Lesson Plan: Growing Place Value Understanding Through Explicit Instruction

General Information

Name: Chloe Plume

Title/Subject: Growing Place Value Understanding Through Explicit Instruction Using Enhanced Counting Routines

Grade Level: 3rd Grade

Date: 3/3/26 (Day 2 of Week 3 of the Action Research Intervention)

Standards & Objectives

Arkansas Academic Content Standard: 3.NBT.A.2 Fluently add and subtract within 1,000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

Learning Goal: I want students to understand THAT mathematicians use place value, grouping, and structure to choose efficient strategies when solving real-world problems involving addition, subtraction, multiplication, and division.

Student-Friendly Learning Objectives (The "DOs"):

- I can skip-count across hundreds (e.g., 290 to 310) to show how 10 tens make 1 hundred.
- I can find and fix "borrowing" mistakes when subtracting across zeros.
- I can solve a subtraction problem starting from 1,000 with at least 90% accuracy.

Success Criteria:

- I can explain why I need to "trade" a hundred for tens.
- I can show the "middle step" in the tens place when regrouping from the hundreds to the ones.
- My final answer is correct and my work shows the decomposition of numbers.

Materials & Resources

- **Student Materials:** Base-ten blocks (flats, skinnies, bits), "Zero Hero" Place Value Mat, dry-erase board and markers, "The Great Exchange" game cards.
- **Teacher Materials:** Large magnetic base-ten blocks for the board, "Zero Hero" cape or prop, document camera.
- **Resources:** Manipulative-based place value charts, "Zero-Locked" scenario cards.

Assessment & Evaluation

Formative Assessment (During Lesson): "Thumbs-up/Thumbs-down" check during the counting routine; observation of base-ten block placement during the "We Do" phase; "Find the Flaw" whiteboard activity.

Summative Assessment (End of Lesson): The "Mission: Possible" Exit Ticket. Students must solve 1,000 - 452 and write one sentence explaining how they "unlocked" the zeros.

Lesson Procedure

1. Introduction: The Hook (5 Minutes)

Scenario: "Imagine you are at a store and you want to buy a legendary toy that costs 167 coins. You reach into your pocket and pull out five 100-coin bills. You have 500 coins! But wait... the cashier says, 'I can't take these big bills unless you have some smaller coins for the exact change.' You look at your 'tens' pocket—it’s empty. You look at your 'ones' pocket—it’s empty! Does this mean you’re broke?"

The "Aha!" Moment: "No! You’re just 'Zero-Locked.' Today, we are going to become **Zero Heroes**. We are going to learn how to break into those big hundreds to fill up our empty tens and ones pockets so we can solve any subtraction problem!"

2. Modeling: "I Do" (10 Minutes)

Enhanced Counting Routine: Teacher counts backward from 1,000 by 10s.
"*1,000... 990... 980...*"
Stop at 900: "To get to 890, what did I have to do to that 900? Did I just lose a ten, or did I have to 'break' a hundred? I had to trade 1 hundred for 10 tens. Now I have 8 hundreds and 9 tens."

Explicit Instruction: Display 500 - 167.
"*I have 0 ones. I can't take 7. I go to the tens. 0 tens! I'm locked out! I must go to the hundreds. I take one hundred (leaving 4). I trade it for 10 tens. Now, I'm not locked out of the tens anymore! I take one of those tens (leaving 9) and trade it for 10 ones. Now I am a Zero Hero!*"

3. Guided Practice: "We Do" (10 Minutes)

Interactive Activity: Using physical base-ten blocks, the teacher and student work together on the problem 400 - 123.

- **Step 1:** Build 400 using only "flats."
- **Step 2:** Try to take away 3 "bits." Discuss why we can't yet.
- **Step 3:** Physically trade one flat for 10 skinnies.
- **Step 4:** Physically trade one skinny for 10 bits.
- **Step 5:** Subtract the units.

Check for Understanding: "Why did the tens place become a 9 and not stay a 10?"

4. Collaborative Learning: "You Do It Together" (15 Minutes)

Game: "The Great Exchange"
Working with a partner (or the teacher in a 1-on-1 setting), the student plays a game where they start

with 1,000 in "Bank Credits" (Base-ten blocks). They draw "Expense Cards" (e.g., "Buy a pizza for 24 coins").
The student must physically perform the regrouping and the partner must "audit" (check) the work to ensure the regrouping was recorded correctly on a whiteboard.

5. Independent Practice: "You Do It Alone" (10 Minutes)

The student completes the "Zero Hero Challenge" worksheet.
Task 1: Solve 600 - 278.
Task 2: Solve 1,000 - 541.
Task 3: "The Detective Task"—Look at a pre-solved problem where a student forgot to change the 10 to a 9 in the tens place. Circle the mistake and fix it.

6. Conclusion: Closure & Recap (5 Minutes)

Summary: "Today we learned that zeros aren't 'nothing'—they are just empty pockets waiting to be filled! To be a Zero Hero, we have to move from left to right to unlock the numbers."

Reflective Question: "If you are subtracting from 1,000, why do you have to visit the hundreds place before you can help the ones place?"

Differentiation Strategies

- **Scaffolding:** Use a color-coded place value mat (Hundreds=Green, Tens=Blue, Ones=Red) to help track regrouping steps.
- **Extension:** Challenge the student to subtract from 10,000 or create a story problem involving two "Zero-Locked" situations.
- **Visual/Kinesthetic:** Use virtual manipulatives if physical blocks are too cumbersome, or use a "number line jump" method to verify the answer by counting up.

Plan for Questioning

- **Recall:** "How many tens are inside one of these hundred flats?"
- **Procedural:** "Which place value do we start with when we begin subtracting digits?"
- **Conceptual:** "What would happen if we just skipped the tens place and took a hundred straight to the ones place? Would our number still be the same value?"
- **Efficiency:** "Is it faster to use base-ten blocks or the 'Zero Hero' shortcut (the algorithm) once you understand the trick?"