Instructor's Name: Morgan Schwarz
Subject: Mathematics
Grade: 4th Grade
Title of Lesson: Lattice Method Multiplication

Materials and Resources (including technology):

- SmartBoard w/ SmartBoard Lesson
- White boards/Dry erase markers/Erasers
- Worksheet (15 copies)

Standard(s) the Lesson will Address: Type out the source, number, and the text of the standard (s) addressed in this lesson.

- 4.1.1.1 Demonstrate fluency with multiplication and division facts.
- 4.1.1.3 Multiply multi-digit numbers, using efficient and generalizable procedures, based on knowledge of place value, including standard algorithms.

Objective: State the CONDITION, the BEHAVIOR, and the CRITERIA. Label in ( ) the predominant domain of **C** for Cognitive, **A** for Affective, or **P** for Psychomotor. DO NOT make every condition "at the conclusion of the lesson.."

Cognitive: During the lesson, students will be able to generate a representation of the Lattice method, given the corresponding numbers to be multiplied.

Affective: At the completion of the lesson, given the appropriate steps and instruction, students will be able to implement an easy and workable alternative to long multiplication.

Psychomotor: During the lesson, students will be able to verify their long multiplication answers with the lattice method multiplication, given a set of problems.

Vocabulary:

Academic: Language needed by students to do the work in schools.

- lattice multiplication
- diagonally

Content: Language the students need to learn to apply the content.

- representation
- alternative

Anticipatory Set: How will you get the students ready and/or excited to accept instruction?

1. Ask the students how they think multiplication is different from simple addition. After some students have answered, explain that it is actually adding a number to itself a specified number of times. Encourage them to share examples to get a clear idea of the concept.

Pre-Assessment Plan (if any): Pre-assessments help you to determine what students already know and bring to the lesson content.

- See anticipatory set
    - Review game of "Around the World"
    - Basic multiplication facts

Input: (SCRIPTED) *Detailed planning: Write plans to a level of depth that would allow another teacher to use the plan to deliver the instruction. Script the learning target(s), transitions and key questions as well as timings.***)**

2. Introduce section 4.4 -- Review objectives
3. Pass out whiteboards, markers, and erasers
4. Mental Reflexes -- Ask the students if they can identify a pattern within the multiplication facts.
5. Introduce the game called "Around the World" to aid in review for lattice multiplication.
    a. Get a set of math fact flashcards. These are to be in PowerPoint format and clicked through by the teacher.
    b. The teacher will be the flash card presenter on the PowerPoint.
    c. Have another student stand up as the first contestant next to a seated student.
    d. The teacher will then show both the standing and seated student the flash card fact.
    e. The first student to give the fact with the answer correct wins the attempt.
    f. The winning student then moves beside the next seated student in that row.
    g. The process is then repeated.
    h. If the standing student losses the attempt, then the standing student is to take the seated students chair and the seated student becomes challenger.
    i. The object is for the student to make it around the entire classroom.

    j. This student has then made it “Around the World” and is declared the winner of the game.
6. After a brief session, move on to multiplication of two-digit numbers. Encourage students to use white boards.
7. After a brief session using two-digit numbers, tell the students that an easy and interesting way of multiplying bigger numbers is the Lattice multiplication method.
8. Using the SmartBoard lesson created, introduce lattice multiplication.
    a. Page 4: Vocabulary and definition of lattice; How do you know what size lattice to use and where to write the factors?
    b. Page 5: Example problem. Discuss with the students that it is easier to multiply one digit numbers and add simple problems.
    c. Page 6: How do you know where to begin the addition? (ALWAYS from right to left)
    d. Page 7: Do this problem as a whole group on the SmartBoard. Call upon students at random to identify each step.
    e. Page 8: Setup the example problem as a whole group. Then, instruct the students to work on the problem individually. When they are completed, they may raise their hand and I will check on it.
    f. Page 9: Ask the students where each number belongs on the grid. Then, instruct the students to work on the problem individually. When they are completed, they may raise their hand and I will check on it.
    g. Page 10: Do this problem as a whole group on the SmartBoard. Call upon students at random to identify each step.
    h. Page 11: Discuss with the students how to multiply decimals using lattice multiplication. See SmartBoard lesson for instructions.
    i. Page 12/13: Identify as a whole group where the decimal point belongs. Then, instruct the students to complete the problem as they typically would.

Guided Practice (Formative Assessment):

- Page 14: Homework assignment due FRIDAY.

Closure: (SCRIPTED)

“As you learned about lattice multiplication today, tomorrow we will continue reviewing how to multiply decimals and review your worksheets on Friday.”

Independent Practice/Summative Assessment: (How will students extend or apply their learning OR demonstrate mastery? If demonstrating mastery, include criteria for evaluation (checklist, rubric, sample, etc).

- Extended Learning: Continuation of material through decimal points and dividing multi-digit numbers

- Demonstrate Mastery: Formative assessment of completing the worksheet

Accommodations & differentiation for learners: (For all practice lesson assume that you have at least one student in each category: attention/focus issue, language processing issue, sensory issues)

- Attention/Focus Issue
    - Use colors on the SmartBoard to increase focus
    - Ensure the student is in center of the board/material being presented
- Language Processing Issue
    - Short and simple sentences with demonstrations
    - Use nonverbal cues
    - Check for understanding
- Sensory Issue
    - Ensure the student is away from the door or window where there may be loud noises occasionally
    - Place the student in the front of the classroom so when the front lights are off while using the SmartBoard, there will be less light to focus on and worry about

Multiple Intelligences Addressed: Address at least ONE of these intelligences: verbal linguistic, musical/rhythmic, visual/spatial, intrapersonal, logical/mathematical, interpersonal, bodily/kinesthetic, naturalistic