

Matsuzawa School's Research Theme

For their school-wide focus on mathematics, teachers at Matsuzawa Elementary School, in Tokyo chose the research theme:

Mathematics teaching that supports students to explain their ideas to each other and
learning from each other

–Learning through problem-solving–


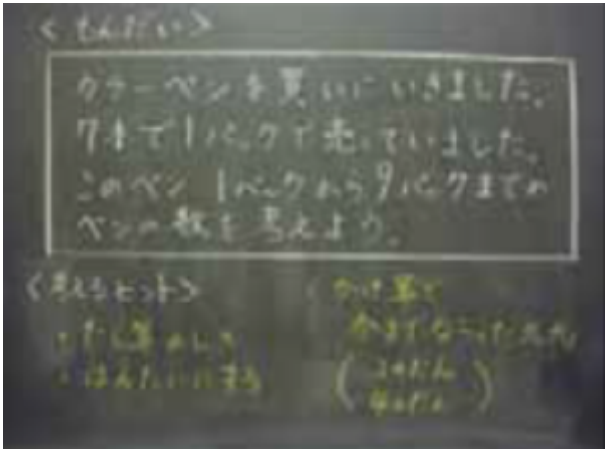
Over the two years of their school-wide effort, Matsuzawa teachers worked on five strategies to nurture student explanations and understanding:

1. Creating examples of effective questions for each phase of a problem-solving lesson (“back pocket” questions to support teachers in their daily instruction).
2. Studying curriculum materials to identify unit and lesson goals and understand how to design the “present-compare-discuss” phase of the lesson to achieve those lesson and unit goals
3. Creating a Lesson Plan Essence to capture key features of a problem-solving lesson.
4. Setting up protected arithmetic time, for students to build technical skills
5. Improving board writing and students’ journals.




During research lessons, teachers examined the progress and impact of these strategies, by looking at students’ actions, speech, and journals. Research lesson observers used the framework below developed by the school in order to grasp students’ progress in explaining and understanding ideas.



**Framework for Observation of Mathematics Problem-Solving Lessons,
Matsuzawa School**

<p><i>Phase of Lesson</i> <i>Student Activity</i></p>	<p align="center">Picture of Activity</p>	<p align="center">Desirable Student Behavior</p>
<p><i>Grasp the Problem</i> Tries to capture the problem situation mathematically</p>		<ul style="list-style-type: none"> • Understands the problem
<p><i>Develop Insights</i> Has own ideas & insights</p>		<ul style="list-style-type: none"> • Looks for what's different from prior learning • Recalls related knowledge • Has insights about solution process • Has insights about answer



<p><i>Independent Problem-solving</i> Expresses own thinking</p>		<ul style="list-style-type: none"> • Uses prior learning to attempt to solve • Expresses own ideas in a way everyone can understand • Looks for better ways of thinking—faster, more precise, etc.
<p><i>Present Student Work</i> Explains own ideas</p>		<ul style="list-style-type: none"> • Tries to explain own ideas in a way everyone can understand • Speaks at board with face and body toward class • Explains using equations and diagrams Ex: 'First...' 'This is because...'
<p><i>Understands others' ideas</i></p>		<ul style="list-style-type: none"> • Listens to try to understand classmates' presentations (e.g., shown by nodding)



Compare-Discuss
Brings together ideas to come up with a better idea



- Looks for similarities and differences among ideas
- Thinks about benefits of mathematical ways of thinking
- Integrates ideas or builds on ideas

Lesson Summary
Looks back at their own learning



- Writes down what they learned today
- Records lesson in journal
Ex.: Today I understood A because B

