



10 things to know about mentoring student teachers

Student teaching is a critical period that can affect how a person performs in the classroom early on.

By Douglas B. Larkin

I recently visited a student teacher at the end of his first month of full-time student teaching in an urban magnet school. I had watched him struggle with teaching science to 6th graders during his initial practicum and was looking forward to seeing him teach a lesson in physics, his college major and prospective area of teacher certification. He had assured me that a high school physics class was where he belonged, given his experience as an electrical engineer in a previous career.

When I arrived at his room a few minutes before class, he had stepped out into the hall while his cooperating teacher handled the short advisory period. His appearance reminded me of a wrestler leaving the ring, and the way he mopped the sweat off his forehead and arched his back against the lockers communicated a deep exhaustion. He caught his breath and greeted me, and when I asked him how it was going, he simply said, “This is really hard.”

As I watched him teach that afternoon, I understood completely. It was the last day of the marking period, and he seemed barraged by students with last-minute work all throughout the hour. Furthermore, his students hadn’t understood the previous day’s lab on heat capacity, and his patient explanations and expertly formatted slides didn’t seem to be helping much. A demonstration in which he tried to boil water in a bell jar at room temperature completely failed to work, even after his cooperating teacher stepped in to help. After 10 minutes, they both admitted defeat and moved on with the lesson. I had hoped we could chat after class, but as soon as the

DOUGLAS B. LARKIN (larkind@mail.montclair.edu) is an assistant professor at Montclair State University, Montclair, NJ. He is author of *Deep Knowledge: Learning to Teach Science for Understanding and Equity* (Teachers College Press, 2013).



bell rang, he was swamped at the front desk by students jockeying for his time and attention. We only managed a distant wave, with an implicit promise to catch up later. As I returned over the course of the semester, the strain of student teaching was never far from the surface, even as he continued to find joy in teaching a subject he loved.

Over the past seven years, I've spent many hours in high school science classrooms researching how people learn to teach science, and I have learned that the mentoring role of a cooperating teacher can't be understated. Undoubtedly, cooperating teachers' ideas about how people learn to teach influence the types of support they offer to student teachers. Yet these ideas and personal theories don't always align with the research on learning to teach.

Here are some things we know: Learning to teach is stressful and is a time of intense personal transition that often forces people to change who they think they are (Britzman, 2003). Student teachers also come with their own ideas about teaching formed from their own experiences, and they often use their own schooling as a guide to best practice. Prospective science teachers' own experiences with inquiry inside and outside science classrooms greatly influence their likelihood of fostering inquiry in their own classrooms as teachers (Windschitl, 2004). Prospective high school teachers may know they're supposed to address misconceptions, but then aren't quite sure what to do with student ideas once they're out in the open. Many are still learning the content, and most

are struggling with both teaching equitably to all students and keeping pace with district curriculum guidelines.

We also know that prospective science teachers usually try to enact the vision of good science teaching put forth by their teacher education programs (Zeichner & Conklin, 2008). In some cases, this means adhering closely to particular resources and approaches that rely on following the guidelines of expert curriculum developers. For others, this vision of good science teaching may entail combining learning cycles with vibrant activities, lesson planning through backward design, or reflective practices that weave social justice topics into every science unit.

It is challenging for student teachers to integrate their own ideas about good teaching with those of their teacher education programs. Furthermore, enacting this vision of good science teaching in an actual classroom with actual students may be even more daunting. The mentoring choices of cooperating teachers have significant consequences for how their student teachers address the challenges they face.

To aid in making such choices, I present 10 tips for mentoring student teachers in high school science classes. Many of these come from my own recent work in tracking prospective high school science teachers in different university-based teacher education programs (Larkin, 2013). While this research focused on high school science teachers, mentors in other subject areas and grade levels might benefit from these suggestions as well.

Student teaching may be one of the few times in a teacher's career when he or she has the opportunity to learn hard truths about one's teaching from a knowledgeable and caring colleague.

1. Don't just leave them alone.



During my research, I was surprised by how many cooperating teachers simply disappeared, thinking that they were doing their student teachers a favor. Science teachers tend to have desks in prep rooms, and this can seem an attractive place to hide in order to give a student teacher more autonomy. While such intentions seem laudable, this practice denies student teachers the opportunity to receive ongoing feedback based on the cooperating teacher's professional knowledge and observations. By the end of student teaching, leaving them alone may be an appropriate strategy, but, for the first few months, student teachers need formative feedback and logistical support, even if they seem quite capable of doing things on their own. Many student teachers in the study whose teachers left them alone often reported that their need for feedback was more pressing than their desire for autonomy.

Many cooperating teachers are apprehensive about bruising the emerging professional egos of their student teachers, yet student teaching may be one of the few times in a teacher's career when they have the opportunity to learn hard truths about one's teaching from a knowledgeable and caring colleague. Many student teachers genuinely want these conversations to occur. Little learning will take place if they hear that everything is fine. Instead, practice compassionate confrontation, and give them useful and timely feedback on one or two things each lesson.



Deepen your understanding of this article with questions and activities in this month's *Kappan* Professional Development Discussion Guide by Lois Brown Easton. Download a PDF of the guide at kappanmagazine.org.

Student teachers often fail to realize that a curriculum does not teach itself.

2. Turn on your commentary track.

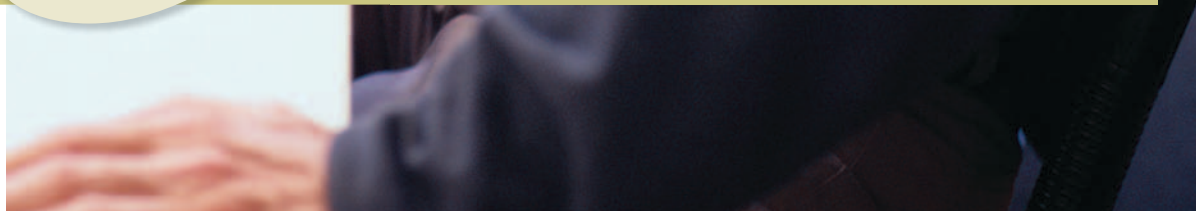
Many movies on DVD have an option to turn on the director's commentary so the viewer can hear about what went into the making of the film, highlighting details that might otherwise be very difficult to perceive. Likewise, good cooperating teachers can keep a running commentary track going for student teachers. This can help prevent student teachers from uncritically copying what you do, and focus their attention instead on your underlying goals. It's also a way to share hard-won practical wisdom automatically. If you organize a lab activity in a certain way after tweaking it for years, let them know why.



#3. Work with your student teacher to find creative outlets.

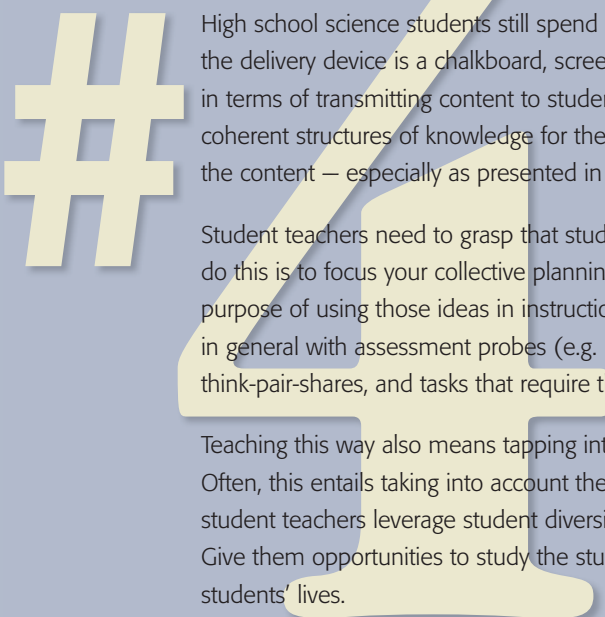
A common frustration among student teachers concerns the curricular constraints they feel upon entering their classrooms. This is particularly true in the case of undergraduates in their 20s, who continue to make up the majority of new teachers. Ready to spread their wings and fly, the last thing many wish to hear is that they will be following a carefully prepared common curriculum that you and your colleagues have developed. Student teachers often have ideas about the creative lessons and activities they wish to do — some of which may even be required by their teacher education program — only to find that there is no space to implement their plans.

Student teachers often fail to realize that a curriculum does not teach itself. Simply having established learning goals and activities doesn't mean a lesson will just unfold. Give student teachers the task of deciding exactly what they will say to introduce a lesson, elicit student ideas, run a discussion, review assignments, or organize class data from a lab activity, and encourage them to be creative in these tasks. Helping them find professional outlets for their creativity is a valuable way to channel their desire to show what they can do. This has the added benefit of focusing their planning energies at different scales in the classroom and may help nurture the collaborative skills they'll need as future teachers.





#4. Model how to teach in a constructivist manner.



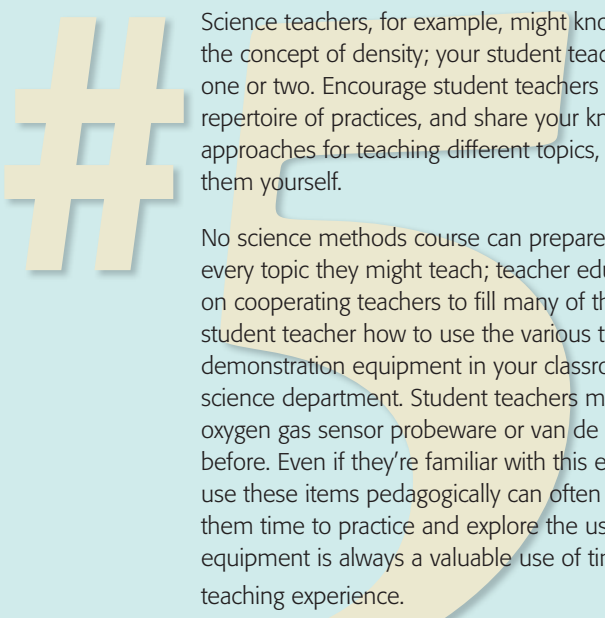
High school science students still spend lots of class time copying notes from the front of the room. Whether the delivery device is a chalkboard, screen, or electronic whiteboard, student teachers often think about teaching in terms of transmitting content to students rather than thinking about teaching as a way to help students build coherent structures of knowledge for themselves. This is particularly true in secondary science where much of the content — especially as presented in textbooks — can seem sequential and indisputable.

Student teachers need to grasp that student ideas are the raw material of our work as teachers. One way to do this is to focus your collective planning efforts on eliciting student ideas about science phenomena for the purpose of using those ideas in instruction. Get student teachers to attend to student ideas and student thinking in general with assessment probes (e.g. Keeley, Eberle, & Farrin, 2005), journals, do-nows, demonstrations, think-pair-shares, and tasks that require the presentation of explanatory arguments from evidence.

Teaching this way also means tapping into students' ways of understanding and communicating about the world. Often, this entails taking into account the diverse life experiences students bring to the task of learning. Help student teachers leverage student diversity as a resource to be tapped, rather than an obstacle to be overcome. Give them opportunities to study the students, and help them seek opportunities to connect the content with students' lives.




#5. Share topic-specific teaching knowledge.

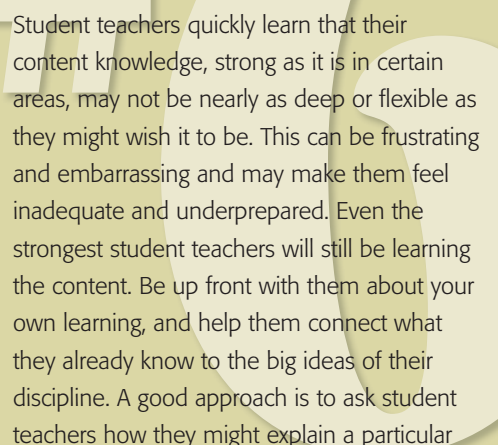


Science teachers, for example, might know 12 ways to teach the concept of density; your student teacher may just have one or two. Encourage student teachers to develop their own repertoire of practices, and share your knowledge about various approaches for teaching different topics, even if you don't use them yourself.

No science methods course can prepare student teachers for every topic they might teach; teacher education programs count on cooperating teachers to fill many of these gaps. Show your student teacher how to use the various types of laboratory and demonstration equipment in your classroom and around the science department. Student teachers may never have operated oxygen gas sensor probeware or van de Graaff generators before. Even if they're familiar with this equipment, learning to use these items pedagogically can often be challenging. Giving them time to practice and explore the use of science teaching equipment is always a valuable use of time in the student teaching experience.



#6. Model how to learn new content as a teacher.



Student teachers quickly learn that their content knowledge, strong as it is in certain areas, may not be nearly as deep or flexible as they might wish it to be. This can be frustrating and embarrassing and may make them feel inadequate and underprepared. Even the strongest student teachers will still be learning the content. Be up front with them about your own learning, and help them connect what they already know to the big ideas of their discipline. A good approach is to ask student teachers how they might explain a particular science idea to students. If you think they're having trouble with a lesson because of the content, don't hesitate to give them a mini-lesson.

#7. Plan together.

Having recently taken college courses that explore the upper reaches of their disciplines — like physical chemistry and molecular ecology — student teachers may forget what it is like to not know something simple, like Newton's laws, the periodic table, or basic cell structure. This is complicated because people who choose to become high school science teachers were likely high achievers as students themselves. Consequently, they may feel that they're dumbing down the curriculum when writing lessons and unit plans and worry that they're being unfaithful to their science disciplines when they modify lessons for different learners. Furthermore, many student teachers focus their energy on developing activities, rather than designing experiences that connect to learning goals.

Planning together and continually asking, "What do you want the students to learn from this?" is important for these reasons: It helps student teachers set appropriate learning goals for students, and it helps the student teacher and cooperating teacher decide together what constitutes acceptable evidence of students meeting those goals. When framed this way, the intellectual challenge of planning may even appeal to the scientific problem-solving dispositions of student teachers.

Even the strongest student teachers will still be learning the content.

#8. Make time to talk.

While touching base each day is important, be sure to build time into each week to talk with student teachers about how things are going. If there are important issues that need addressing, particularly in regard to professionalism, be sure to raise them instead of hoping they'll go away because they probably won't. Classroom management troubles often take precedence for student teachers, and your approach to talking through these issues will determine whether they're able to move beyond a focus on student control to a focus on student learning. The cooperating teacher and student teacher must be able to express their expectations and needs at the beginning of the student teaching experience and keep open lines of communication throughout student teaching.

#9. Connect student teachers to the larger political world of the school.

Student teachers may express an interest in learning more about their legal rights and responsibilities as teachers. These may include questions of safety in the science classroom, school budgets, and how contract negotiations work, among other things. As a cooperating teacher, you can help give them opportunities to learn about these issues.

Suggest that they attend a school board meeting if they haven't done so already. Introduce them to a union representative. Show them what a teacher evaluation looks like. Encourage them to explore online documents like school testing data, state report cards, census data for the district, and the school budget. Help them see how a classroom teacher fits into the larger ecology of education and society.

Giving them a sense of the different perspectives on relevant issues at the level of the school and classroom is very valuable. What are the discussions around English language learners, gifted education, attendance areas, prep periods, teacher duties, parent meetings, and budget issues? What happens at meetings of child study teams? How are students selected for advanced science courses? What are the legal requirements for storing chemicals and using safety glasses for students? Help student teachers explore the answers to such questions, and encourage them to begin posing their own.

#10. Treat student teaching as a learning opportunity, not as a performance.

#

10

Many student teachers, as much as they would like to think otherwise, view their teaching as a performance, evaluating each lesson as a test that they either pass or fail (Dweck, 2006). Help them think of their work more clinically, with the view that there is something to be learned from each lesson. This may not be your student teacher's initial orientation, yet with sustained effort a mentor can cultivate such a disposition over time.

One way to do this is to talk candidly beforehand about using evaluative language. There is nothing more natural than saying, "That lesson went well," to a student teacher after a lesson, but such language can be counterproductive in the longer-term goals of improving practice and student learning because it feeds the impression that each lesson is to be judged. Begin instead with the assumption that in each lesson there will be parts that are good and other parts that can be improved.

Conclusion

Mentoring a student teacher is challenging and rewarding. The hard work that goes into helping someone learn how to teach is balanced by the benefit of having an enthusiastic apprentice with you, and taking advantage of this situation is essential for your own professional learning. You can even present them with *your* problems of practice and see what solutions they find. If you have a lab activity you'd like to improve or a persistent problem you just haven't been able to overcome, don't hesitate to share this information with your student teacher. After all, they're often searching for new strategies themselves and may have an answer right at their fingertips. Besides, it's only fitting to offer your student teacher the opportunity to give something back for all of the fantastic mentoring you've done with them.

K

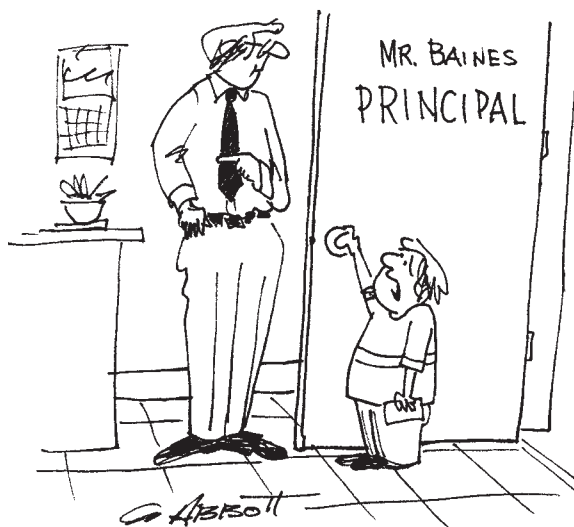
References

- Britzman, D.P. (2003). *Practice makes practice: A critical study of learning to teach* (Rev. ed.). Albany, NY: State University of New York Press.
- Dweck, C.S. (2006). *Mindset: The new psychology of success*. New York, NY: Random House.
- Keeley, P., Eberle, F., & Farrin, L. (2005). *Uncovering student ideas in science*. Arlington, VA: NSTA Press.
- Larkin, D.B. (2013). *Deep knowledge: Learning to teach science for understanding and equity*. New York, NY: Teachers College Press.

Windschitl, M. (2004). Folk theories of "inquiry": How preservice teachers reproduce the discourse and practices of an atheoretical scientific method. *Journal of Research in Science Teaching*, 41 (5), 481-512.

Zeichner, K. & Conklin, H. (2008). Teacher education programs as sites for teacher preparation. In M. Cochran-Smith, S. Feiman-Nemser, D.J. McIntyre, & Association of Teacher Educators (Eds.), *Handbook of research on teacher education: Enduring questions in changing contexts* (3rd ed.) (pp. 269-289). New York, NY: Routledge, Association of Teacher Educators.

Student teachers need to grasp that student ideas are the raw material of our work as teachers.



"They told me diplomacy didn't work so now they're giving me sanctions."