

Lesson Study Plans

Date: Friday October 10, 2008

Host: Jamie Gadley, Third Grade

Location: Eagle View Elementary School, Room 246
4500 Dixie Hill Road
Fairfax, VA 22030
(703) 322-3100

3-4 Team: Susan Clark, Tia Hawkins, Denise McGuiness, Josh Miles, Elizabeth Sampson, Cynthia Walker

Standards of Learning:

- 3.3 The student will compare two whole numbers between 0 and 9,999, using symbols ($>$, $<$, or $=$) and words (*greater than*, *less than*, or *equal to*).
- 3.7 The student will read and write decimals expressed as tenths and hundredths, using concrete materials and models.
- 3.24 The student will recognize and describe a variety of patterns formed using concrete objects, numbers, tables, and pictures, and extend the pattern, using the same or different forms (concrete objects, numbers, tables, and pictures).

Process Standards: Problem solving, Connection, Communication, Reasoning and Proof, and Representations

Goals: To provide a context through which students can use a variety of strategies to solve a problem. Students will apply their knowledge of amounts of money up to \$2.00 from second grade and up to \$5.00 from the first quarter of third grade in the problem-solving situation. Students will identify, represent, and extend a pattern. They should be able to explain their problem-solving approach and solution.

Materials/Resources:

Problem Worksheet

Piggy Bank Template

Coins

Grid paper

Table

Calendar

Chart Paper

Problem-Solving Strategy Labels

Student Laptops

Online Create a Graph

<http://nces.ed.gov/nceskids/createagraph/default.aspx?ID=ad4e9940a6cb44eba28506ee10794735>

Literature Connection:

Connection to Research at Eagle View: The staff at Eagle View has made a concerted effort to establish and use common language in mathematics discourse. Additionally, the problem solving model that is used is grounded in Polya's Four Step Process. Students must understand what is being asked, make a plan, carry it out, and check their work to ensure that their solution is reasonable. The range of mathematical ability and learning styles necessitates differentiated lessons.

Questions:

What are some similarities and differences among our strategies?
How can you describe your strategy in one sentence?

To elicit seeing a pattern—on the day after, follow up with asking whether they saw a pattern.
Why do you think this happened?

Hint questions for struggling students:

How will you organize your coins?
How will you keep track of how much money Alex has and Celia has?
What tool could you use to help you solve the problem?

Extension questions for early finishers:

At what day will Alex have \$.50 more than Celia?
At what day will Alex have \$5.00 more than Celia?
Graph the daily deposit of allowance and students will not only see the rate of change, but they will also see when Alex has more.

Possible Areas of Confusion for Students:

- Confusion of coin values (dime and nickel)
- Difficulty with adding across the next dollar
- Addition errors
- Misinterpretation/misunderstanding of problem situation
- Misinterpretation/misunderstanding of question
- Difficulty recording the amount in each piggy bank each week
- Difficulty keeping track of the weeks
- Not knowing when to stop filling out the chart (i.e. how many days needed to answer the question)
- Recording the amounts on the first day as the original amounts without the addition of the allowance
- Confusion with the day the piggy banks have equal amounts and the week Alex first has more than Celia
- Adding 5¢ as .5 instead of .05
- Adding 5¢ to Alex's piggy bank and 10¢ to Celia's instead of the reverse

Additional Thoughts:

- The wide variety of available tools may have been distracting for some students.
- The lesson could be tried without the actual calendar or without a specific date in the question or on the chart – just the number of days it would take for the two piggy banks to contain equal amounts or for the reversal of who had the most.
- Because some of the students recorded deposits only on weekdays, include an explicit statement that Alex and Celia are depositing money every day (not just on weekends).
- Students could be asked to make predictions about what occurred on a certain day.
- We had planned a few extension questions; however, they were not printed out for easy access by students. They were given to a student orally. We felt that it would be helpful to have these challenge questions printed on the student activity sheet or on separate sheets which students could easily pickup if they finished the basic lesson early.

Lesson

	Conceptual and Teaching Supports	Evidence of Learning/ Points of Evaluation				
<i>Link: Introduction Introduce the problem scenario.</i>	Literature Connection? <i>Trading cards</i> Use model piggy banks	<i>Students successfully pair up with the partner with the appropriate coin/symbol money amount</i>				
<i>Engage: Posing a Problem</i>	<i>Allowance Problem</i> Use RUDE— Read, Underline, Defend Eliminate	<i>Present problem: discuss money, model piggy bank, discussion who has more, etc. Question for understanding When confident that all understand the scenario, Ask “Will Alex ever have more than Celia?”</i>				
<i>Active Learning: Solving Problem-Anticipated Student Solutions</i>	<i>Individual/Table Group</i> <table border="1" style="margin: auto;"> <tr> <td style="padding: 5px;">I...</td> <td style="padding: 5px;">Shoulder partner</td> </tr> <tr> <td style="padding: 5px;">Partner 2</td> <td style="padding: 5px;">Partner 3</td> </tr> </table>	I...	Shoulder partner	Partner 2	Partner 3	<i>Students will solve individually (ask those who solve quickly to model their solution another way), Share with shoulder partner</i>
I...	Shoulder partner					
Partner 2	Partner 3					
<i>Reflect: Comparing and Discussing</i>	Four Corners Peer partners first or Whole group reflection	<i>Students will have opportunities to share their understanding of the problem, strategies that they used to solve, as well as their solution. These are also opportunities for the teacher to gain insights about students’ level of understanding and misconceptions that may or may not have been anticipated.</i>				
<i>Now and Then: Summing Up</i>	Whole group share out guided by teacher questions... Teacher selects students to share who reflect different methods of modeling and strategies.	<i>In this case, Now and Then was an opportunity to remind students of how modeling their math helped them to approach a problem that involved mixed numbers with decimals which they will see more of in coming weeks.</i>				

Name _____

Allowance Problem

Two children receive allowance. On Monday September 1st, Celia has \$2.00 in her bank and Alex has \$1.70 in his bank. Celia earns 1 nickel each day for her allowance and Alex earns 1 dime each day for his allowance.

Do you think Alex will ever have more? When do you think that will be?

What is the problem asking? _____

What do you already know? _____

Do you think Alex will ever have more?

My Prediction: _____yes _____no



What strategy will you use to solve the problem?

- Draw a picture
- Use manipulatives
- Make a table
- Use number sentence(s)
- Make a graph
- I would rather solve the problem by _____

What did you first think? _____

September 2008

Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

		
	Celia's Piggy Bank	Alex's Piggy Bank
Start	\$2.00	\$1.70
Day 1		





Work Space