

Could the mathematics teaching community become as successful as the mathematics research community?

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MSRI The Mathematical Education of Teachers

The Common Core era

As our colleague from Sweden pointed out yesterday, we need more than common standards and common assessments to make real improvements.

An essential ingredient that is still missing:

A vigorous math teaching community in which we all spur each other on to do better and better work by competing for each other's admiration through the sharing of ideas and community judgment of quality.

Math research versus teaching

Why is math research so vigorous and strong,
yet math teaching is not?

What makes math research so vibrant and productive?

What makes math research so strong?

- 1 math researchers discuss their work in depth and build on each other's work;
- 2 quality is judged from *within* the community by peer recognition and admiration;
- 3 the math research community is a meritocracy;
- 4 time to think!
- 5 entry into the community requires a high level of education and accomplishment.

Internal motivation is fostered by environments that fulfill the basic human needs for

- autonomy
- competence
- relatedness

as opposed to environments that are externally controlling.

Development of expertise requires *deliberate practice*.

- 1 is largely an isolated activity,
we lack deep discussions about our practices,
we lack opportunities to learn from each other;
- 2 quality is usually not evaluated from within the community;
- 3 who are the leaders in math teaching?
- 4 no time!
- 5 the preparation of teachers is often weak.

The current math teaching environment

- does not foster autonomy, competence, relatedness;
- is often externally controlling;
- doesn't promote deliberate practice towards expertise

Why look to math research?

Why should we look to math research for ways to improve math teaching in addition to looking to other trades and professions?

Goals and quality in math research and math teaching:

- The actual goals are much bigger and more lofty than can be assessed by tests or counts
- Quality is only partially determined by tests and counts
judgment of quality from within the community is essential

Goals and quality in plumbing and medicine:

- The actual goals *are* readily assessed (unclogging a drain, curing a disease)
- Quality is determined by achieving the readily assessed desired outcomes

A way forward?

All of us who teach math:

- Let's take collective responsibility for math teaching at all levels; In particular, let's demand high standards for entry into the community
- Let's develop a practice of sharing ideas and competing for each other's admiration through the sharing of ideas;
- Let's negotiate and promote excellence in math teaching from within our community;
- Let's form consensus where we can, but let's disagree respectfully;
- Let's not let assessments drive teaching — lofty visions should guide us!

Let's join together to make math teaching strong!