Math Teachers: What Influences Their Teaching Methods?

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Senior Research Project
Educational Studies, Trinity College,
December 2009
Background

- Urban classroom techniques
- Teacher-student interactions
Significance

- Why Math?
- Effective learning strategies
- Role in teacher hiring process
What types of teaching methods do teachers use to engage students in Math departments in an urban middle school?
What are the influential factors that play a role in the methods that Math teachers use inside the classroom?
Diverse teaching methods
- direct instruction
- verbal interactions
- hands on activities.

Teacher qualities
- types of experience
- Training
- Personality
- Major

Initial teaching skills
Previous Research

- Problems with Math teachers
- Qualitative learning outcomes
  - appropriate representational systems
  - Use cognitively challenging tasks
  - ensure active involvement of the students
- Midrange years of teaching experience
- Teachers’ personality
- Teachers’ college majors
Teacher Classification

- Determined what is an “engaging teacher”
- Interviewed and observed 4 teachers
- Found teachers through random selection
- Signed Consent Forms
- Participants’ Names Confidentiality
Research Findings

- Engaging Teachers
  - Verbal Instruction
  - High student participation
  - Innovative Methods
  - Good student/teacher relationship
## Engaging Teachers

<table>
<thead>
<tr>
<th>Rank of Engaging Teachers</th>
<th>Teaching Methods</th>
<th>Reasons Why Teachers Are Engaging</th>
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<tbody>
<tr>
<td>Ms. Bush is the most engaging teacher</td>
<td>&quot;try as much as you can to make the math problems real to the kids' life in some way. If you're teaching fractions, you know cut up a pizza, don’t just cut up a rectangle on the board.&quot;</td>
<td>1. Students respect Mr. Bush. 2. A lot of student participation. 3. Students are actively asking questions. 4. Fast pace lesson and lot of good content.</td>
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<td>Ms. Top is the second most engaging teacher.</td>
<td>&quot;I am a big believer in lots of quizzes, they are always small points, most of the kids are going to say it's a fair system and they will respond well to it.&quot;</td>
<td>1.. Students are constantly asking questions and actively listening. 2. Uses a lot of worksheets as she lectures. 3. Lots of diagrams.</td>
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<td>Ms. Smiley is the third engaging teacher.</td>
<td>Engage her students with limited direct instruction with combination of verbal discussion between the teacher and the kids. Constant use of games.</td>
<td>1. Students somewhat participate. 2. Struggle with classroom management. 3. Uses mints as incentives. 4. A lot of games.</td>
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<td>Ms. Reese is the fourth engaging teacher</td>
<td>Direct instruction with verbal interaction but at a very slow pace, due to poor class management skills.</td>
<td>1. Only 3-4 students are listening and participating. 2. Students are constantly walking around having conversations. 3. Worksheets are usually incomplete.</td>
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## Influential Factors

<table>
<thead>
<tr>
<th>Teachers</th>
<th>Teaching Experience</th>
<th>Training</th>
<th>Personality</th>
<th>Majors</th>
<th>Personal Motivation</th>
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<tbody>
<tr>
<td>Ms. Bush</td>
<td>26 years at 3 school</td>
<td>Master program at an University after college. &quot;By the end of the first week, I just started teaching.&quot;</td>
<td>&quot;I am absolutely intimidating and it can be useful if I need to quiet them down. I am also a jokester.&quot;</td>
<td>Economics and History</td>
<td>&quot;I pursued teaching math because I needed a job.&quot;</td>
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<tr>
<td>Ms. Top</td>
<td>30 years at 4 schools</td>
<td>Formal education training right after college at University.</td>
<td>&quot;I think I am strict, although I also think I am not as strict as some people I know. I am too soft.&quot;</td>
<td>History Major and Math minor</td>
<td>&quot;Math is so important. It comes up everywhere in their life later on and I found it easier to convince students how important the subject I was teaching in.&quot;</td>
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<tr>
<td>Ms. Smiley</td>
<td>1st year</td>
<td>Worked as an engineer for many years. Went back to school last year to get teaching certificate.</td>
<td>&quot;I like to overplan every day because &quot;you have to keep them busy, because if you don't, they will keep you busy.&quot;</td>
<td>Engineering</td>
<td>&quot;I am not a traditional teacher. I don't believe that it is the best way to learn math and I knew I wanted to do it differently when I have the chance.&quot;</td>
</tr>
<tr>
<td>Ms. Reese</td>
<td>19 years at 2 schools, tutoring programs</td>
<td>formal education training after college but started working in tutoring centers first.</td>
<td>&quot;I think I am too soft and nice.&quot;</td>
<td>Math Major</td>
<td>&quot;I like Math since I was young and thought I was good at explaining it to people, so I pursued teaching.&quot;</td>
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</tbody>
</table>
There’s not one type of pedagogical technique that produces an engaging teacher. Teachers are shaped by various experiences, training, and personality. The important aspect is that teachers need to initially have a strong background in teaching in order for these factors to really matter.