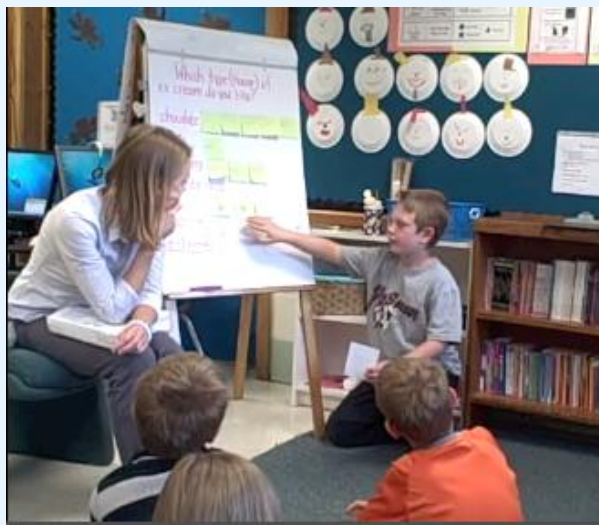


Mathematical Discourse

Talking Like a Mathematician



Presented by, Karen Moylan

Mathematics Consultant, Mansfield, Connecticut

and

Madelyn Williams

Goodwin Elementary School, Mansfield, Connecticut

Speaking & Listening Standards

Comprehension and Collaboration

1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.
3. Evaluate a speaker's point of view, reasoning, and use of evidence and rhetoric.

Speaking & Listening Standards

Presentation of Knowledge and Ideas

4. Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.

5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

6. Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.

Classroom Discussions

You have the right to ask questions.

You have the right to make a contribution to an attentive, responsive audience.

You have the right to be treated respectfully.

You have the right to have your ideas discussed, not you.



Rights

You are obligated to speak loudly enough for others to hear.

You are obligated to listen to others in order to understand.

You are obligated to agree or disagree with the speaker's comments and explain why.

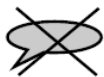


Obligations

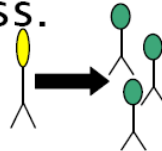
Speaker Listener Roles

As **Speakers** we will:

1. Talk loudly.



2. Turn to the class.



3. Share and explain our ideas.



4. Agree and disagree with ideas, not each other.



As **Listeners** we will:

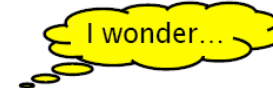
1. Ask speakers to speak up.



2. Show speakers we are listening.

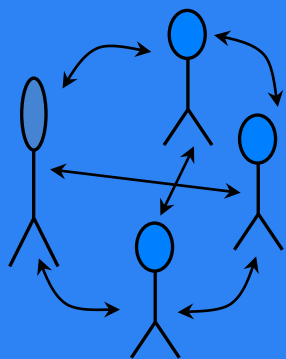


3. Ask questions to understand an idea.

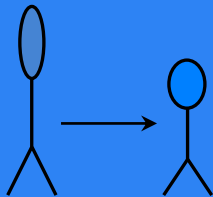


Students Talking as Mathematicians

Towards this...



...rather than this.



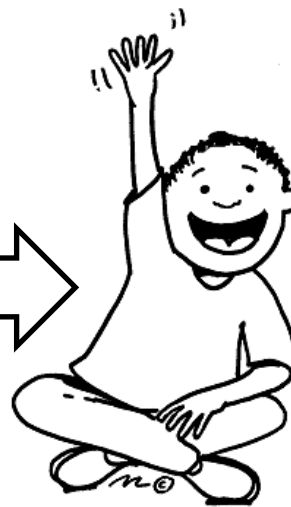
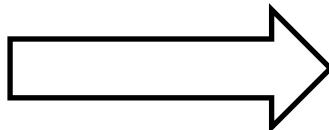
1. Re-voice
2. Repeat/rephrase
3. Agree/disagree and why
4. Add on
5. Think time

Re-voice

- ▣ **Can you repeat what you said?**

Repeat/Rephrase

- ❑ Can you repeat what _____ said?
- ❑ Can you repeat in your own words what _____ said?

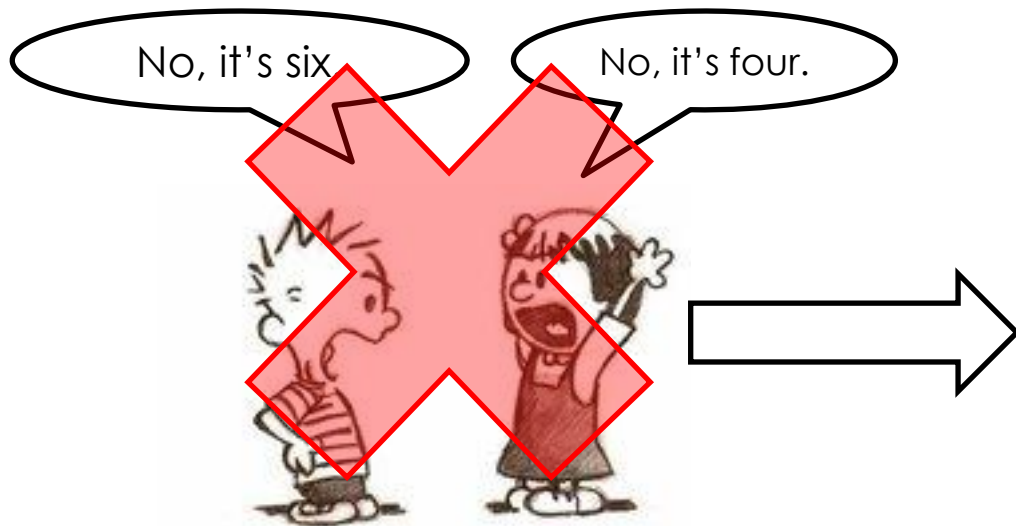


Repeat/Rephrase



Agree/Disagree and Why

- Do you agree or disagree with their idea? Why?

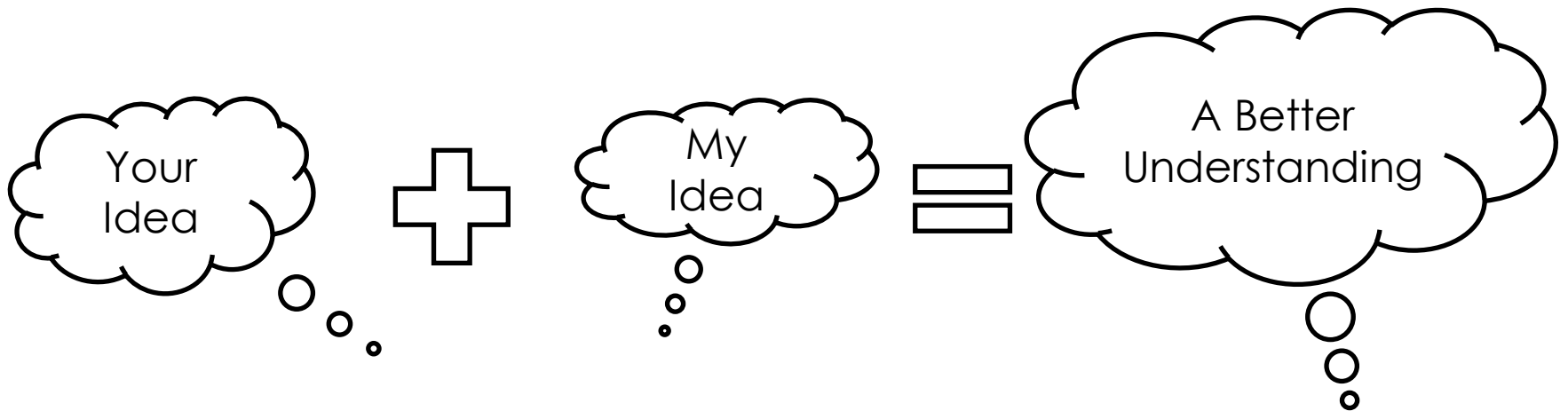


Agree/Disagree and Why

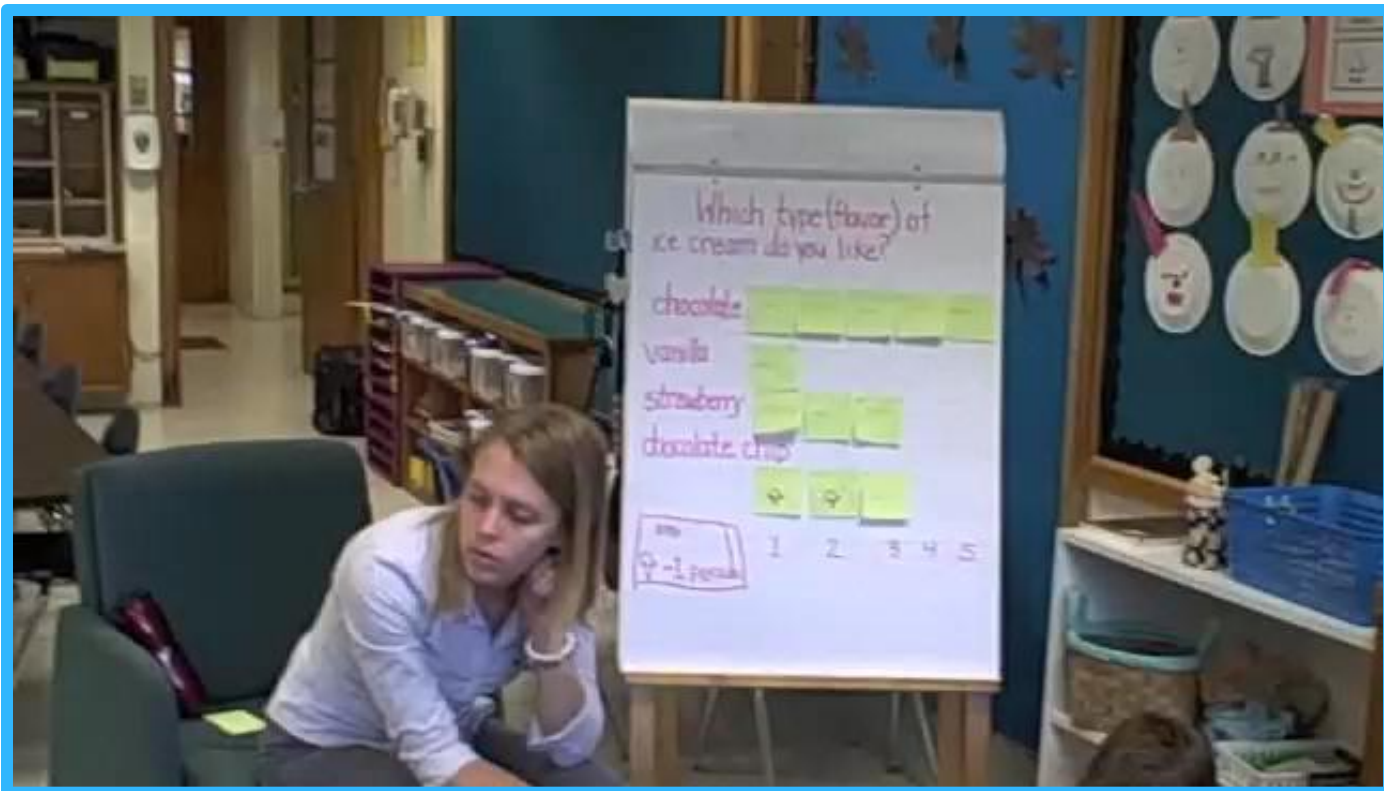


Add On

- ▣ Can someone add on to this idea?
- ▣ Can someone help to explain this idea more?



Add On



Think Time

- “I am going to give you a few minutes of think time. While you are thinking, I would like you to think about”



Think Time



Acknowledgements

- ▣ Project M^2 and M^3 - NSF Grant No. 0733189 and developed at the University of Connecticut
- ▣ M. Katherine Gavin, Tutita Casa, Suzanne Chapin, and Linda J. Sheffield – authors of M^2
- ▣ Grade 3, Goodwin School