BEYOND THE ACHIEVEMENT GAP: HELPING YOUR STUDENTS PLAY/CHANGE THE GAME

Rochelle Gutiérrez
University of Illinois at Urbana-Champaign

EFFECTIVE MATH DEPARTMENTS SERVING AFRICAN AMERICAN AND LATIN@ YOUTH

- Successful Outcomes
  - Scored better than expected on standardized tests
  - Took more than required number of math courses
  - 81 students in calculus classes
  - Calculus students representative of student population
  - English learners some of higher achieving students
WHAT WORKED?

- Rigorous & common curriculum
- Commitment to collective enterprise (e.g., rotation of courses)
- Commitment to students (e.g., accessible)
- Innovative instructional strategies (e.g., technology, relevance, etc.)

- Facilitated by teacher community
“I think, many many teachers get overwhelmed by the demands of the job and feel punched around by the bureaucracy or the principal or other teachers. It's complicated so it's really hard as an individual to kind of maintain a stance of believing in kids and, and constantly thinking of new and creative ways to move them forward. And... I think having other teachers, particularly other math teachers [in the department] that have a similar stance and similar ideas, I think that we help each other continue to be creative and idealistic and non-alienated.” [EH01, 6, 7]
“And, I think we got a more **concrete** sense of what **high** expectations meant. Maybe as much as anything else, we got empowered as teachers. We came to believe, maybe in similar ways I came to believe as a student and union activist, that **we could really change** what our **schools** were doing.”
“I mean, **besides the academic benefits** of possible college credit, the grades, I think they get, there's somewhat of an **esprit de corps** like "we are the smart kids, we are the cool kids, we are the, kids who went together over the summer, we've been through something together," that I think is valuable...I also think that Union as an integrated school has this effect...kids from different cultures working together...there's a kind of nice spirit of people working together at a high level seeing each other as achievers, as smart, you know, **the smart kids are not of one race.**” (JS004, 4)
“I mean I think there’s a million things we can do to like educate, organize, the vision, I mean I think we more than anything provide a vision for kids... having them believe in themselves, having them believe in themselves as a group, having them be able to do math as a group, having them believe they can go to college as a group, individually and as a group...Um, and then at a whole 'nother level, it's like a political level...my way of teaching tries to organize them to be actors rather than acted upon...” [EH001, 5, 7]
That’s part of what drives my teaching because I got sick of the racists I used to work with in the wood working shops. I mean, some really nice guys. But, their image of inner city kids is like, every stereotype you can imagine. You know, and partly I’m teaching cause I want to say “In your face!” you know, it’s like, these kids are just as good as the New Trier [prestigious school] kids. (BL005, 14)
Some Lessons Learned from Effective Math Departments

- Doing more than just getting kids to take higher levels of math
- Not all T’s on board, but critical mass important (whole > sum of its parts)
- Constantly struggling to reach more students (representative)
- Definitely about identity and power, but subtle
Calculus students normalized their presence, yet used it to their advantage ("calculus card")
Teachers saw themselves as writing a counter-narrative in society
Reclaimed their profession by deciding **themselves** what was considered successful
PREVAILING BELIEFS ABOUT IMPROVING TEACHING AND TEACHER EDUCATION

(Ball & Bass, 2003; Ball, Thames, & Phelps, 2008; Hill, Rowan, & Ball, 2005; Hill et.al, 2007; Leonard, 2007; Civil, 2007)

- **Mathematical knowledge for teaching (MKT)**
  - Common content knowledge versus specialized for teaching
  - Requires more than accurate execution of procedures (e.g., analyzing student errors)
  - Expanded PCK

- **Knowledge of students**
  - Horizon content knowledge
  - Funds of knowledge (building on students’ culture)
WHAT’S MISSING IN THESE MODELS?

- Deep connection with students, families, and communities
- Math as dynamic, human practice
- Acknowledgment that “achievement gap” is a social construction, connected to racism
- Equity > access to rigorous curriculum
- Recognition that teaching is a negotiated practice (with students, families, administration, colleagues)
Dimensions of Learning
(Gutiérrez, 2007; 2008b; 2009)

- Access
- Identity
- Power
- Achievement

Play the game/Change the game
SUMMARY OF DIMENSIONS OF LEARNING

- Access = human and material resources
- Achievement = student outcomes
- Identity = affirming and expanding oneself
- Power = voice in school; agency in society
Parents are invited to the school to learn how to support their student with the new Interactive Mathematics Program (IMP) curriculum that was adopted.
Students practice problems like the ones that will appear on standardized tests. Later that year, their school makes AYP (Academic Yearly Progress) under NCLB.
Mr. Taylor's students learn how to use geometry to solve a problem about the school's redistricting policy that threatens to bus families to other schools. They present their "better" solution to the school board.

Power(+)

HOW WOULD YOU CLASSIFY IT?
Homework assignments are of the form: Here's a problem; now do 30 just like it.

Access (-)
Identity (-)
Knowledge for Mathematics Teaching

- Mathematical Knowledge
- Pedagogical Knowledge
- Knowledge “with” Students/Communities
- Political Knowledge
- Histories in Society
- Community Membership
Professional development around PCK not enough (Gutiérrez, 2004)

We need to prepare teachers with the knowledge to *change the game*

Reclaim the profession through *creative insubordination*
MODEL OF TEACHER DEVELOPMENT

- Partnership with Nationally Board Certified high school math teacher
- *Play the Game/Change the Game* Framework (identifying tensions)
- Language and Teaching Moves for Reclaiming the Profession through Creative Insubordination
WHAT IS MATHEMATICS?

What is a **quick definition** you use for yourself when you think about what mathematics is? (How do you know you are **doing** mathematics?)
SCENARIO: You’ve spent most of the year having your students do challenging mathematical problems, often times in small groups. They are used to making conjectures in their math journals and explaining their work to the whole class.

In April, you’re handed the “district final exam” where the problems are all strictly procedures.

Do you give the exam? (YES/NO)
SCENARIO: Student teacher working in a school with a 30% Latino student population. She is teaching calculus.

“At the school where I am working, there is only 1 Puerto Rican student in the calculus course and I’m concerned about that.”

What would you tell your pre-service teacher about how to play the game and change the game to address her concern?
FORMS OF CREATIVE INSUBORDINATION

- Seek Allies
- Initiate Professional Dialogue
- Counter with Evidence
- Connect with Students
What are the implications of this form of teacher education?

- Focus on political knowledge, tensions in equity stance better reflect reality (not easy, no silver bullet, dynamic)
- Reclaiming the profession is an explicit stance, not set of skills
- Prepares teachers for strategic risk-taking (creative insubordination) to engage and transform mathematics teaching and learning
- May help with teacher retention
WHEN AND HOW SHOULD TEACHERS EMPLOY CREATIVE INSUBORDINATION?

- Are there times in teachers’ careers when particular moves are more or less effective?
- Do certain math topics or student populations require particular moves?
- Does the identity of the teacher influence how they reclaim the profession?