one-on-one basis to their mentees, and there's been a really positive response from the students.

Heidi Park, Senior Fellow

Citation

Voss, D., Hanzlick-Burton, C., & Park, H. (2017). Raise your hand: Changing student lives. *Kaleidoscope: Educator Voices and Perspectives, 4*(1), 3.

An ongoing feature in *Kaleidoscope*, Raise Your Hand, features short responses to a writing prompt. Do you have an idea for a storytelling prompt? Contact us at **kaleidoscope@knowlesteachers.org**.

Giving Props to New Teachers

Chris Lipski

Small actions by veteran teachers can make a lasting impact.

Anyone who has seen a film about an aspiring teacher knows the typical scene. A teacher enters a chaotic classroom: paper airplanes soaring across the room, the smack of bubblegum popping as students flagrantly break the "no gum" rule, the name-calling and roughhousing that loudly knocks over a few chairs, and, depending on the age of the film, the student who won't get off the phone. The teacher proceeds to attempt some semblance of classroom management but is clearly woefully underprepared. The audience is spared watching the remainder of the class period as we cut to the teacher slumped over his or her desk, tired and demoralized from the day's events.

That was my first year of teaching.

Okay, I'm being a bit dramatic. But in that first year of teaching, my seventh period chemistry class came very close at times. The paper airplanes really did happen. Lab stools did get knocked over. A student literally used his phone to call another student in that class, during class—while my principal was in the room. And I certainly ended many days slumped at my desk wondering how in the world things would ever improve.

For too many first year teachers, the reality may be even worse. There may be no break in the struggle, and the result of this daily dejection is a strong desire (or even need) to leave the profession.

Surprisingly, though, I never felt that I wanted to leave the job or the school. It wasn't because I'm super-human and have the "grit" to stick it out and deal. It wasn't because there was a magical moment where I "truly connected" with my students and suddenly all the problems went away (as movies often trivialize). Instead, it was because my high school and my colleagues understand the importance and complexity of supporting new teachers. It was because I felt, and continue to feel, unwavering support from my school. I was (and still am) lucky to be at a school with structures that allowed me to easily find the support I needed in managing what I deemed as "failure."

My school is set up such that a team of core teachers (i.e., math, science, English, and history) all share the same group of students in small learning communities or "houses." Each teacher has five classes: four sections of their content area and one section of advisory. The

> "My high school and my colleagues understand the importance and complexity of supporting new teachers."

advisory class was added to our program as part of a goal to make high school more personalized and promote stronger relationships. Advisory meets every day, and students in your advisory are also enrolled in your content class, which means every student is seen twice per day by one core team member. Finally, the master schedule has been created such that these four teachers also share a common prep period during the day, which allows them to meet and plan advisory curriculum as well as discuss student progress and concerns as they arise.

These teams of core teachers around the school meet consistently and can become very close. My team met twice weekly that year—a bit more frequently than what is most common. Meetings began with "check-ins and props." Since we had time to discuss student concerns already in the agenda, "check-in" really was a time to talk about our lives off-campus. I was genuinely asked about my weekend, and I was honestly told about great weekends and weekends full of grading. I was even invited to weekend plans! The point is, just a few minutes of authentic check-in made me feel part of the group. I felt less overwhelmed knowing that experienced teachers still had the occasional weekend of work, but that they had also managed to strike a balance, and that they were helping me to find that balance.

After check-in, we had "props." I will never forget that, every week, the history teacher made it a point to give me props for surviving yet another week of my first year—"and Chris made it one more week!" It seemed silly at the time, but I got to the point where I truly looked forward to hearing him say it. The whole process was never more than five to ten minutes of the meeting, but these small things (that I suspect my team did very intentionally) are a huge reason for me feeling welcome, supported, and that I could always go to them for help.

Let's return to my seventh period class. Twenty-six tenth-grade students, all required to take chemistry—many chagrined by this fact. Unless the lab for the day required fire or resulted in an unexpected color change, the vast majority of these students found it difficult to engage with the class. Their interest in learning chemistry stood little chance against the classroom culture that I had allowed to develop—if most of the class is off-task,

shouldn't you be, too? I tried incentives to encourage good behavior. I tried punishments to discourage bad behavior. I kicked kids out of class. I praised the class for even just three minutes of silence. I assigned seats as strategically as possible. Nothing was working.

Because I felt so comfortable with my team, I asked them to give me advice. This was no small feat—I think it can be incredibly challenging for new teachers to feel comfortable going to peers for help, but my colleagues' intentional work to build camaraderie was paying off. Not only did they happily oblige, the history teacher offered to come observe and give feedback. To my amazement, his response to my class was that it was largely running okay (it did not actually reach the levels seen in movies). This wasn't because he had low standards—he is a well-respected and beloved veteran teacher at the school—but rather he knew my students. He knew the behavior that I was attributing to my inabilities was normal for new teachers and, in some cases, might still happen in his and others' classes. He had a perspective that I lacked, and his reaction to my class comforted me. We didn't just give up on the problems; he gave me some practical suggestions for small changes.

But the most important message the observation provided was that it wasn't just me. The rest of my team—veteran teachers!—also struggled with these students. The days I considered "failures" certainly could have gone better, but the team I worked with supported me in managing those failures and seeing the bigger picture. I imagine for so many other first-year teachers this is also true; unfortunately, they just don't experience it.

It would be nice if I could write that everything improved immensely after I went to the team for help, but the reality is that my seventh period class never became a well-running class. Sure, the paper airplanes stopped, but the class remained a place where many students saw each other working on things other than my learning target. The social pressure to disengage never lifted enough that students felt comfortable exploring challenging new concepts. More students ended up failing that semester than any subsequent class I've taught, and in many ways I was more relieved than proud when June arrived.

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> *He knew the behavior that I was attributing to my inabilities was normal for new teachers and, in some cases, might still happen in his and others' classes."*

As I reflect on that year, I wonder how many first-year teachers have left the profession never to return. Not because they "didn't cut it," but because they didn't have the support that I was so fortunate to receive from my teaching colleagues. The fact that this is a rarity among new teachers is heartbreaking and, frankly, unacceptable.

I recognize that not every school can have teams that share common students and common prep periods, but we can all support new members of the profession. A simple "you've made it another week!" might seem small, but when combined with other "small" things—offering genuine check-ins about weekends, honesty about your own struggles with a student, or even a class observation—can help persuade that young-career teacher slumped over their desk in June to return in August.

Citation

Lipski, C. (2017). Giving props to new teachers. *Kaleidoscope: Educator Voices and Perspectives, 4*(1), 4–6.

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Self-Talk and Sustainability

Alex Steinkamp

Why was I using my ideals as an educator to berate myself?

I first noticed the root of a deep problem when I was talking with a student teacher I knew and she asked me, "What are you doing in your robotics class to promote equity?"

My mind reeled with the assumptions I read into the question:
- Equity is promoted through specific, discrete acts, not dispositions.
- What more could I be doing with equity?
- My purpose ought to be to promote equity, and I should be able to articulate the steps I have taken towards that purpose.

In trying to answer genuinely, I felt a wave of hesitation, guilt, and a sense of failure wash over me. What was I really doing? What should I have been doing that I haven't found the time to do? Am I just a heap of excuses? Why did her question about equity, so common in teacher prep lingo, and so simply an inquiry aimed at understanding more about my teaching, make me feel like I was a failure?

In this question, I have come to realize that two distinct problems collided: what my priorities in teaching should be, and how I see and treat myself when I do or do not meet those priorities. The conflict was a confluence of what I felt a successful teacher should be doing and how I reflect on my struggles.

Through my teacher prep program and my work with the Knowles Teaching Fellowship, I developed a multi-faceted image of what teaching was: a pristine ideal with well-explored angles that I could see clearly for myself. I had goals around equity—the touchstone I'm exploring throughout this essay—as well as pedagogy, social justice, personal connections, and collegial relationships.

Without question, defining our goals as educators is important. They are what guide us in thinking about what we do and help us grow in ways that support our shared image of an ideal educational system. Our goals are not a target—a simple bullseye to hit by standing a standard distance away and aiming. It is a multidimensional, many-sided, different-from-every- perspective, evolving, sometimes hazy, and extraordinarily beautiful entity that we work to approach from many directions at once. We all learn to value a target, or at least some dimension of it. It is the beginning of defining ourselves as educators. At the same time, no one holds precisely the same target as someone else.

I don't think I was aware of this until recently, but as I had this multifaceted target laid out for me, I also internalized the narrative of "I must get to that target. If I don't, I'm not doing what I should, and that is bad." And not just one part of the target; all of it. It became a moral imperative for me to push myself to achieve every goal that was framed for me.

I was of course reminded by my program that "the first years of teaching are quite challenging," but when I heard the word challenging, I now realize that my internal dialogue converted that into "if you are good

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> *What I should do is teach as well as I can and keep growing in areas that stretch me."*

enough, and work hard enough, you will get there." This accentuated every shortfall that I saw in myself. When I wasn't reaching my ideal, it was because I hadn't done enough.

This attitude was a hidden undercurrent for my first few years of teaching. I continually viewed everything I did in terms of how short of the target I fell and saw many pieces of my perfectly envisioned practice that I didn't do. I didn't find time to go meet with the girl's STEM club about taking my robotics class. I didn't make a personal connection with the families of each of my students. I didn't track the voices that are most often heard in my classroom and consider who I was valuing more. I didn't. Therefore, in my head, I wasn't good. And every reason I had for what I didn't do, I called a cop-out; no matter what, I still should, and when I didn't, it was because I was a failure.

Those failures hit me hard. As a result of my consistent negative self-talk, I began to doubt that I truly valued my goals. If I really valued the target, wouldn't I be reaching it? When I struggled to adequately act on equity considerations in my classroom, I saw myself as being just as bad as someone who thought equity wasn't a problem worth considering. It was easy to tell myself that I was bad; I had all this evidence. And why should I keep teaching when I was "bad?" I didn't see the cost my attitude carried—I cut myself down by continually doubting the core of my practice.

This blade can be turned against others as much as against ourselves. In the transition from teacher preparation to teaching, the reality of differing targets and priorities amongst our colleagues and administrators can be jarring. I felt resonance with my school administration that seemed to support my questioning of traditional physics teaching but felt paralyzed with frustration in working with colleagues who, to my first impression, seemed to not think that pedagogical questions were a high priority. It took me time to realize that the targets that they had were simply different from my own, and they were just as motivated to move towards effective education as I was. The difference was in the path they were choosing.

I believe it is important to accept that there are many different targets, and every person in education is trying to hold themselves towards their internally-defined target. Judging others based on how we see them meeting our own target, without seeking to understand how they see their targets, only serves to hinder our collective capacity to make positive change.

Keeping our eyes fixated on the target can even make a new teacher miss the narrative that once you start working at a school, the path to your target is not straight. You will have to adapt and compromise and struggle, and there are all sorts of costs and risks in your context that you have to determine before deciding what steps you take towards what goals. What we should do becomes weighed down with the personal costs of each act. It becomes more than just a cardinal direction to move towards, and we sometimes must spend a lot of time dismantling a barrier without actually making visible progress before we can resume approaching our goal.

The blade of "you should do more" exists to point us to the target we hope to attain. To help us cut a path through the obstacles blocking our way. To make us open our eyes to that which too many people ignore. To help us address the hidden inequities around us, to make us question and unearth which parts of our practice are helpful and which are not. To urge us to grow towards every facet of our target.

Carrying that edge can be harmful to ourselves. Rather than serving as a call to action, I used that blade to hurt

myself, to berate myself internally for not doing enough. I felt ashamed of the work that I did because I could list innumerable moral imperatives that I failed to obey in my practice. I did more than just try to hold myself accountable: I punished myself for my limited progress.

It has taken me a long time to accept that the part of the target that you love most will be the one that you push yourself most on, and that is okay. I fundamentally love teaching my content, and thinking about how I structure my course to help students see what I see is what makes me most excited. Equity in teaching is an important facet of my practice, but it isn't what drives me to teach on a day-to-day basis, and my work on equity may not be immediately visible in my teaching.

When we decide that every ideal a teacher holds must be visibly demonstrable in their practice, we limit ourselves to what we can articulate in a few, hard-hitting, lingo-supported sentences. We discount the ways in which our philosophy permeates our actions in small ways. The way I check myself on with whom I spend extra one-on-one time. The added grace I give towards students who otherwise may be seen as out of line. The phrasing I choose in my feedback for each student. We have to see and count those hard-to-articulate acts in our own work as being valid and valued, even when they are not necessarily the greatest leap possible towards that facet of good teaching.

What I'm still trying to believe is that you're not necessarily a detriment to the cause if the cause isn't the thing for which you fight hardest. It doesn't have to be, "If you're not 100% with us, you're against us." The psychological damage I inflicted on myself by focusing so strongly on what I "should be doing" had been a great source of the mental strain that tipped me towards burning out, and often still does. I couldn't do everything that I felt like I should, and that made me feel like I really should just stop.

Now I feel that what I should do is teach as well as I can and keep growing in areas that stretch me. If I cut myself to shreds with my own expectations to reach the imperative target in my head, I will end up removing myself from the system, because I will ultimately view myself as a detriment to the field. My greatest imperative is to keep pushing myself forward towards my target and not cut myself down for the things I have not yet done. The costs that I weigh in choosing what I do don't mean that I am straying from the "right path;" they are very real choices that we all have to make in order for us to continue to function as educators over years and years.

I must give myself the grace to value the subtle work that I do towards the goals that underpin my work. This is not meant to be a call to complacency. Rather, this is meant to be a reminder that our real moral imperative is that we sustain our practice. Even when we fail to reach our targets, the value we add is from trying. Being so self-critical and hyper-conscientious that we are paralyzed and fearful serves nobody, and potentially can cost the field an educator whose impact is positive.

And, even as I write this, the voice in my head says, "Shouldn't you have done more?"

I am trying to learn to say back, "Thanks for the reminder, I'm still trying. I still see the target, and it is still important to me."

Citation

Steinkamp, A. (2017). Self-talk and sustainability. *Kaleidoscope: Educator Voices and Perspectives, 4*(1), 7–9.

Alex Steinkamp, a Knowles Senior Fellow, is entering his fifth year of teaching at Olympia High School in Olympia, Washington, where he continues to grapple with his sense of identity as an educator. Reach Alex at alex.steinkamp@knowlesteachers.org.

Now on *Teacher Voice*

#teach180

In our inaugural episode of *Teacher Voice: The Podcast*, Knowles Fellows explore how Twitter's #teach180 changed their teaching.

In this episode, host Brittany Franckowiak (@franckowlhs), *Kaleidoscope* Associate Editor, speaks to three of the authors of "#teach180: A window into our classrooms," published in the Spring 2016 issue of *Kaleidoscope*.

Nicholas Chan, Sarah DiMaria, and Sophie State discuss their experiences participating in a year-long exploration of their teaching utilizing the Twitter hashtag #teach180.

Learn more about authors' experiences since writing the article, including

- what they have found to be the most powerful aspects of daily reflection on their teaching,
- how participating supports teachers in improving classroom practice,
- how they built new communities, and
- how it helped them navigate the complex relationships between teachers, students, parents, administrators, and educational policymakers.

To hear more about their experiences in sharing their teacher voice, listen to the podcast on our website. You can also search the #teach180 hashtag on Twitter, or follow panelists Nicholas Chan (@sergtpeppa), Sarah DiMaria (@MsDiMaria), and Sophie State (@sophiestate).

> *When teachers are professionals they engage in a community, they reflect in a community . . . [it] can be really challenging when you are in a more isolated context.*
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> *Participating in #teach180 has also helped me to learn self-compassion, that there are other teachers who struggle. It's important to learn from failures, but also there are opportunities to celebrate things I'm doing that are successful, things that other teachers help me recognize and that my students help me recognize."*
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> *- Sophie State*

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Striving to be THAT Teacher

Mary Chin

I know glorifying teachers does more harm than good, and yet I keep doing it.

I volunteered to substitute teach the other pre-calculus class at my school last March. Towards the end of the class and after a scintillating discussion on using an area model to solve polynomial division, one of the students asked if it were possible to request teachers for the next year. To me, the clear underlying message was, "I like you," "I had fun this period," and/or "You are a good teacher."

Maybe even a great teacher. I was feeling good, and my confidence got a little boost until I read "The Great Teacher Myth," written by Knowles Fellow Erin Marron (2016). She notes:

> Depicting a past teacher as the lone teacher bucking the system is subtly couched in a larger assumption— that the surroundings are bleak and uninspired. When we glorify our own inspirational teachers, we quietly assume that our other teachers who came before and the teachers who came after "The Great Teacher" didn't really do their jobs; we quietly assume that the other teachers who worked alongside our "Great Teacher" were just going through the motions.

I started thinking about how this small interaction with a student after one lesson made me feel so good and why. Erin's message makes sense to me. I totally agree that glorifying teachers, whether from movies or our own experience, does more harm than good. I know this, and

yet, I still want to be that teacher she describes. This student's tiny comment was quickly absorbed by my ego as evidence that I belong with those great teachers. I know it's not true that there are two categories of teachers, great and other, and yet I want to be in that non-existent great group. Why do I feel the need for external validation of my practice?

The teacher I was subbing for is a person I truly respect. He and I are both Knowles Fellows and, as such, have devoted a lot of time and energy to bettering ourselves as teachers and teacher leaders. I have learned so much from him: nuanced mathematical content about independent and dependent variables, how to emphasize the importance of active learning in our students, and how to elicit high quality work. If I took his student's question as praise for myself, am I inherently

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> *I know it's not true that there are two categories of teachers, great and other, and yet I want to be in that non-existent great group."*

and simultaneously putting this other teacher down? Is teaching really a zero-sum game where my "winning" means that others "lose"? How can I understand intellectually that the "Great Teacher Myth" is destructive while still striving for and seeking some validation that I am that teacher?

It must be partly because I don't get validation through monetary compensation or social status in this country. But, I tell myself, those aren't the reasons I went into teaching anyway. I went into teaching because I thought it was good for my soul. I felt like I was supposed to teach, like it was and is a calling, and I made life changes from a previous career to make that happen. I teach because I want to make an impact on students' lives and matter to them. What's the point of sacrificing monetary wealth and social status if not to be that teacher for as many students as possible?

Perhaps there is an underlying fear that I am not good enough, and that the only way to be good enough and make teaching a worthwhile profession is to be that (non-existent) teacher.

I'm not sure of the answer to this internal struggle, but I think that Aristotle might provide a good starting point. In his Nichomachean Ethics, Aristotle explains that happiness involves a state of being-at-work; that "virtues are formed in man by his doing the actions" (trans. 1951). By being-at-work and doing our typical daily actions in thoughtful ways, we strive towards being virtuous. It is not enough to merely understand what is good and want it; we need to do good actions.

As a teacher, this idea is relatively easy for me to understand because there is plenty of hard work that goes along with teaching. Earning tenure or teaching a class for many years does not reduce the number of tests there are to grade or reflections there are to read. There are always more student misconceptions to understand and points-of-view to take into account. Still, like Aristotle understands, we can find happiness as we work towards achieving some good.

This work can be seemingly small: this year, my colleagues and I have made more space in-class and out-of-class for students to complete test corrections. We have reworked how we give feedback and our grading

> **Like Aristotle understands, we can find happiness as we work towards achieving some good."**

scale to reflect the value we place on learning from and correcting errors. In this way, not only are we as teachers working to become better at our craft, we are also showing that anything worth learning will inevitably involve error and correction.

While there is no way that I will ever achieve perfection and no way to be that teacher for every student, I do enjoy trying for the ideal and helping my colleagues try too. Instead of winning and losing, I need to remember that it takes a village to raise a child. All their teachers, family, coaches, clergy, etc. have a small hand in shaping who they become.

I will not be remembered by all students I teach. Whether or not students remember me as being an integral part of their development will depend on so many factors, including their maturity, their preparation from previous teachers, and their lives outside of class. But it shouldn't matter. I should remind students that growth is slow and riddled with failure and that they should not attribute their own growth to any particular teacher, whether it is me or someone else. Students themselves should own their growth, and I am happy to help them to work to take ownership of that growth. I enjoy talking about teaching and getting better at my practice with my colleagues such that collectively we can be the best possible part of the village working to encourage these students.

This internal struggle rages on as I try to simultaneously strive for the best and remember that it's not about

landing in a mythical great teacher land. I also want to be aware of taking this too far such that I do not celebrate successes in my colleagues and in myself. I think it is OK to say that sometimes for some students we can be that teacher and hope that sometimes for other students, or the same students, my colleagues can be that teacher too.

If I'm not going to earn power or money, I want at least a shot to be a part of the group that molds someone's growth. I want to take part in the betterment of our society. This may indeed be an unrealistic ideal and may be an unachievable goal. But I'm okay with unrealistic as long as I am continuing to strive for something individually and, more importantly, collectively. The long game is also important to me. If I tip the balance and start to give too much of myself and my time to striving to be that teacher, as is portrayed in the most popular teacher movies, surely I will burn out. I envision teaching for decades and to have some small influences on many students in that time. To survive as a teacher that long, I certainly cannot devote all of my time and energy to the classroom. But I can and will devote some time, and that is the being-at-work through which I find happiness.

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A Novel Co-Teaching Model to Support Student and Teacher Growth

Kristen Cacciatore
& Shannon Morey

> **Two teachers team up to co-teach AP Chemistry and AP Physics 1.**

Co-teaching can deepen teacher collaboration, enhance teachers' professional satisfaction, and promote adoption of innovative instructional practices. In this article, we describe a novel co-teaching arrangement created and successfully implemented by the authors in Advanced Placement (AP) Chemistry and AP Physics 1 classes throughout an entire school year. Because we considered this arrangement to be tremendously helpful for both ourselves and our students, we believe that other pairs of teachers interested in close collaboration can benefit from learning about our work and adapting it to their own situations. We explain our motivation for creating this arrangement, detail the routines and strategies we developed during the year, provide specific examples of instructional practices we improved, discuss student and teacher outcomes, and offer guidance for others who might consider such an arrangement in similar or different teaching contexts.

Context and Rationale

In the 2016–2017 school year, we both worked at East Boston High School (EBHS), a large, urban public school in the Boston Public Schools system. Shannon was in her third year of teaching and Kristen was in her seventeenth year of teaching. Shannon had taught AP Physics 1 for one year, while Kristen had been teaching AP Chemistry for 14 years.

We had worked very closely together in the past when we both taught honors chemistry and freshman physics.

In these collaborations, each of us had a section of the course and we co-designed lessons, teaching the same lesson on the same day. Through this process we were able to reflect on each lesson, review student data, and in general think more deeply about our pedagogy than when we designed lessons alone. Because we had experienced the benefits of our collaboration, we both realized that we wanted a close collaborator for our AP courses.

As we explored different possibilities for close collaboration we discovered a significant body of educational research that shows a connection between increased teacher collaboration and greater student achievement. Most relevant to our context were two studies in large urban school districts that reported increasing teacher collaboration around instructional planning improved student's math achievement (Ronfeldt, Farmer, McQueen & Grissom, 2015; Goddard, Goddard & Tschannen-Moran, 2007). Knowing that educational research supported our own positive experiences with close collaboration further motivated us to find a way to make it happen in our AP classes.

We knew there would only be one section of each AP science course at EBHS for the foreseeable future, so our previous mode of collaboration would not be possible. We also knew from experience that non-school peers make great thought partners, but more could be gained from working with someone in our building. A collaboration within the building was much easier to manage and allowed for more opportunities to examine student data and reflect on the success of each lesson, as both classes had the same schedule, student population, and administrative constraints. Each of us had strong backgrounds in the other's subject and felt capable of teaching both AP Chemistry and AP

Physics 1. Additionally, both courses were historically offered during the same block. With this in mind we developed a plan to co-teach these courses in a way that was suitable to our context.

Nuts and Bolts of Collaboration

After considering multiple options for collaboration and co-teaching, we decided that we would like to co-teach the courses such that we each taught part of each course each week. In a typical week, Kristen would teach three classes of AP Chemistry and two classes of AP Physics 1, while Shannon did the reverse. We presented a proposal of our "split co-teaching" model to our administration. After discussion, the administration approved our proposal with the stipulations that we would both attend an Advanced Placement Summer Institute for our new course, outline our co-teaching model clearly to parents and students, collect feedback from students during the year to assess their feelings towards the model, and stop co-teaching if it was negatively impacting student achievement in the courses.

Our co-teaching model differed significantly from other more standard forms of co-teaching in that we would not both be in the classroom at the same time. We had to know exactly what had happened in each class and

where instruction left off every day so that we could be ready to step in and lead the class the following day. We decided to meet daily during our prep period to debrief each lesson and solidify the next day's lessons. We also met weekly to sketch out the upcoming week's lessons, reflect more deeply on any particular issue we had the week before, and think about the long-term plans for each course.

We also agreed on a grading system we used for both courses. All of our records were shared through our school's Student Information System, so any student in either course could talk to either of us about their grades. In order to simplify some of the logistics during our first year using this model, we mostly split the grading by course with Shannon grading the AP Physics work and Kristen grading the AP Chemistry work. However, we were particularly interested in student performance on lab reports and divided the grading for this component of each course. For each lab in both classes, Shannon graded the lab reports of half of the students and Kristen graded the reports written by the other half of the students. This allowed us to have much deeper discussions about student understanding of the lab. We agreed we would want to split more of the grading in the future, particularly of tests and problem sets, as these assignments give specific insight into individual student understanding.

Outcomes and Benefits

After reflecting on our year of co-teaching, both of us agreed that it had pushed us forward pedagogically and provided additional support in teaching these challenging courses. Having a thought partner allowed us to think critically about each lesson we designed and analyze student data more effectively. Being accountable to another person pushed us to design materials that hit content objectives more directly. As we designed each lesson, we had to explain to someone else how each activity was furthering student progress towards mastery of the AP standards. In this climb forward for our curricula, having a close collaborator provided support in terms of coping with the obstacles—such as testing a new activity, helping with lab set-up, or trying to determine the missing link in student understanding—that come from teaching a fast-paced, rigorous course. Most of these benefits are not unique to this particular model of

co-teaching; the split co-teaching model we developed simply allowed us to realize these benefits since, in our context, other models of co-teaching were not possible.

Furthermore, having a co-teacher allowed teacher absences to cause less disruption for each course. When one of us was absent the other would help cover the class. We would help students get started on an activity and answer student questions if the other person was out. This meant there was less wasted time in each course.

In addition to the benefits we felt from this collaboration, we surveyed students throughout the school year and found that they also felt this model was valuable to them. They commented on the benefits of having two teachers to go to for help before or after school and the ability to get material explained in two different ways. Interestingly, several students mentioned that having two teachers who collaborated so closely made them believe the class must be worthy of their effort. Three comments that represent the general consensus of our students' sentiments are found in Table 1.

"I am glad there are two of you because I can pretty much always find or get a hold of one of you when I need help."
"When I hear you two talking about teaching us, it makes me feel like this class is very important and I should take it seriously."
"It's good to have two teachers for a really hard class because then if I have already asked one of you for help on something I can ask the other one if I'm still lost without feeling like I am being annoying or dumb."

Table 1: Sample comments from student surveys.

> ❝
> *When I hear you two talking about teaching us, it makes me feel like this class is very important and I should take it seriously."*

Two Examples of Instructional Improvements

Instructional Improvement Example #1: Concluding Connections

One specific area we chose to focus on was helping students to draw meaningful conclusions from laboratory activities that connected their results to the underlying scientific concepts. Both of us knew we had struggled to guide students effectively in this area in the past, and we were frustrated that often it seemed like students did not understand the point of doing an experiment or how it connected to the concepts we were learning in class. Their conclusion sections of their lab reports were often a bland statement like "I accomplished the goal of the lab" or a comment about error, such as "My percent error was 12%, which was pretty good." Other students made statements of scientific principle with no connection to the experimental data, as in "This experiment was about limiting reactants, which is the reactant that runs out in a chemical reaction," or even a personal opinion, such as "This lab was very colorful and I liked it a lot." We had previously tried whole class post-lab discussions and various small group post-lab activities but had found them insufficiently effective at helping students write meaningful conclusions.

Kristen suggested using a conclusion-writing scaffold— which had been recommended by another AP Physics 1 teacher—along with accompanying class discussion for every experiment throughout the year. The purpose of the scaffold and the accompanying class discussion, collectively called "Concluding Connections," was to support students in clearly stating the two or three most important takeaways from an experiment and to use their results as well as accepted scientific principles as justifications for those concluding statements. The Concluding Connections graphic organizer helps students to build strong conclusions (see example in Table 2).

We decided to use Concluding Connections throughout the year, with incrementally less scaffolding as the year progressed. We agreed this decision would result in more time spent on post-lab discussion in class, meaning we would have to trim time spent on other activities. We also agreed preparing the instructional materials and deciding on how to guide students during the post-lab discussion for each experiment would be a collaborative effort and thus would require significant preparation time for us both. We found this process of working together to succinctly state what we wanted students to take away from each experiment and how we expected them to arrive at those conclusions to be both challenging and useful. Concluding Connections not only helped our students make connections between the lab and the content in the course; it helped

Conclusion Statement *This time these are filled out for you. You just need to finish the justifications.*	Justification *Evidence from this lab*
A graph of the volume of a sphere vs. the radius of a sphere is not linear.	From my graph, I can see that...
A graph of the volume of a sphere vs. the radius of a sphere **cubed** is linear.	From my graph, I can see that...
The slope of the line of best fit of a graph of the volume of a sphere vs. the radius of a sphere **cubed** is equal to 4/3 π.	When I compare the slope-intercept form of an equation for a line to the equation for the volume of a sphere I see that...

Table 2: Concluding Connections graphic organizer from first lab experiment in AP Physics 1.

us guide students' thinking during the experiment itself in order to help them reach the conclusions we wanted them to reach.

During the first term, we provided each student with the graphic organizer containing the concluding statements in the left column and the beginning of an appropriate justification in the right column, as shown in the example in Table 2. We would review the provided concluding statements in the post-lab class discussion and talk about what would qualify as supporting evidence, then show slides containing the suggested supporting evidence and allow them to summarize that evidence as it applied to their own results in their lab report. In the second term, we provided students with the blank graphic organizer, then had an abbreviated discussion with less detailed slides. In the third term, we discussed each experiment very briefly as a whole class without slides and provided students with a blank graphic organizer to fill out in small groups. In all terms, students were expected to use the Concluding Connections organizer to write the conclusion section of their lab report about each experiment.

Over the course of the year, our students' written conclusions improved significantly, even as we reduced the scaffolding provided. We also found that the routine of focusing on drawing conclusions based on lab results and conceptual understanding helped students to think of experiments more as meaningful learning exercises rather than simply fun and interesting ways to spend

> *The increase in student comprehension and the empowerment the students gained more than justified the amount of prep work and class time."*

class time followed by a dreaded lab report. They had animated discussions about the meaning of their results in class and would refer back to experiments later on when trying to solve pencil and paper problems. We both plan to continue to use this instructional strategy going forward. Additionally, having these discussions around student understanding through lab experiments made us think about other aspects of how we conduct and assess lab reports. We were able to use this as a launching point for making other changes to our pedagogy.

Instructional Improvement Example #2: Test Corrections

Another area we focused on in both classes throughout the year was our process for test corrections. We wanted students to see tests as a learning experience. In previous years in both classes, students had been allowed to correct answers to multiple choice and free response questions and given a percentage of the credit back if they had fully explained their errors and the correct answer. Although we found that a few students completed this successfully and learned from the experience, many were overwhelmed and demoralized by their initially low scores. We started off this year using this model and quickly started discussing how we could make it better.

We decided that we wanted to spend class time reviewing the exams. As all of our test questions were released AP questions or slightly modified versions of AP questions, we felt it was worth investing the time in class to go over these questions. When students seemed more confident in addressing their own errors in multiple choice questions, we decided to switch to focus class time on free response questions.

In order to give students ownership of their test corrections and to involve them in the process, we decided to have students present the problems to the class and be assigned to ask each other questions. After we had graded all of the exams, we selected students that had some of the top scoring answers to present their answers to the class. We would email or speak directly with these students to see if they felt comfortable presenting their answers and address any questions they had about the free response question before they presented. As an incentive, students were given a small amount of extra credit for presenting their responses.

During the presentations, each student in the class was assigned to ask a question about a particular part of one free response problem. We chose which students would ask questions about which parts of the test by examining their responses and selecting the problem based on where we felt they had the most to gain and where they would be able to ask a question that could help the rest of the class. We gave students some sentence starters to help them formulate questions and asked students to make the questions meaningful and specific. Students were given a small amount of class credit for asking their question.

Students were instructed to direct their questions to the student presenter and not to us. We only intervened during the presentations if the student presenter was unable to answer the question or had made a scientific error that the rest of the class didn't point out. Both of us were surprised and impressed with how this turned the conversation from teacher-centered to student-centered. Students stopped looking at us for answers and instead turned to their classmates. If a student started to ask us a question they would often realize their error and turn to the student presenter. This also seemed to break down a barrier to asking questions, as many students would ask questions about parts of the exam that they had not been assigned to ask about. The discussions were often very rich, addressing student misconceptions and critical math errors.

Overall, we were very pleased with the implementation of this test correction procedure. We observed that this new correction format allowed many more students to feel successful when correcting their tests. It also helped students to view low test scores, which were quite common because of the challenging nature of released AP test questions, as more of a learning opportunity rather than proof of failure. The number of students turning in test corrections and the amount of the test that they had corrected increased greatly. The student feedback was also very positive for this procedure. They felt more motivated to finish their

test corrections in the days following our in-class discussion. Students also felt it helped them gain a better understanding of the content on the exam while boosting their collective morale and contributing to a positive class culture.

It must be noted that this was a very time-consuming process. It would often take an entire class period to review the free response section of an exam. Additionally, it took a great deal of prep work from us, as we had to examine each test very closely to determine which students to ask to present and which questions to assign each student. Despite these drawbacks, the increase in student comprehension and the empowerment the students gained from this procedure more than justified the amount of prep work and class time we needed to devote to it. We absolutely plan to continue to use this procedure—it is worth the time in our opinion.

Potential Drawbacks of this Model

We had an extremely positive experience using this model of co-teaching over the course of a year, but it does have potential drawbacks and hurdles that anyone considering implementing it should consider carefully. First of all, the amount of time required for the close collaboration necessary is quite significant. We spent seven or eight hours per week working together in person and several additional hours working asynchronously. If both of us had not been able to make this time commitment and adjust our schedules to accommodate each other, the co-teaching arrangement would not have worked as well. Second, we had to negotiate and come to agreement on classroom routines, grading policies, and logistical responsibilities (e.g., submitting attendance, grading student work, making copies). We had to be organized and detail oriented in order to make sure that all of the daily tasks associated with instruction were attended to in both classes. For these reasons, we would not recommend this arrangement to a pair of teachers who had not previously worked together very closely and collaboratively in other contexts. Because we had worked together on instructional planning for other courses for several years, we knew that we had similar ways of thinking about teaching and similar levels of commitment to our teaching. Most importantly, we knew that we enjoyed working together and spending a lot of time together.

Another potential concern is that this co-teaching arrangement could be confusing to parents or other staff members at the school because it is so novel. In order to try to educate parents about the arrangement we wrote students and parents an introductory letter describing

the arrangement and our rationale for choosing it at the beginning of the course. We also described it to parents at our September open house event. Parental involvement at our school is generally pretty low so we are not surprised that we did not encounter any significant resistance or expressed uncertainty from parents, but in another school context where parents are more involved and empowered that would certainly be a possibility. In hindsight, we wish we had been more proactive about communicating our arrangement to the guidance department and the office staff because there was sometimes administrative confusion that would have been nice to avoid, but the consequences of this confusion were minor and short-lived.

Potential Applications in Other Contexts

This model of split co-teaching could be implemented in other contexts as well. Naturally this model could be applied to other subjects and grade levels; the teaching arrangement was not tied to the course context. So, for example, two math teachers could split co-teach an algebra I and an algebra II class if they wanted to work on aligning curricula in the two classes. A pair of teachers with different content specialties could split co-teach a course that integrated their areas of expertise (e.g., a history teacher and English teacher co-teaching a humanities course or a math teacher and a physics teacher co-teaching a mechanical engineering course) to two different sections, alternating days teaching each section. It is worth noting that our students were academically motivated high school juniors and seniors; we conjecture that younger, less mature or less motivated students would struggle more with adjusting to this split co-teaching model and might need more time to develop relationships with each teacher before switching each day began.

Conclusion

The split co-teaching model we designed and implemented in AP Chemistry and AP Physics was very successful, and we would absolutely do it again, given the opportunity. We achieved our principal goal: to critically evaluate and improve our instructional and assessment practices and curriculum planning. Our students were overwhelmingly positive about their experiences as learners with two co-teachers. This model requires a large investment of time and energy and close daily collaboration between teachers. We encourage other pairs of teachers to consider implementing this model if they have a strong working relationship and are struggling to find ways to collaborate closely in order to move their practice forward. Also, we invite anyone interested in learning more about this co-teaching model to contact us.

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Once a Teacher, Always a Teacher

Tanya La Mar

> **Leaving my teaching position, but bringing my teacher voice with me.**

One of my greatest fears is to be misperceived by the people that I respect the most. Through the Knowles Teacher Initiative and my school, I've become a member of two strong teacher communities. Both communities have been built through our connections as educators with passion for our profession and love for our students. I am proud to be a member of these communities. I've spent the last five years exploring what it means to teach alongside some seriously incredible teachers. I most definitely do not have everything figured out, but I've grown to strongly identify as a teacher and even a teacher leader. These teacher communities feel like home, a space where my ideas are valued and my voice is powerful. However, now that I am about to pursue a PhD, my teacher identity and sense of belonging in the teacher world feels at odds with my decision take a different turn in my career.

There seems to be a divide between academics and classroom teachers, where some academics do not respect the work and expertise of teachers and some teachers see academics as too far removed from classrooms. I am struggling with this rift because I believe I am both a teacher and an academic.

I can remember when my undergraduate education was coming to a close and it was time for me to decide what to do with my life. I was about to become the first person in my family to graduate from college. I had fallen in love with mathematics and the way it made me feel to be successful at it. I knew that I needed to pursue a job that would allow me to help others feel this same feeling.

My dad always told me that before I choose a career I should seek out professionals in that job and learn from their perspectives. In an effort to follow his advice, I searched for professors focused on math education and ways to improve it for people underrepresented in the subject area. This is how I came across the work of Jo Boaler. A fire was ignited as I dreamt of one day pursuing a PhD in math education. I wanted to transform secondary math education so that students could feel that feeling that I had fallen in love with. I

> " *I wanted to transform secondary math education so that students could feel that feeling that I had fallen in love with.*"

didn't know how I was going to do it, but I knew it was important. The one thing I knew for sure was that I needed to be in the classroom.

I was offered a teaching position at a new high school in South Central Los Angeles. The school plan was designed by teachers and the philosophy was exactly what I was looking for: focusing on restorative practices and collaborative learning. The population of students was 85% Latino and 15% African American, and the school offered 100% free breakfast and lunch. Although there were unexpected challenges the school faced in its infancy, it felt right to be at a school that cared so deeply about its students and their particular needs.

I met Isabel[1] in my second year of teaching. She was a ninth grader enrolled in mostly tenth grade classes, intent on graduating a year early so she could go to college and ultimately get a well-paying job to help support her family. She came to the United States with her mother when she was seven years old to escape violence in El Salvador. From the moment Isabel started school in the United States, she was determined to be at the top of her class.

Over the next four years, I had the pleasure of teaching her both pre-calculus and AP Calculus, and we developed a close relationship. She loved math in the way that I love math. She had a thirst for learning that was unprecedented by anyone I've ever known. As a sophomore, Isabel collaborated easily with a class filled with juniors, often taking the extra time to help explain complicated topics to her peers. In her junior year, she took AP Calculus and consistently set an example for her peers of what it meant to think critically, ask deep questions, and persevere through difficult problems. I was ecstatic when she told me that year that she had decided she was going to become a math teacher.

Outside of the classroom, Isabel pushed through every challenge that she and her mother faced, becoming increasingly resourceful and resilient. She acted as a mother rather than a big sister to her baby brother so that her mother could return to work. She took on a part-time job to help her mother make ends meet. Even while facing these challenges, Isabel maintained almost perfect grades at school.

Although she did not graduate a year early, her hard work and perseverance earned her the salutatorian title at her graduation and a place at the University of California, Berkeley.

What felt like a success and happy outcome for a deserving student ended up becoming yet another challenge. Unfortunately, since Isabel is undocumented, she was not offered enough financial aid to cover the cost of attending. Instead, Isabel will attend the local community college and work to save money so that she can transfer to the University of Southern California (her dream school) and major in mathematics. She is still determined to be a math teacher when she graduates from college. I have no doubt that she will continue to persevere through this challenge to become an amazing and inspiring teacher.

Watching Isabel grow as a young woman, with so much drive and passion for learning, will always stick with me. I find myself constantly in awe of her maturity and selflessness. However, I can't help but feel like our education system did not do enough for her. She did her part; in fact, she did far more than her part. But it feels like the system didn't hold up its end of the deal. How could this be fair?

In my fifth year of teaching, our school community lost three students to three separate acts of violence.

My student Sean was killed after school one day in the middle of the school year. School had just let out for the day; he was walking to the local donut shop with some friends when he was shot. A large number of students witnessed the shooting and the loss of Sean hit our community hard. He was only a sophomore and described by many as a sweet and kind person, a big teddy bear.

As I began to try to process this loss with other teachers that knew and loved Sean, it became apparent that

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[1] All student names are pseudonyms.

several adults in his life felt some form of blame. He was a student with special needs and a documented Individualized Education Plan. We knew that there was some heightened tension amongst the local gangs, and Sean's family was involved with one of them. Throughout his time at our school, several adults had made efforts to support Sean in his learning and protect him from falling into the pressures of the gang. Each of us built relationships with him and his family; one mentor tried to get him involved in the football team. My co-teacher gave him individual attention every time he made it to math class to catch him up. We praised the work and thinking that he did in an attempt to prod him into loving school, or at least our math class, but it was not enough.

When Sean passed away, there was a feeling of "If only we had found a way to get Sean more involved in school, if only we had pushed him a little harder, if only we had done more to step in when he seemed to tune out…"

Isabel and Sean and students like them have shaped me as a person. They've changed the way I see the world because they've shown me realities of our education system beyond what I experienced as a high school student. My students have opened my eyes to a different world— a world filled with the realities of growing up in a place blessed with strong families and culture and challenged by poverty and violence.

These stories have shown me the urgency of education and access to it and have complicated my love for math. They've also shown how our education system is not set up to support all students. These stories impassion me to understand what needed to be different so that Isabel could get the support she rightfully earned. What needed to be different so that Sean's story didn't end

like that? These complexities in providing high quality mathematics education and the reality of inequality compel me to change course. Equity means everyone gets what they need. My students did not get what they needed. It shouldn't be like this.

With this new, more nuanced understanding of education, I am currently preparing to leave the classroom to pursue a PhD in math education. I am pursuing a dream that started almost 10 years ago. However, the lens with which I view this pursuit has changed greatly.

I used to think that becoming an academic would be a light and airy conquest. I thought I would be ready to embark on the journey with no question to whether or not it was the right choice. But now, when I think about this next step, I am overcome with a myriad of emotions. The most striking is that it does not feel as good as I thought it would. The decision to leave the classroom is much more complicated and emotional than I could have known. My students hold a special place in my heart and I have grown to see myself as a teacher leader. My hope is that these things will carry me through this next journey and keep me focused on my goal to be an agent for educational improvement.

Talking about leaving my teaching position to attend graduate school has evoked a wide range of reactions from happiness to shock, from encouragement to disappointment. When our school lost another student, Christopher, this past school year, I came to check in with another teacher that knew him well. We were both in mourning over the loss of a charming student who had greatly impacted our teaching. In the midst of our conversation about Christopher, she paused and said, "Aren't you glad you won't be here next year?"

When I told one of my close friends at work that I had accepted my admissions offer, she excitedly responded, "You're going on to do bigger and better things! Now's the time to do that, when you're young and don't have other responsibilities yet, like kids." I had a hard time understanding her response; calling graduate school "bigger and better" than teaching feels like a disrespect to teaching, and I don't feel that way. In fact, teaching has been the most impactful thing in my life so far. Teachers are the people I respect the most. My hope is that my future work will be in service of teachers.

It seems as though my decision to leave the classroom is interpreted to mean that I have decided teaching isn't for me, or that I must not want to be with my students any longer. I have feared that my decision to leave might be

role is something else because: once a teacher, always a teacher.

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> **"**
> *If I am not the voice for my students and students across the nation, who is? If I don't leap to get a seat at that table, who will? If I don't tell my story, which story gets told?"*

the equivalent of abandoning my students or my identity as a teacher. I fear that my work these past five years could not be enough, and maybe I failed at serving the students of south LA. I feel guilty for leaving my students now that I understand the urgency of education—how impactful a positive teacher-student relationship can be on a young person's life, how the absence or failure of these relationships can be detrimental.

I recognize that privilege is a large contributor to my circumstance. I am white, middle class, and have had few obstacles to overcome in my academic and career ventures. However, as I move into academia, my voice will presumably gain a different kind of power than it has now. This is something about which I am not sure how to feel. In some ways I feel unworthy: why should my voice be heard more loudly than someone else's? Then again, gaining the power that comes with earning a PhD could allow me to have a voice in the national conversation of education reform. If I am not the voice for my students and students across the nation, who is? If I don't leap to get a seat at that table, who will? If I don't tell my story, which story gets told?

It feels risky to be sharing this story in both the teacher world and the academic world, but it's important to me that my intentions for leaving the classroom are clear and my respect for the teaching profession is apparent. My pursuit of a PhD is driven by my love for my students and my belief that all students deserve quality math education. My hope is that my story can start a conversation about who qualifies as a teacher and what forms teacher leadership may take. In my heart, I know I my identity as a teacher will always be the biggest part of me. I will always be interested in finding ways to support young people like Isabel, Sean, and Christopher. I will be a teacher even when my formal

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Building Relationships as an Instructional Coach

Claire Fassio

> **In my first year as a coach, I learned the importance of building good relationships with teachers.**

"No one can learn from you if you think that they [stink]." I started reading *The Art of Coaching* by Elena Aguilar when I became a middle school science coach last fall, and this quote from Leslie Plettner stuck with me (2013). At the time, I knew this applied to students. I knew that students needed to understand that I, their teacher, believed in their ability to succeed, but I hadn't really thought of how I would need to maintain this strengths-based mindset in my work with adults as well. As I finished my first year as a coach, I repeatedly thought back to this quote and realized that it was one of my fundamental takeaways from the year.

As a new coach, I was nervous about how teachers would feel about having me in their classrooms. I was especially nervous to work with Allie[1], a seventh grade integrated science teacher. She had worked with a different science coach during the previous school year, and from what I heard (from Allie, my supervisor, and Allie's principal), it did not go well. Allie told me that she felt like the coach was there to point out flaws and that the coach's expectations were not grounded in the reality of Allie's teaching context.

I told Allie that I wanted to be useful in her growth as a teacher and asked what she had hoped for in a science coach. She had imagined that a coach would observe her classes and then provide constructive, usable feedback

on her classroom management and lesson plan design. We agreed that I would spend the next several weeks in her classroom doing this, with the understanding that she would let me know if she felt like she wasn't getting what she needed.

Due to my knowledge of Allie's previous experience with a coach, I spent the first several months trying to build a good relationship with her. I knew she was hesitant to spend a lot of time with a new coach because she wasn't sure that it would be a good use of time, so I scheduled observations followed by debriefs that were focused on the areas in which she had asked for feedback. I also participated in her team's professional learning community (PLC), after asking if it would be okay for me to attend, every week. I wanted Allie to know that I was invested in learning about her context and in being a member of her team.

As I observed Allie's class, I saw some clear strengths. For a relatively new teacher, she had good classroom management. She was very organized, always had a starter on the board, and her students knew that they were expected to be working on this before the bell rang.

Allie also had deep knowledge of biology, and her passion for the subject was clear. Allie had high expectations for her students, and used scaffolding like structured notes to help her students meet these expectations. Finally, Allie had contacted a science outreach program at the local university to schedule

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[1] Teacher name is a pseudonym.

zebrafish researchers to visit her class and let students carry out genetic crosses to learn about inherited traits. This program let Allie's students experience science in a way that few had done before.

During these observations, I also saw some areas in which I thought Allie could improve. Allie was still in her first few years of teaching, and like many teachers (new and veteran), Allie said that she felt like she was rushing through the curriculum in order to finish in time for her students to take the end-of-year state science test. When teachers feel pressure to get through their curriculum, I have noticed that lessons often start to focus more on getting the right answer and less on providing students with opportunities to explain their thinking. Assessments also shift toward questions that assess memorization rather than process. I worried that Allie was feeling this pressure to keep up the pace as I noticed her students frequently gave one word answers that were either right or wrong; they were not often asked to explain or justify their reasoning.

Although I saw areas in which I thought Allie could grow as a teacher, I did not want to come off as another "person from the district" who was going to tell her how terrible she was at her job. So, during my interactions with Allie, both in our debriefs and in our PLC, I always highlighted her strengths as a science teacher. I would also give constructive feedback about classroom management and/or her lesson plan,

since those were areas that she wanted to work on. Sometimes, these conversations would lead to topics like higher Depth of Knowledge (DOK) level questions or student engagement, and we would talk about ways that students could share their reasoning, but I never forced the subject.

During this time, I was also covering two classes of Advanced Placement (AP) Biology until a long-term sub could be found. My AP students were learning about osmosis, which is introduced in seventh grade science. I asked Allie if she would be willing to share her ideas for how to teach this concept. She described a lab she had done with students the previous year in which they tried to explain why different types of potatoes have different osmolarities. It is pretty common for biology teachers to let students test the effects of osmosis on potatoes, but I had never thought of having students test the osmolarities of different types of potatoes. I thought this sounded like a really interesting way to frame a run-of-the-mill lab. I used her suggestion and took photos of the work my students did to share with Allie. I wanted her to see that she had helped me make changes to my own teaching practice, and I genuinely thanked her for the suggestion. I wanted Allie to know that I valued her ideas.

Around winter break, I heard Allie say that she is "not good" at assessment and that she thought she should be assessing her students more often. We had talked about Claim-Evidence-Reasoning (CER) at a district professional development that Allie attended, and she seemed interested in this framework. During our next debrief, I asked Allie if she would be interested in using CER in her classroom as a way to assess student thinking. She was interested but worried that she would not have time to develop CER prompts since this strategy was new to her, and she was already busy taking endorsement classes and participating in other professional development after school. I didn't want Allie to feel like I was ignoring her workload, so I suggested the formative assessment probes in Uncovering Student Ideas in Science (Keeley, Eberle, Farrin, Tugel, & Dorsey, 2009) might be a good resource for CER prompts. I showed her a few sample probes, and Allie thought they would be useful. Allie's principal agreed to buy this set of books for her, as well as for the other two science teachers at her school.

After winter break, Allie sent an email to ask if I would help her think of some CER prompts for her upcoming units. I was thrilled and said, "Of course!" This was the first time she had reached out. In March, Allie told me that she had been using the probes as pre- and post-assessments for a few topics. I asked if I could stop by her class to see her students' work, and she said yes. As we looked at her students' work, we noticed that almost every student showed a better understanding of forces on the post-assessment. Allie was very excited about this and said that she really like this kind of assessment, rather than multiple choice, because she could see what students were thinking. She is using these assessments as part of her evaluation worksample this year, and she said that she wants her professional goal next year to focus on CER.

One week in May, I mentioned that I wouldn't be able to attend Allie's PLC that week. Allie said, "What? Are they [the district] taking you away from us? We need you!"

I am glad that I will get to work with Allie again next year (and that she is interested in continuing our work). At the beginning of the year, I wondered if I should push back more and ask more probing questions about Allie's teaching. I still wonder if we could have made more progress had I done this. However, we did make real progress. Allie feels more comfortable asking students to share their thinking, and she sees value in it. I am not sure that she would feel this way if I had been more upfront early in the year about what I saw and didn't see in her classroom.

I left my first year as a coach with a clear understanding of the importance of building good relationships with teachers. If Allie did not know that I valued her as a teacher and saw her strengths, I don't know that she would have been willing to make shifts in her teaching to create opportunities for students to share their thinking. I still have questions about when to focus on strengths and when to push back when working with teachers. This can be a really fine line to walk, and I'm sure that it is different for every teacher (and for every coach). However, it is always important to recognize and honor the strengths of colleagues because this lays the foundation for a relationship that can be the source of meaningful changes.

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> *The teacher I coached feels more comfortable asking students to share their thinking, and she sees value in it. I am not sure that she would feel this way if I had been more upfront early in the year about what I saw and didn't see in her classroom."*

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Learning to Defy Myself

Angela Lou

Examining my identity as a teacher— and finding it needs to change.

Teachers, how do you identify? For me, I'm a biology nerd at heart. In the classroom, I stop and tell my students about how emerald jewel wasps use chemical warfare to subdue their prey. I smile when I think about how bonobos peacefully resolve conflicts. I feel well-versed in the subject and love helping my students see the world through a biological lens.

Though I strongly identify as a biology teacher, I also teach geometry, engineering, and writing at an arts magnet in Boston. This is also my third year as an advisor to twelve music students. Amidst this hectic environment, I have often wished for fewer preps, as anyone would!

An especial thorn in my side has been geometry. I never thought of myself as a math person and did not have particular training in its unique pedagogy. For the first two years, I secretly thought to myself that I'd put in my time, teach math as I had been taught (rote and procedural), and one of these years I would have it taken off my teaching load. There just wasn't room in my teacher identity for math!

Then a few things conveniently disrupted that narrative. First, I started reading the book *Mathematical Mindsets* by Jo Boaler (2015). I thought the required reading would put me to sleep one Saturday night during a meeting of Knowles Fellows, but it actually helped me realize that I could learn to be a great math teacher. Second, my

principal gave me some perspective on the longer view in teaching: just as city's infrastructure should not be fixed all at once, a growing teacher should not try to fix all areas of their teaching all at once. Improvement should be incremental, targeted, and ever-rotating in its reach.

So, last spring, I took the first leap into teaching math as a social, creative, and sense-making subject. For the first time, I asked my students to work on single problems for an entire class period. I asked them to work in small groups to share different opinions and strategies. I asked them to notice visual patterns and generate questions. My students responded! I overheard a student say, "Ms. Lou is making us think and think!" and "That was fun!" They actually clapped and cheered for each other. For the first time, we felt like a community of learners.

While I am grateful for these joyful experiences, diving into the unknown makes me feel like a first-year teacher again. For example, while my students responded really well to open-ended problems, I was at a loss for how to cover math content without reverting back to rote

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> *For the first time, we felt like a community of learners."*

and direct instruction. I also grappled with how to hold students accountable for group learning. Boaler's book motivated me to invest in math pedagogy, but I did not yet have all the tools I needed.

I don't want people to think at this point that I'm somehow weirdly OK with discomfort. I'm not. I struggle with the feeling of "not knowing" every day. What I do know is that the possibility of learning and growing is too exciting for me to ignore.

Being connected to resources and people who can support my growth helps to alleviate the uncertainty. After being inspired by Boaler's book, I enrolled in an excellent professional development course at the University of Washington—"Designing Effective Group Work in Mathematics"—where I learned tools that deepen student thinking in inclusive settings. I also requested a coach from my school district to observe me throughout the year. My coach observes me weekly and points out concrete ways in which I have improved, and incremental ways for me to grow. Further, I'm lucky to have colleagues who are curious to hear each other's thinking and who are supportive of each other's growth.

I feel strangely confident this year. I think it's because I have support, some goals, a path, and learner's mindset. Making mistakes is still scary, but I know that I'm allowed to learn from them.

So, six months ago I would have said, yes, of course I know myself. A biology teacher. A dog-lover. Not a writer. And yet, here I am teaching geometry, adoring my Betta fish (his name is Jackie Chan), and writing another piece on the life and love of teaching. I'm glad I learned to defy myself. Not believing just one narrative of my story has helped me stay true to myself, find support in my community, and embrace discomfort as part of the journey.

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> *Making mistakes is still scary, but I know that I'm allowed to learn from them."*

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Citation

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Using QFT to prepare students for new experiences

Kaitie O'Bryan

Question Formulation Technique helps students propel their own learning.

"Does anyone have any questions?"

In many classrooms, when a teacher asks this question, they are met with silence.

Even when I was a student, "Does anyone have any questions?" made me a bit anxious. Questions did flood my head, but it sounded more like this:

> Should I have questions? Is this question a trick question? If I ask a question, does that mean I wasn't paying attention? What if I ask the wrong question? Does my teacher have a question they are waiting for? Is my question stupid to the person sitting next to me?

By the time I had gone through the full decision matrix of asking a question, the moment had passed.

In my computer science classes, I frequently bring visitors into the classroom to provide students with opportunities to see what careers with computer science look like in the "real world." However, when a visitor asks the room, "Are there any questions?" the silence is even more palpable.

Learning to ask questions is a skill. Learning to ask the right question is an advanced skill, which is why I have found Question Formulation Technique (QFT) to be a

helpful tool I can use in my classroom to build these skills in students.

I first learned about QFT when I attended a mathematics teaching conference at Phillips Exeter Academy in the summer of 2015 and then was re-introduced to it at a Knowles Teaching Fellows meeting in the fall of 2015. QFT is a process that facilitates the asking of many questions. The process includes providing a question focus, producing questions, categorizing questions, prioritizing questions, and reflecting on the experience and next steps. I was intrigued: having such clear steps helps provide students with structure as they generate their own questions, and allocating class time to developing questions helps teach students the skills needed to develop questions in the real world.

I have struggled to find a way to incorporate QFT into my teaching routines, especially when the learning targets for a specific day in my geometry classroom are so specific. There doesn't always feel like there is room for open exploration of ideas in my geometry class,

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> *Learning to ask the right question is an advanced skill."*

particularly given that all the teachers in geometry have agreed to pace our instruction at the same rate.

However, in my computer science classroom, my main goal is to increase student interest in computer science. When an opportunity came along to have students visit Target's headquarters in Minneapolis to work with the engineers and scientists in their technology departments, I needed a way to get students ready to engage with these engineers. Enter QFT.

I have found that students tend to buy in more to new strategies if I am fully transparent about my intentions and goals. I designated one hour to use QFT with my students. When we started the hour, I explained a bit of the backstory of QFT to my students—I wanted students to see that this was not another activity I had made up, but there was research behind it. It felt important for me to explain my thinking to students.

My question focus for students was a short paragraph of text from emails I had exchanged with my partner at Target as well as snippets from his team members' LinkedIn profiles. Students were given five minutes to read the paragraph of text and then two minutes to summarize what they read or pull out key pieces of information in that text. From there students worked in small groups for 12 minutes to generate questions about what they read. 12 FULL minutes. That tends to be a lot of time to a high schooler and certainly more time than a student typically gets when we ask, "Does anyone have any questions?"

In these groups, one person documented the questions in a Google Doc while their team continued to ask questions. While some of these questions got off task in unproductive ways, other questions showed how students were making connections to the work Target was doing and their own learning or lives. As I observed students participating in this protocol, my main role was ensuring every question was written down in the document. Students are accustomed to judging their responses immediately, but there was no judgment during this time—EVERYTHING was put into the document. While monitoring the class, I intervened a few times to remind students of that rule if I noticed some of the questions were not being included.

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> *QFT helped students prepare for the trip—and helped the partnering corporate team understand what my students were already thinking."*

At the end of the 12 minutes, we discussed the difference between closed and open-ended questions, and students color-coded their questions based on these two distinctions. We then practiced modifying closed questions to make them into open-ended questions. Finally, students prioritized their questions to determine their top three questions for Target's team so I could send them to my partner at Target. Doing this helped students prepare for the trip—and helped the Target team understand what my students were already thinking before their arrival.

Target engineer Jake Krings speaks to other engineers and the author's students. *Photo by Kaitie O'Bryan.*

At the field trip, students met five individuals who worked in different roles related to technology in Target stores. Target employees shared their unpredictable journeys that led them to working in technology with Target, and then the students broke up into two groups and saw new technologies Target was using (or hoping to use) in their stores to improve the guest experience. The experience was fast, but—because we had gone through the QFT process before the trip—students were ready to hear what the engineers were sharing and students were ready to ask questions throughout the experience.

After this experience using QFT before a field trip, I have actively sought out ways to incorporate QFT into my class more frequently. One way in which I have done this is when preparing students for guest speakers in my computer science classes. Guest speakers can be

a very valuable part of a course, and this is especially true in my computer science class where I am trying to get students to see the many different options a career in technology has to offer. While I do my best to prepare guest speakers, I also prepare my students using a QFT protocol.

While I still get met with initial silence when I ask, "Does anyone have any questions?" in class, QFT has helped my students get the most out of experiences with visitors to the classroom or on field trips. In particular, I have noticed using QFT gives all students courage to ask questions during trips or with visitors. When I have skipped the QFT process due to time, there are only two or three students who ask questions of visitors. But that is not the case when I utilize the QFT process; during those experiences, I see more students ask questions— it appears that engaging with QFT has provided more students with the confidence to ask questions.

QFT is one tool in my "teacher toolbox," but I am still looking to better develop a classroom culture that values question asking. Ideally, QFT would not be just a lesson each quarter of the year, but rather a mindset that students are able to internalize—a mindset where they are constantly producing, categorizing, and prioritizing questions that propel their learning forward.

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Leadership As Stance: Leading from Inside the Classroom

Rebecca Van Tassell

Exploring the ways that my view of teacher leadership is enacted during informal interactions between teachers.

Near the end of my fifth year of teaching, on a beautiful spring day, teachers and staff at my high school participated in an in-service day. It was a familiar scene: a day without students in which teachers, curriculum specialists and others led various sessions. I co-led a session with a colleague, attended a number of useful sessions and at the end of the day, gathered with my science department colleagues to share takeaways.

I don't remember what I shared when it was my turn, but a colleague, Joan[1], found me in the hallway as I made my way back to my classroom to pack up for home. She thanked me for what I said because it sparked an idea for her about how to implement group work to make it even more accessible to her students with Individualized Educational Plans. I was surprised that, at the end of a day of carefully planned professional development activities, it was my off-the-cuff statement that had the most impact on Joan's practice.

This interaction made me think about how I'd been approaching teacher leadership. At the time, I was struggling to balance the demands of my leadership role as department coordinator with the myriad demands of teaching. I wanted to be a teacher leader, but I felt unsatisfied with the work I was doing. I wasn't convinced that teacher leadership only came with a formal role or title —it seemed like perhaps leading could happen

from the classroom—but I was torn. I liked having a title, a role, a publicly recognized stamp, and I believed that without it, it would be difficult to wield the authority required to make changes to teachers' practice. I wondered, would leading from the classroom feel like leadership? Was being an excellent teacher and serving as a model for others enough to lead educational improvement? I found myself asking: What counts as teacher leadership, and who decides?

Defining Teacher Leadership As Stance

Teacher leadership has been defined differently in the literature, but many researchers agree that teacher leaders are distinguished from other teachers because they influence teaching and learning within and beyond their own classrooms (Wenner & Campbell, 2016). Teacher leaders are typically moved out of their classrooms at least part time so they can take on formal, highly visible roles, such as department chair, curriculum coordinator, or professional development leader. We expect these teacher leaders to have a broad impact, "not just influencing individual teachers, but also having the capability to influence the entire school, community, and profession" (p. 7). Less easy to spot are teacher leaders without titles who influence their colleagues in different but equally powerful ways.

My conception of teacher leadership evolved after my interaction with Joan, thanks in part to the work I did as a Knowles Teaching Fellow. During my fifth year

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[1] Teacher name is a pseudonym.

in the Fellowship, I was encouraged to re-think ways I identified as a teacher leader in my own context and I came to recognize that my leadership was not limited to the defined role I had or a set of behaviors I was expected to enact. While it was easy to describe opportunities for teacher leadership when looking at formal leadership roles and in school-sanctioned initiatives, such as professional development, it became clear that even without the authority of a formal role we could leverage our relationships with colleagues to bring about change.

Following a 2009 Knowles Fellows' meeting, I began to think of teacher leadership as a stance I take when I work with colleagues. In their work on teacher inquiry, Cochran-Smith and Lytle (2009) describe inquiry as stance as the "positions teachers in inquiry communities . . . take toward knowledge and its relationship to practice" (p. 289). Like Cochran-Smith and Lytle's inquiry stance, I began to understand teacher leadership as a stance that is perspectival and conceptual—a dynamic way of knowing my teaching community and my membership

in that community so that I can improve teaching from the inside. Rather than envisioning teacher leadership as a discrete role that is undertaken, or a set of leadership skills to be implemented when working with colleagues, a leadership stance pervades a teacher leader's every interaction and allows for leadership to be enacted throughout the educational setting. Viewing teacher leadership as stance promotes the idea that all teachers have the power to improve education, the capacity to advocate for students, and the ability to influence teaching in their local contexts regardless of their position in school hierarchies.

Looking for Models

I decided to explore the ways my expanded view of teacher leadership was being enacted by other teachers during informal interactions with their colleagues. I sent a questionnaire to the Knowles Teaching Fellows community, as well as teachers in my own school, and asked: Describe a time when a small interaction (a conversation, question, or casual exchange of ideas) with a colleague impacted your teaching. What changes to your thinking or student learning have resulted because of this interaction?

In framing my question to teachers in this way, I hoped to elicit data on these interactions without influencing participants' thinking about leadership. My goal was to understand ways these interactions might be depicted as acts of leadership, if they had an influence on the way other teachers thought or behaved, inside or outside of the classroom.

I reviewed teachers' responses to understand why teachers changed their teaching practice as a result of one-on-one interactions with colleagues, and to find evidence that those conversations were sites for teacher leadership. As I read each response, I asked four questions:

1. Who influenced the teacher?
2. What were the circumstances of the interaction described by the teacher?
3. What aspect of the teacher's practice was influenced?
4. What prompted the change in teachers' practices?

At each stage of answering these questions, I enlisted the help of Linda Abrams, a Program Officer at the Knowles Teaching Initiative, to look at my data with me to make sure what I was seeing in the data was clear to others.

Who influenced these teachers?

Nine teachers described interactions they had with colleagues who were mentor teachers, cooperating teachers, or assistant principals. I decided to exclude those responses from further analysis because I felt that the authority inherent in their colleagues' roles changed the dynamics of their relationships. I wanted to look exclusively at interactions that did not have this power dynamic at play, which left 11 out of 20 responses to help me understand leadership as a stance one took with their colleagues.

Influential colleagues included "the teacher next door," "another teacher in the building," or "a teacher in my department." Such relationships are proximal: teachers who have ready access to each other because they are in a department meeting together, run into each other in the copy room, or teach nearby. Being part of the same community and teaching the same students under the same conditions allows these teachers to support each other in context-appropriate ways that allow for short, informal interactions to be incredibly rich. Teachers can bypass the cognitive load of trying to understand a problem, a question, or a group of students because they are shared. Proximity allows these interactions to be powerful, with teachers readily available to offer timely and context-appropriate feedback to each other.

What were the circumstances of the interactions teachers described?

As I read through each response, I wanted to understand what was going on when the interaction happened, what the teachers were doing, and where it took place. I found that some teachers sought out colleagues with experience in the same content area to elicit information about pedagogy or course content. A few of those interactions took place in collaborative settings where teachers were working together on curriculum or during a content team meeting. Other interactions were more spontaneous, occurring by the copy machine, in the staff room, or in-between classes. One such interaction allowed a teacher who felt apart from her school community to feel supported, even by a teacher who taught differently from her:

> During my second year teaching, a colleague and I were having a discussion in the copy room about instructional techniques. [Our] brief . . . chat . . .

allowed me to see that there was a teacher who valued the way I was teaching, even though she had a totally different style. . . . [T]hat . . . conversation allowed me to see that . . . we can support each other in the ways we choose to teach!

Many of the teachers described their interactions as informal "suggestions," "mentions," or "nuggets of support," an indication that, despite their casual tone, these conversations were memorable and had a significant impact on some aspect of these teachers' teaching or professional well-being.

What aspect of the teacher's practice was influenced?

In posing this question, I wanted to focus on what teachers were learning from their colleagues. Were they learning new instructional techniques? Did their colleagues have an even greater influence on their conceptual understandings around teaching and learning? I grouped their responses into four content categories: pedagogy, course content, understanding students, and emotional well-being—and found that teachers' thinking and practice were differently impacted.

Some teachers came away with new approaches to teaching. For example, a geometry teacher asked a member of her department to suggest a different approach to teaching equations of circles. She typically taught it with a system of equations because she was more experienced in teaching algebra. The teacher remarked,

> She showed me a more geometric way (constructing perpendicular bisectors to two of the chords and then finding their intersection). I would have never thought of this way, but it was more useful for my students who are visual learners [and] struggle with algebra.

Another teacher described a change in her instructional method. As a first-year teacher, she was unsure how to support student learning by modeling. When she approached a colleague in her department, he responded, "What is that you expect students to do? If you do not show them, how will they ever know?" What seemed obvious to her more-experienced colleague was a revelation to this novice: "It made me understand the importance of being direct, explicit, and detailed in my teaching practice." This teacher developed an understanding of the value of transparency in her teaching for her students' learning.

Teachers were also challenged to reconsider what they were teaching and why they were teaching it.

Interactions with colleagues allowed for exploration of what content was most important for students and prompted questioning about how to provide more meaningful learning experiences for students. A chemistry teacher described a conversation he had with a middle school science teacher who taught next door. When the chemistry teacher answered a basic content question, the colleague asked, "Is that important for my kids to know?" Reflecting on the exchange, the chemistry teacher wrote,

> [T]he second question stuck with me . . . Is the fact that the third orbital can hold eight or eighteen electrons really important? Does it change the understanding of my students or do I cover it because it is a fact that I can easily assess?

Some interactions allowed teachers to gain new insight about the students they were teaching and to uncover assumptions they held about them. A teacher whose computer was stolen shared with a colleague that she was concerned that her students were "quiet… didn't want to participate, [and] angry . . . because I 'told on' their classmate." Her colleague suggested a different interpretation; perhaps the students "felt guilty and ashamed that their classmate stole" the computer. Thanks to her colleague, the teacher was able to to see her students differently and align their morals with her own. She could "see the bias" in her assumptions, deepen her understanding of students in the community, and avoid othering her own students.

Teachers also shared the impact their colleagues had on their emotional well-being by promoting feelings of confidence, providing perspective on a problem and making them more comfortable in their community. One teacher commented, "By supporting my emotional development as a teacher, my colleagues push me to stay in the profession and become a better teacher."

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> *Interactions with colleagues can challenge teachers to reconsider what they are teaching and why they are teaching it."*

Kind supportive statements affirmed the importance of teachers' work and their ability to do it. Examples like this speak to the importance of collegial support for teachers' emotional well-being, and its relationship to teacher retention.

What prompted the change in teachers' practices?

Once I identified that these informal interactions between teachers led to changes in teachers' thinking and practice, I looked to the responses a final time to identify the nature of these interactions. I wanted to know what respondents' colleagues did to prompt a change. I identified four behaviors in this final phase of analysis: colleagues made a supportive statement, asked probing questions, made an observation or provided an explanation of pedagogy.

Many teachers cited a supportive statement made by a colleague that affirmed their choices, abilities and value as teachers. Colleagues recognized the difficulty of a teacher's situation and encouraged generosity toward themselves and others. For example, one teacher described feeling a "crisis of confidence" following the birth of their daughter. They turned to a colleague for support and came away for the conversation reassured:

> [My colleague reminded me] whatever I was experiencing in my life, I would grow through it and it would make me a better teacher, a fuller human being. This small interaction is one I keep returning to like a touchstone, and it keeps my heart open.

The colleague's acknowledgement of the teacher's difficulty, which was "said with so much acceptance," offered them a new perspective, helped them to process the emotional difficulty of their situation, and allowed them to find some peace despite its impact on their professional life.

Several interactions started with a probing question that prompted a change in a teacher's thinking. The questions posed by colleagues became opportunities for teachers to examine their practice, to steer their thinking in a new direction, or to inspire them to justify the significance of their curricular choices, as in the example of the chemistry teacher discussed above. Other teachers described scenarios in which a colleague simply noticed something about the teacher or the teacher's practice. These observations uncovered blind spots in the teachers' thinking, allowed them to see the problem in a new way, and inspired them to make adjustments to help them move forward. Another teacher wrote about a course team meeting when one of her colleagues noticed that three of the questions on a quiz the team was writing required one basic skill; if students did not know the skill, they

> *By supporting my emotional development as a teacher, my colleagues push me to stay in the profession and become a better teacher."*

would miss all three questions. The teacher wrote, "This small noticing is now something that I think about every time I assess students." Her reflection speaks to the potentially long lasting impact that relatively small, simple interactions can have on a teacher's thinking.

What I Learned

Responses to my questionnaire suggest that informal interactions between colleagues can result in educational improvement. Even during casual conversations, teachers' thinking and multiple areas of their practice were influenced in significant and lasting ways by colleagues who understood their individual needs, asked just the right questions, and recognized that they could be helpful in the moment. This was possible because teachers and their colleagues had ready access to each other and deep knowledge of the context they both shared. They made the most of small moments and leveraged them as opportunities to influence one another.

At the beginning of this article, I defined teacher leadership as a stance, perspectival and conceptual: a dynamic way of knowing my teaching community and my membership in that community so that I can improve teaching from the inside. What I've seen in these interactions is just this: teachers using their knowledge of their community to prompt change. These teachers have exercised leadership by helping their colleagues make sense of their practice and themselves as teachers to provide the best possible opportunities for students.

According to research, the visibility and presence of teacher leaders in a school community empowers all teachers there (Beachum & Dentith, 2004; Vernon-Dotson & Floyd, 2012). Teachers who are recognized by

their colleagues as leaders, regardless of formal power structures, have the potential to inspire change from the bottom up, working in parallel with other school improvement efforts. In seeing small interactions as potential sites for leadership, we increase the opportunities we have to practice leadership and thus see ourselves as teacher leaders. Thinking about leadership as stance allows for a gradual transformation in a teaching community's practices that are context appropriate and encourage even early-career teachers to see themselves as leaders in smaller ways as they build their capacity, develop their teaching efficacy, and move gradually toward their ideal of teacher leadership.

There has been a surge in attention to preparing early-career teachers for leadership roles in schools. Many institutions include teacher leadership in master's degree coursework or even offer additional certificates in leadership for classroom teachers. However, there is evidence that the transition from classroom teacher to teacher leader is problematic for early-career teachers. In one study of teachers enrolled in graduate coursework in teacher leadership, participants expressed "fear of not being listened to by colleagues and of not being effective at influencing change" (Carver & Meier, 2013, p. 185). Early-career teachers in the study, while acknowledging smaller interactions as acts of leadership, "did not recognize themselves as leaders and continued to privilege the formal and idealized images of leadership to which they aspired" (p. 180). The authors conclude that issues of credibility and approachability are "intractable" aspects of teachers' thinking around teacher leadership (p. 185), which suggests a persistent belief that teacher leadership is something that is practiced in addition to our work in the classroom, and not included in that work. Teachers overlook the daily support and impact their colleagues have on their teaching.

We teachers, novice and experienced, take for granted that our common understanding about where we teach, who we teach, and how to teach can have a positive impact on our profession and open us to the potential and power of our daily, routine interactions. Reconsidering teacher leadership as a stance we can all assume, allows teachers to work across stages in our professional careers and educational contexts and to leverage the power of our relationships. My colleague Joan did not look for our interaction as a specific opportunity to improve her practice. Rather she was open to the possibility of learning from her colleagues at any time. Like Joan, teachers who embrace a leadership stance can move fluidly between having an influence on other teachers and being influenced by them because they recognize expertise and potential in

themselves and their colleagues.

Now What?

For teachers, taking a leadership stance in our contexts creates opportunities to lead in a myriad of ways, from small interactions with colleagues to formal roles and responsibilities. All are opportunities for teachers to have a positive impact on student learning. Thinking about leadership as a stance helps me to understand the ways that I can continue to lead through the ever changing landscape of my career to recognize that all of my collegial interactions are potential sites for teacher leadership, as long as I tune into my colleagues and consider the possibility that the teacher next door has a lot to offer.

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The Knowles Teacher Initiative, a 501(c)(3) non-profit formerly known as the Knowles Science Teaching Foundation (KSTF), was established by Janet H. and C. Harry Knowles in 1999 to increase the number of high quality high school science and mathematics teachers in the United States. Through the Teaching Fellows Program, Senior Fellows Program and the Knowles Academy, the Knowles Teacher Initiative seeks to support a national network of mathematics and science teachers who are collaborative, innovative leaders improving education for all students in the United States. For more information, visit www.knowlesteachers.org.