

PCMI 2008: Designing and Delivering Professional Development (DDPD)
Notes – Friday, July 18, 2008, 4:30–5:30 PM

A quick slide through some ideas and problems we didn't get to – PowerPoint will be posted:

A different kind of problem – the skin graft
Assessing with performance assessment, modeling problems; Vermont's sample rubric
Making assumptions as a step in modeling problems
Using newspaper articles and Googling as resources
Bluebeard's Treasure problem – related to the geometry problems we worked with this week
The wandering student – where does the student wind up after iterating the process?
How many vertices of an n -gon can be collinear?
How many diagonals of a polygon?
Maximum and minimum perimeter (from Student Math Notes)
The Eiffel Tower (ratio, scale, & proportion) Also, "Are you full of hot air?"
Light beams reflecting inside the equilateral-triangle kaleidoscope
Quilting applications – what geometry is involved?
Lots of references

Today President Kepner addressed us at 11 AM, and worked in interest groups at 1 PM
Please fill out the DDPD-specific evaluation form as well as the general PCMI evaluation

Brief summary of the Seattle PD³:

- Long-time involvement with PCMI
- Initial thought was to do workshops
- Jim King (mathematics) worked with Lani Horn (education)
- District assigned them three high schools
- Ended up doing not what was envisioned, but what was needed – large achievement gap in some schools (visible when performance data was disaggregated)
- Driven by teachers' goals – focus on ninth-grade success
- Groupwork: Lots of training in Complex Instruction (Cohen/Boaler at Stanford): status (see *Connecting Mathematical Ideas: Middle School Video Cases to Support Teaching and Learning*, Jo Boaler and Cathy Humphreys: <http://www.amazon.com/Connecting-Mathematical-Ideas-Teaching-Learning/dp/0325006709/>)
- Focus on pedagogy; serious, long-term work with lots of followup
- Also, teachers decided that they wanted to use new textbooks – chose IMP; provided PD around that curriculum
- Lots of training in spring and summer (planning retreats), including Teachers Development Group (CI)
- Lani figured out a way to fund an extra teacher to have a common planning period (teachers planning in teams); connected with grant to move math methods course into school
- Next year, more teachers were interested, enabling expansion to two courses, and to a second school
- Also, early (before these other plans had coalesced) started up the Video Club.
- Details: meets monthly; graduate assistants handle permissions/human subjects work; select 5–10 minutes of video around students' work on mathematics, then view and

discuss: “What did students understand? What’s the evidence? What problems did they face?” Not about “Was this a good lesson?”

- Protocol: Meet at 5 PM with food: chat, do math, discuss math (“What kinds of mathematics do you need to know to help you do this problem? What do you anticipate will be problematic or difficult for students doing this problem?”), teacher who’s in the video sets it up, watch video, teacher answers group’s questions, then more general discussion – always focused on evidence (“What do you actually see?”) and on students. Though questions are about students, the impact is all on their teaching.
- Started by using external videos until protocols and norms and “safe environment” established
- So focuses were groupwork, curriculum, ongoing training, and video club
- Lots of people overlap between NWMI (PDO) and PD³, but no official connection; would much rather have PD³ teachers come to PCMI, and an additional week for more intense and focused PD (as described), so that may have been enough. PD³ teachers do present at NWMI (week-long summer program) and other PDO gatherings.
- Did it make a difference (impact)? Focusing on one school: Number of at-risk students passing WASL has doubled; number of students entering below grade level passing ninth-grade math went from 20% to 60%. All students taking the real class (1), not the “pre-class” (0.5).
- Math department has emerged as the leading teaching department at the school, which is not always the case.
- Lots of both PD³ teachers (Seattle) and PDO (elsewhere in Washington) are at PCMI.
- Lots of support from Seattle Public Schools; tried to use this as a model for working with other schools.
- A school with some prestige, but inner-city, has gotten a lot smarter about hiring – principal has made it possible to do hiring earlier (in spring, not in August), and has had a large increase in the number of applicants. Indicates that there are teachers who are interested in working in urban schools if they feel like they could make a difference. (SPS does not allow more experienced teachers to “bump” less senior teachers.)

Gail’s comments: This is a place where success is happening. SPS thought about dispersing Garfield’s teachers to many different schools; but this was achieved by carefully nurturing a community and it’s still fragile, not stable yet. This says something about how districts look at reform.

The graduate students helping were education graduation students. Would like to have had math graduate students, but hasn’t worked out yet. Have had math graduate students working in other educational contexts (including elementary schools); should be someone whose credentials and emphases make sense. Arguably, a math graduate student could bring interesting and different perspective to the program (but not a random person). Math graduate students generally get a lot of support so they’re not clamoring to participate.

Gail: Mathematics departments do teach a lot of prospective teachers, so it’s not unreasonable.
Jim: Look at both – will this benefit the graduate student, and will this benefit the program?

Any comments from your 1 PM sessions? Observations worth sharing across groups?

Math on Demand concept: Teachers can share curriculum with mathematician, ask questions, have discussions. (Why are these ideas important? Etc.) Teachers would like this – in a non-threatening environment, be able to look at why ideas are important. (Key: ensure that the experience is not intimidating.) View as resource for teachers; doesn't require a lot of people to be assembled at once. Do have to be careful about who you pick (PDO folks are a good bet).

Gail: Successful PD was designed around a deliberate goal – deliberate, ongoing program. For example, Henry's looking at student work; Jim's video club; etc. Aimless PD that continues to shift and change is almost guaranteed to fail to get teachers to re-assess what they're doing, but a more coherent, sustained approach will be more likely to cumulate and get you somewhere; it's also probably easier to measure. Have a design: where did we start, where do we want to end, and how can we get there?

Johnny: Tell everyone what your first step will be on PD this fall.

- Lay out a plan or make a goal (e.g., planning retreat for teachers in August)
- (College) Speak to the principal at one local HS where teachers are known – try to get common planning periods in place, advocate for teachers [Jim: Time is important, but they also need a focus, or they will find other (worthwhile) things to do with that time] Depends on getting math education (methods teacher) involved
- Set dates for more meetings or define a calendar
- Meet with new K-12 math manager in SPS; encourage involvement with efforts
- Go through programs and figure out what to bring to middle school teachers
- Talk to principals and do a needs analysis
- Meet with teachers who attended state and national conferences to define what PD they will lead
- Find ways to sustain the PD that's going now
- Work on a website that has descriptions of ongoing programs
- Recruit graduate students to help analyze data on local schools; then use this data to answer the question of “now what?” (now where do we go with PD)
- Plan foundations for new teachers
- Gail: Write a framework for designing PD programs, both as a model for design, and for assessment or reflection
- NCTM's aim for PD this coming year: Equity