Peanut Butter & Jelly Lesson --- Making a "Writing in Math" Rubric

Goal:

The goal of this activity is to show students how to write thorough, detailed descriptions so that they can apply this to writing about their thinking when solving math problems. Usually, when they write directions to make a PB&J sandwich, they leave out steps that they assume the other person knows. For example, they may say, put the peanut butter on, but they forget to say to use a knife, so when you do the demonstration, you get as crazy as you can, to demonstrate (in a funny way) what happens when you leave out the details or assume someone else knows what you mean!

This is a 3 lesson series. There's a lot of prep to do in between lesson #2 and #3.
Look at the Writing in Math Rubric and sample problem so that you know where you are headed.

Lesson #1: (This could take up to 45 minutes)
Supplies:
Bread -- enough bread for everyone to have ¼ of a sandwich (or whatever amount of a sandwich you want to give).
Jar of Peanut Butter
Jar of Jelly
Knife
Paper plates or napkins to serve the sandwiches on
Paper towel to clean up the mess
Plastic gloves
****Keep all of this hidden until you are ready to use it!*****

Students need paper and pencil

You can start the lesson by asking for examples of when they have had to follow directions. They may come up with, when playing a game, when driving somewhere, when at school, etc.

"Has everyone here had a peanut butter and jelly sandwich before?" (If they have, you are ready to go – if someone hasn't, have a student describe what one looks like.)

"I would like you to pretend that you have met someone who has never made a peanut butter and jelly sandwich before, and please write down the directions so that person would be able to make one. Make them as complete as you can."

That's all the directions you give – if they ask if they can draw pictures, they can, but basically just give them 10-15 minutes to work.

After most have finished, get out your supplies and ask if anyone would like to share their directions. Ask them to read them step by step, and you do whatever they say. (If they don't say to use a knife, don't. If they don't explicitly say to spread the PB or J on the flat side, spread it on the crust, put the sandwich together so the PB &J are on the outside, etc.)

After you've demonstrated a few that have things left out, discuss with the class what happened. Make sure that someone says that you can't assume things, and that you need to include ALL of the details. Go back to

some of the examples that they brought up in the beginning of class. For example, if someone needed directions to the restroom, and you just told them to go out the door and turn, they may not ever find it. If the directions to a game did not include all of the details, they may not be able to play.

Then ask them to re-write the directions, this time, making sure that they don't leave out any steps.

Let them re-work their papers and then make a few sandwiches following their directions to see if they did it correctly.

At the end, we make enough sandwiches (or portions) to give to everyone who would like one.

To prepare for the next day's lesson, choose a math problem that you know your students can solve, or one they have already solved. It should be something that lends itself to explaining how the students solved it. They should have to explain in words, pictures and numbers. (There is a sample 3rd grade problem, out of enVision that was re-typed with the directions for this activity.)

Lesson #2
Explaining Your Thinking in Writing
(This will only take part of the class period – and depends on how challenging the problem that you give them is.)

Supplies: A problem for the students to solve and explain their solution.

Have the students tell you what they remember as the point of yesterday's lesson. (You need to include all of the details when you write directions.)
Tell them that they are going to use what they learned yesterday to do a good job on today's assignment.

Hand out the math problem and explain that you know that they can solve this, so the point of today's lesson is not the actual solution, as much as the description of the solution.

Tell them to solve the problem and then explain HOW they solved it, step by step. Include all of the details, just like in the PB&J directions. They should not assume that you know what they are thinking, and they should try not to leave anything out.

Discuss WHY it is important to do this. (It helps them be organized when working a problem. It might help them be able to find a mistake later. It helps the teacher know what the students know so she can help them, etc.)

Give them enough time to finish their work, collect the papers and that's the end of today's lesson.

****** To prepare for tomorrow's lesson, you have to read all of your students' papers from today. Choose 3 examples that include all of the details (We will call them "WOW!". If you don't have 3, you will have to make them up. You can use parts of a student's paper and then just add in what is missing. Copy these with the student name taken off or rewrite them in "student" handwriting.**

Next, using your students' work as a starting point (but not exactly, because you don't want to use your students as an example of bad work….), write up 3 samples that are "Got it – but something is missing" – Work that has left out some things, has the answer wrong, is messy, etc. Re-write them as if a student wrote them.

Then make up 3 examples of work that "Needs Some Work". These papers should be missing, either the explanation in words, or numbers or pictures, the answer could be wrong or incomplete, etc. Use the rubric to know what this kind of work looks like. Again, write these up as if a student had written them.

Take the 9 papers that you have, mix them up and then give each paper a letter (A,B,C,D,E,F,G,H,I) (You don't want the 3 "WOW" papers to have consecutive letters.) Copy enough of each set of 9 papers so that each group of 4 students can have a set.

Make a set of 3 strips of tag board for each group of 4 kids. Each group should have a strip that says, "WOW!", one that says, "Got it but something is missing" and one that says "Needs more work"

Make sure that you have a cheat sheet so that you know which paper goes in which pile!!

Lesson #3: Creating the Rubric

Start the lesson by saying that you are going to spend today looking at student work. Put the students into partners or groups of 3 or 4, depending on how many students you have.

Tell them that they are going to look at a set of 9 papers and sort them into 3 piles. One pile will be papers that you think have done a really good job of explaining and using all of the details. Papers that would make a good peanut butter and jelly sandwich! We will call this the "WOW!" pile. The second pile will be papers that are pretty good, but something might be missing. This will be called the "Got it but something is missing" pile and the last pile will be papers that "Need more work."

Remind them that the group needs to work together. They are to all be looking at the same paper at the same time – they should read a paper (one person can read it aloud to the group), discuss which pile to put it in and why, put it there, and then go on to the next paper. Remember, only 1 paper at a time! They need to come to agreement for each paper before they go on to the next. Depending on your class, you may need to spend more time discussing how they might come to agreement if they don't agree.

Pass out the set of papers, the pile titles and let them work.

After they have all finished putting the papers in piles, make a chart on the board with 3 columns "Needs More Work" is column #1, "Got It But Something Is Missing" is column #2 and "Wow" is column #3.

Ask each group where they put paper 'A'. Record that and discuss it. Come to agreement (leading them to where you want it to go.)
Do this for all 9 papers.

Once that is done, ask students to discuss in their groups what the papers in the WOW pile have in common. Then, make a list of those things as a whole class. (You know what the rubric already looks like, so steer them toward those descriptors.) Do the same for the other 2 columns.

After you've got all of the descriptors on the board, ask them if they know what this is called (a rubric). Explain that a Rubric is used to know what is expected. If they want their paper to be a WOW paper, they can look at the WOW column on the rubric and make sure that their paper includes all of those things. Discuss how this might be helpful when learning how to explain your thinking in math.

Print off the rubric and you can make a poster of it to have in the classroom for students to refer to. I have also copied it onto 3X5 note cards so each student can tape one on their desk or inside their binder.

Putting the Rubric to Work
Now that your students know what the expectations are for a "Wow" paper, make sure to remind them, each time that they do writing in math, to check the rubric before they turn in their work. To practice, assign a problem and have the students score themselves, based on the rubric, and then give it to a partner to score.They should give evidence for why they gave the score that they did. Then, you can grade the papers according to the rubric. Anyone who doesn't get a '3' (WOW!) can use the rubric to figure out what is missing, revise it and turn it in again.