

CHANGING THE RULES TO INCREASE DISCOURSE

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### Paradigm

Students are silent for much of the school day. (Jackson, 1990)

Students receive messages about mathematics through school experience. (Lampert, 1990)

Teachers rely heavily on lecture, seatwork, etc. (Rowan, Harrison, & Hayes, 2004)

Teachers and students enact limited roles during mathematics. (Stigler & Hiebert, 2009)

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### Traditional Norms

- **Traditional Social Norms**
  - Students follow steps of teacher
  - Students raise hands
  - Students listen (or not)
- **Sociomathematical Norms**
  - Procedural focus
  - Errors should be avoided
  - Students recipients of information

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National Council of Teachers of Mathematics

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**Principles to Action: Provides recommendations for effective mathematics teaching practices.**

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NCTM Recommendations (2014)

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**Mathematical Discourse**  
“Effective teaching of mathematics facilitates discourse among students to build shared understanding of mathematical ideas by analyzing and comparing student approaches and arguments.”

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**Research**

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“The more complex the action demanded by the situation and the less direct its solution, the greater the importance played by speech in the operation as a whole.”  
(Vygotsky & Luria, 1930, p.109)

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**Establishing New Norms**

- **Sociomathematical Norms**
  - Student thinking is highlighted
  - Students analyze strategies for difference, efficiency, and sophistication
  - Errors provide opportunities for growth
  - Conceptual focus

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**Establishing New Norms**

- **Social Norms**
  - Students address one another by name
  - Students speak one at a time
  - Students listen to each other
    - Speak clearly and loudly
    - Ask for clarification when needed
    - Restate what was shared
  - Respond with agreement/disagreement
    - Provide reasons

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**Reaction to Changing Discourse Norms**

<ul style="list-style-type: none"> <li>• <b>Teacher</b> <ul style="list-style-type: none"> <li>○ Awareness of student misconceptions</li> <li>○ Appreciation of ownership in conversations</li> <li>○ Recognition of effectiveness of open discourse</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• <b>Students</b> <ul style="list-style-type: none"> <li>○ Enjoyed being able to help one another</li> <li>○ Viewed errors as opportunity not embarrassment</li> <li>○ Viewed their role as participatory</li> </ul> </li> </ul>
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**Increasing Discourse**

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STEPS TOWARD CHANGE

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Step 1

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**Teach expectations**

- Teach and model example and non-example behaviors.
- Discuss friendly disagreement.
- Revisit new expectations regularly.

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Step 2

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**Engage students in problem solving**

- Utilize challenging tasks.
- Highlight process rather than just product.

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Step 3

Provide individual or paired work time

- Allow productive struggle.
- Provide time for journaling.
- Circulate to determine thinking.

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Step 4

Have students share their thinking

- State expectations for listening and responding to others.
- Encourage students to show “thumbs up or down” or to speak to one another.

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Step 5

Celebrate successes

- Highlight when students remember to speak to one another.
- Expect setbacks.
- Praise students for their efforts.

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### Making Changes

- State Expectations for Norms.
- Highlight Task Selection and Implementation.
- Focus on Student Work and Strategies.
- Provide Opportunities for Critical Analysis.

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### TCM September 2013



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### Questions?

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