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Credits

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Creating Your Own Teaching Community

Robin Pemantle

Teaching Communities

A teaching community is a group of peers with shared interests in teaching, available for advice, collaboration, venting, and other social support for the enterprise of teaching. Peers could be more senior or more junior than you—the term is meant to encompass permanent or temporary faculty or staff, on whose doors you can knock and to whom you can easily talk.

There are a lot of reasons you might want to be part of a teaching community. The reasons I give below will not include evidence from studies. I don't know any studies scientific enough to be credible. Instead, I will compare the situation in college teaching with goals and practices in precollege teaching, where many of the issues and solutions translate in recognizable forms.

Teachers, K–16

We in higher ed have a lot to learn from the K–12 teaching profession. Granted, faculty at research universities devote a much smaller fraction of their effort to teaching. However, when we do teach, the principles of good teaching are not so different, nor are the steps needed to arrive there.

Primary and secondary school teachers earn certificates before they can be placed in a teaching job. In addition to content knowledge and child psychology, they learn many aspects of teaching that would be highly relevant to college teaching, such as

- learning to construct a lesson,
- acquiring classroom skills,
- learning to pose problems and set exams,

- choosing course goals and a useful relationship to the students,
- constructing a curriculum.

In higher education, teacher training is in a far more primitive state. There is no preservice teacher training, other than what someone might have picked up in graduate school. Absent an increase in coordination of the graduate school teaching experience, it falls on the employing institution to provide all the relevant training. At many institutions, this ranges from a few workshops at the start of the first year to none at all.

There are reasons, beyond mere historical accident, for this neglect. It would be hard to make time for a formal program of teaching improvement for young faculty at colleges and universities. It may not be very efficient either. The minutiae of college teaching vary greatly by discipline and level of student. The strong tradition of academic freedom may also put a damper on large-scale organization of teacher training. Instead, college teachers are often asked to self-organize into subcommunities where there is greater commonality.

The Role of Community

Because teaching is the sole job of most primary and secondary educators, a good measure of community is built in. However, even in these jobs, the professional organization for teachers of mathematics believes there to be too little focus on community [1, p. 100]. For college teachers, the self-organized teaching community is the main avenue, beyond experience, for continued development of teaching skills.

In a sense, communities are organic. If you take the initiative to talk to those around you about teaching, you will have a teaching community. In my experience, however, the initiative is appreciated but often not reciprocated. The presence of community is like a bonfire on a rainy day, requiring constant stoking or it will tend to wane. Fortunately, there are venues that will keep the fire alive longer and with less effort. Further, these communities can be directed toward the points (classroom skills, lesson construction, etc.) most notably missing from the training of early-career instructors.

The remaining three sections of this article provide ideas for harnessing the power of teaching communities for maximal gain, often with minimal effort. The ideas are drawn from my experiences in several multiyear projects: calculus reform and active learning projects at Penn during the last ten years; preservice teacher curriculum development at Wisconsin and Ohio State from 1994 to 2003; and workshops in the 1980s given by personnel from Project SEED and various NSF-sponsored teaching initiatives.

Lesson Study

Stigler and Hiebert, in their 1999 book *The Teaching Gap*, give a compelling account of a practice originating in Japan.

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Kounaikenshuu, or lesson study, is ubiquitous in Japanese elementary schools. “In lesson study, groups of teachers meet regularly over long periods of time (ranging from several months to a year) to work on the design, implementation, testing and improvement of one or several research lessons (kenkyuu jugyuu)” [2]. These are a few lessons that have been selected for revision via a collaborative tinkering process (discussion of goals, formulation of new questions, explanations and activities, trial and error). The details of how this is carried out in Japanese elementary schools is not as important as the idea of lesson study,¹ the practice of which obviously looks different in a college classroom.

When I began observing classes of junior instructors as part of my role in evaluation of teaching, I was struck by two things. One was how infrequently any of my colleagues had been in my classroom, or I in theirs. The second was that I learned as much, if not more, from classroom observation and the resulting postmortem than did the instructor I was observing. I learned techniques for explaining certain concepts, for motivating students, for seeing what was going on in the classroom, for structuring a course, and many other facets of teaching that no one ever finishes learning. The instructors also gained a lot from these interactions even though many of them were more gifted at teaching than I was.

Part of this is the well-known Hawthorne effect, namely, improvement due to paying greater attention. But that is exactly what teaching communities capitalize on. Classroom observations, institutionalized, are a way to achieve mindfulness and a critical perspective on an ongoing basis. No one has to set a weekly alarm saying to be mindful. With observations, it happens automatically, no matter which side of the lens you are on. It doesn’t have to be every week or in every course. Just a few times per semester, in a junior instructor’s most delicate course that year, is enough to make a very big difference.

A teaching evaluation program such as ours is a far cry from lesson study. The interaction graph of an evaluation program is star-shaped: the evaluator talks to each instructor, but the instructors don’t talk to each other; the community meets only once or twice in a semester; and the relationships bear the burden of being evaluative. It doesn’t take too much imagination to see how one might boost this in several desirable ways.

A group of, let’s say, five instructors in a multisection course, each observing each other once during the semester and getting together for a weekly lunch, does better on all fronts. With someone in charge to ensure the lunch discussions remain useful, and someone to take notes about ideas that arise, most of the benefits of lesson study would be there. The investment of time is manageable: once a week your lunch hour is hijacked, and four times in the semester you spend 40 minutes in a classroom. One of the

main benefits is development of classroom technique. It is generally agreed that almost the only way to achieve great gains in this area is by visiting and being visited, with ensuing discussions. Beyond this, and beyond the social benefits of community, everyone involved also gets examples of lesson construction, uses of technology, problem posing, curricular planning, and classroom persona.

A more ambitious follow-up more closely resembles lesson study. Suppose the same instructors are together again. They might tackle a few spots in the course that didn’t go very well. Let’s say the students were unable to grasp the geometric and algebraic properties of projection matrices. Fixing this involves more than perfecting the explanation. It might involve creating pictures, animations, or models; it might involve a homework problem or sequence of problems stepping the students through ideas; it might involve punctuating the lecture by some checkpoints with multiple-choice responses to keep down the intellectual attrition rate. All of these happen more easily when more people have creative input. For the 90 percent of us who are not extreme personality types, it is more pleasant as well.

Curriculum Development

Lesson study leads into the topic of curriculum development. Communities naturally form around joint projects, and developing curriculum is very amenable to teamwork.

There are very strong reasons to make course improvement and development into a communal activity. For one thing, it is a lot of work for just one person and often does not carry adequate credit. Secondly, whether it is a new course or a remake of an old course, the quality of the product improves greatly under more than one pair of eyes.

A development team of three or four instructors has an added benefit of continuity. Unless the course developers are the only ones who will ever teach the course, there is a question of how best to hand off the course to a new instructor. The notion that the course materials speak for themselves is fiction. It is also not to be expected that each new instructor will go over everything in sufficient depth even to take in what is in the materials. It is far more effective to overlap. If there are not parallel sections for new instructors to teach along with the original developers, then at least new instructors can be inducted into the community of past instructors, maintain conversations with them before and during the course, and be supported by classroom observations and lessons learned by past instructors.

In a new course, some of the big questions cannot be answered by one instructor because they represent departmental values. Updating the course goals can’t be done without a shared vision by all who will be teaching the course. Curriculum is constrained by an even wider group of stakeholders, such as the college and other departments relying on the course as a pre-requisite (if you are not in a math department you can probably ignore this last one).

¹For our purposes, the term “lesson study” is defined in context by the preceding sentences; for more on the meaning of the term, see [2].

Structuring a teaching community around a project like this is in some ways automatic, but there are some caveats. It's crucial to have someone with enough seniority to take responsibility for any fallout. The administration must be involved, at least to the extent that teaching assignments will be consistent with ongoing involvement. The casting must involve understudies so the project doesn't collapse when the intended pilot instructor gets sick, has a baby, or jets off for a semester at the Max Planck Institute.

Beyond Your Department

Despite the unique features of mathematics as a discipline, there are situations where a teaching community might include math along with other departments. One of these is in campuswide active learning projects. My university puts on a variety of talks, brown bag lunches, and training sessions. There is something every week or two. These are nice, though it's hard to predict who will show up. Here is something that might be more effective.

Campuswide, faculty and TAs who are piloting active learning classes meet as a group once every week (two weeks at the outside). The meeting is chaired by a teaching support professional (most campuses have these nowadays) who can bring an agenda in addition to facilitating discussion of issues that have arisen. The number of active learning classes in the pilot phase (taught in this format fewer than three previous times) is usually small enough that everyone has a chance to be heard. Shared pedagogy replaces a shared discipline, but the results are the same.

Those involved hear useful relevant information about the experiences of others, are able to tackle issues together, and build a network of people they can consult down the line. Another natural arena, perhaps more unique to math, is the community of client departments. This typically includes physical science, economics, and pretty much the entire engineering school. When math is taught outside the math department, mathematicians often fear one of two things: that such teaching evades mathematical standards, or that it steals students and hence funding. A more cooperative approach can be helpful.

If we mathematicians have ways to get the deeper concepts across to students for whom the math is not the primary interest, we should demonstrate it by sharing lessons with our colleagues in client departments. Likewise, we could benefit from seeing how nonmathematicians² are able to package mathematics and communicate it to their students. This can enrich everyone's teaching without changing course goals or the flow of students. While STEM fields are the most obvious place for this kind of collaboration, colleges with teacher preparation programs might find education schools to be another ground for collaboration.

Finally, there are possibilities beyond your own institution. Project NExT inducts up to one hundred fellows

each year into a cohort who share teaching experiences and materials and form a lifelong community. Those who run math circles sometimes team up with others in their area who do the same. Transforming Post-Secondary Education in Mathematics (TPSE) organizes for change across all levels of higher education. The Electronic Seminar on Math Education is free and easy to join. If you do so, you will find yourself in a virtual room with many of the same people week to week, among which are a number of the most vibrant and energetic mathematics educators at the postsecondary level.

Conclusion

Formal training for college teachers is thin to nonexistent. Much can be learned on the job. Self-organized teaching communities can go a long way, and are sometimes the only way, to ensure one's development as a teacher. Classroom technique, in particular, is difficult to learn from books or workshops. It benefits incredibly from interpersonal observation and discussion. Similarly, problem posing, lesson planning, exam setting, and relating to students are all skills that benefit from talking to others and observing firsthand how they do things.

In the likely event that no one organizes a teaching community for you, it is not hard to do it yourself. Planning it around specific communal goals, such as course development, peer critiques, coteaching, or active learning pedagogy, keeps a community from petering out while also accomplishing vital objectives.

References

- [1] National Council of Teachers of Mathematics (NCTM), *Principles to actions*, Reston, VA, 2014.
- [2] J. Stigler, *The teaching gap*, Free Press, New York, 1999.



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Author photo is courtesy of Diana Mutz.

²Actually some of them are or were mathematicians.