

PLT Title

"Wait, what?" EnVISIONing Word Problems

Blurb for PLT Conference Brochure

Do you have students in your classroom who struggle to understand the language of math word problems? Our PLT has created lessons to address the power of visualization, the implementation of mathematical models, and the use of graphic organizers to deconstruct challenging word problems. We have also created lessons targeting the use of sentence starters and transition words to assist students in explaining their mathematical thinking.

Contact Information (Write * next to facilitator's name.)

Name	School	Grade Level or Subject
Kathleen Calhoun	Winn Brook	Third Grade
Jessica DeFrances	District	Elementary Math Curriculum Director
Ellen Donahue	Winn Brook	Speech and Language Pathologist
Bob McCorkle	Winn Brook	Third Grade
Hester Murray	Winn Brook	LA specialist; Special Education Resource Teacher
*Danielle Pandolfo	Winn Brook	Third Grade

PLT SMART Goal

By the end of the school year, we will increase student understanding and performance in mathematical problem solving with a focus on a subset of students with language comprehension, visual perceptual, and conceptual weaknesses.

Key Actions

- 1.) We pre-assessed students in our two targeted mathematical practice areas using the original Common Core questions in the third grade Envisions textbook.
- 2.) After we assessed students, we met as team and developed a scoring rubric. We also decided to further narrow and address the targeted practice standards to "Critiquing the Reasoning of Others" and "Writing to Explain".
- 3.) We created and explicitly taught mini-lessons on the following underlying skills necessary for success in the targeted practice standards: visualizing, modeling, utilizing graphic organizers, and implementing sentence starters and transitions words.
- 4.) We created and administered a post-test to assess student progress in the targeted practice areas.
- 5.) We administered the post-test and analyzed the results as a team.

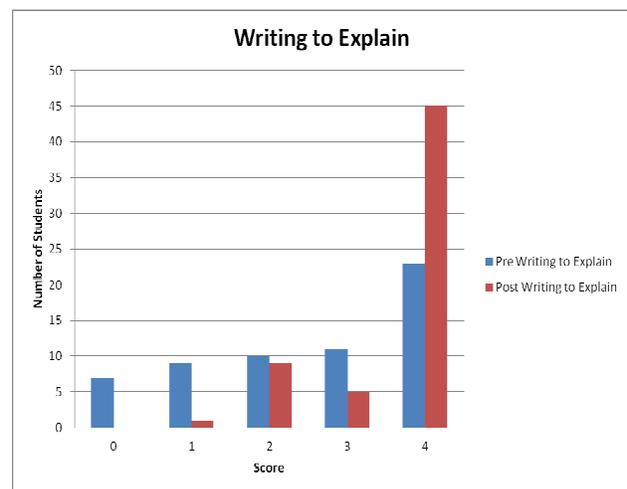
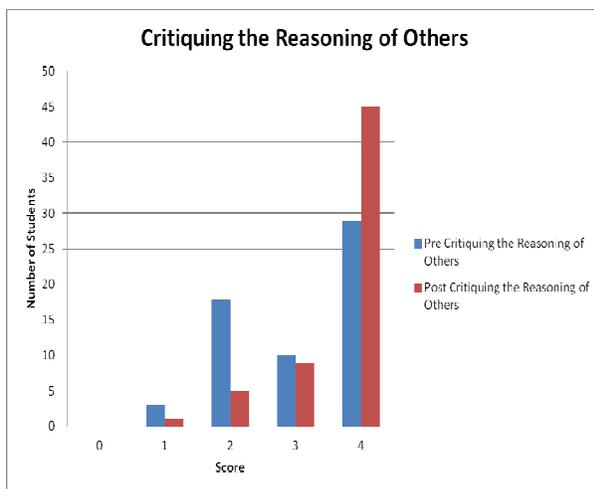
Findings

Pre-Assessment Findings:

- “Writing to Explain” was the most challenging area of the two.
- We found that students may have understood the concept, but had difficulty expressing their thinking using mathematical language.
- Students could not support their answers with clear, sufficient explanations. For example, some students omitted the steps that they took to solve the problem, while others failed to provide an organized sequence of their problem-solving steps.
- In examining our 7 identified students who receive support and services, we found that they needed alternative strategies for demonstrating their knowledge.

Post-Assessment Findings:

- Greatest gains were made in “Writing to Explain.”
- Problem-solving strategies such as drawing a picture and using a model were evident in the students’ work.
- Students incorporated the use of sentence starters and transition words to organize their written explanations.



Scores of 7 identified students who receive support and services:

	Pre-Assessment	Post-Assessment	Pre-Assessment	Post-Assessment
	“Critiquing the Reasoning of Others”	“Critiquing the Reasoning of Others”	“Writing to Explain”	“Writing to Explain”
Student #1	2	3	1	2
Student #2	3	4	3	2
Student #3	3	4	1	2
Student #4	2	3	1	4
Student #5	2	4	1	2
Student #6	3	3	2	1
Student #7	2	4	0	2

- 5 of the 7 identified students improved in both “Critiquing the Reasoning of Others” and “Writing to Explain”.
- All but 1 identified student improved in “Critiquing the Reasoning of Others”.
- Problem-solving strategies such as drawing a picture and using a model were evident in the students’ work.

Recommendations / Next Steps

- We recommend that the lessons we created be presented earlier in the school year and revisited often.
- The use of icons, throughout the school year, might aid students in remembering a repertoire of strategies that would be useful in solving a variety of math problems.
- We recommend explicitly teaching the strong connection between math and literacy.
- We recommend the use of a linear graphic organizer, particularly for those students who struggle with organization.
- When explicitly teaching problem-solving strategies, we recommend providing students with the answer ahead of time to help them focus more on the problem-solving process rather than the outcome; this helps emphasize the objective of the lesson.
- We recommend incorporating visualization in math daily.