

Traditional Method Dice Math Lesson

Date: October 7th, 2022

Grade: 4 th	Subject: Multiplying 2-Digit Numbers
Materials: student white boards, student iPads, dry erase makers, erasers, dice, projected pear deck presentation	Technology Needed: teacher iPad and TV
Instructional Strategies: <input type="checkbox"/> Direct instruction <input type="checkbox"/> Guided practice <input type="checkbox"/> Socratic Seminar <input type="checkbox"/> Learning Centers <input type="checkbox"/> Lecture <input type="checkbox"/> Other (list) <input type="checkbox"/> Peer teaching/collaboration/cooperative learning <input type="checkbox"/> Visuals/Graphic organizers <input type="checkbox"/> PBL <input type="checkbox"/> Discussion/Debate <input type="checkbox"/> Modeling	Guided Practices and Concrete Application: <input type="checkbox"/> Large group activity <input type="checkbox"/> Independent activity <input type="checkbox"/> Pairing/collaboration <input type="checkbox"/> Simulations/Scenarios <input type="checkbox"/> Other (list) Explain: <input type="checkbox"/> Hands-on <input type="checkbox"/> Technology integration <input type="checkbox"/> Imitation/Repeat/Mimic
Standard 4.NBT.5 – Using strategies based on place value and the properties of operations, multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	Universal Design for Learning Below Proficiency: students will have multiple opportunities to work in groups to clarify questions and hear from their peers. They will have multiple check-ins throughout the lesson to help the teacher gauge student’s understanding of the content. At the end of the direct instruction, students will be paired up with another student to complete the dice portion of the activity. They will have collaboration amongst their partner to evaluate any mistakes in their problem-solving process. Above Proficiency: students will be able to think critically about their problem-solving process by evaluating the answer of themselves and their partner. They will be able to isolate and identify which step was completed incorrectly and why that led to different answers during the partner activity. Modalities/Learning Preferences: <ul style="list-style-type: none"> • Visual: the teacher will link the standard algorithm problems to the student’s iPads for them to work through the practice problems individually. These visuals will be displayed on the board for students to see as they are being presented to the class. The teacher will complete example problems on the board for students to view the steps to solving each problem. • Auditory: the teacher will use verbal mapping to explain each step in the standard algorithm method. Students will have multiple opportunities to discuss the math concepts with their peers in groups and with their partners. • Kinesthetic: students will be working in groups at their table pods during the large group instruction and example problems. When students move into partner work time, they will be able to choose a place around the room to work on the practice problems in the dice activity. • Tactile: students will be using their iPads to show their work during the large group review problems. When students move into their partner work, they will move into the dice activity game to further apply their standard algorithm multiplication skills.
Objective By the end of the lesson, students will apply understanding of the standard algorithm to solve multiplication problems with two two-digit numbers by using the vertical equation method. Bloom’s Taxonomy Cognitive Level: Apply	Behavior Expectations- (procedures/expectations specific to the lesson, rules and expectations, etc.) -Active Listening: students will employ the following strategies to stay engaged in the partner work and class discussions: <ul style="list-style-type: none"> -Eyes on speaker -Hands and feet to self -Voices off -Ears ready to hear -Asking questions to clarify information -Providing feedback when prompted
Classroom Management- (grouping(s), movement/transitions, etc.) -Partner Work: students will work with their assigned partner. It is expected that they work with this partner and are not distracting the other groups around them. -Raising Hands: when participating in class discussions, students will raise their hands to indicate that they would like to contribute to the discussion. They will wait to share their thoughts until they have been called on out of respect for those that are speaking. -Gathering Materials: students will need to locate their white boards, erasers, dry erase markers, and dice when prompted to do so. If they	

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	<p>need to move around the room to do so they may, but they should do so in an efficient manner so they can begin working on their task.</p> <p>-Attention Getting Technique: the teacher will use the established classroom attention getting technique that the students are familiar with. If the teacher is unable to identify this before the teaching of the lesson, she will use the “5, 4, 3, 2, 1 and back to me” countdown technique.</p>	<p>-Student iPads: students will be required to use their own iPad when completing the review problems with the class. They should not be looking off a classmate’s iPad during this work time.</p> <p>-Partner Work: while working with a partner, the student is expected to follow the partner work guidelines:</p> <ul style="list-style-type: none"> -Use your voice to share your ideas -Find ways to help your partner -Work as a team to complete your task -Be respectful of those around you -Use a level 2 voice
Minutes	Procedures	
1 minute	<p>Set-up/Prep before lesson:</p> <ul style="list-style-type: none"> -The teacher will have the standard algorithm pear deck presented on the front TV for students to view at the beginning of the lesson. -Materials for the dice activity will be placed at the back of the room for students to access during work time. 	
1 minute	<p>Engage: (opening activity/ anticipatory Set – access prior learning / stimulate interest /generate questions, etc.)</p> <ul style="list-style-type: none"> -The teacher will display the pear deck the board for the students to view -“4th graders, you have learned yesterday how to do the standard algorithm. Today, we are going to review these math skills and give you multiple opportunities for practice with this method.” 	
20 minutes	<p>Explain: (teacher-led)</p> <ul style="list-style-type: none"> -“Let’s start by looking at a problem that is displayed on your screens.” -The teacher will display the review problem on the student’s screens for them to begin working on. -“Students, using what you remember from yesterday, show me the steps you would use to solve this problem”. -Allow work time for the students and move around the room to assist students as needed. -After about 3 minutes, display a student example of how to solve the problem on the front TV. Proceed to work through the steps that the student used to solve the problem on the front white board, having the student speak aloud the steps they used as you show their work to the problem: <ol style="list-style-type: none"> 1. Break up the problem into two baby problems! 2. Multiply up and across, keep and carry, then cross out. 3. Add a zero in the ones place in the line below. 4. Multiply across and up, then keep and carry. 5. Add the products! -The teacher will then repeat the process for the following 3 practice problems, moving around the room to assist students in their work and using the teacher iPad to monitor of student work. -“Very good, 4th graders. Before we move into some partner work time, I would like you to show me on your fingers how confident you are with the traditional algorithm method:” <ol style="list-style-type: none"> -1: I still have some questions and would like some more examples. -2: I am not an expert, but I am confident that I can try the problems on my own! -3: This makes sense, and I am ready to work on my own! 	
20-30 minutes	<p>Elaborate: (concrete practice/application with relevant learning task -connections from content to real-life experiences)</p> <ul style="list-style-type: none"> -Students will then have the opportunity to work with their assigned partners on the dice activity using the traditional algorithm. -“During this partner work time, make sure you are working in a way that is respectful to those around you and allows you to stay focused on your task. If you are working independently, you will be at your desk for this worktime.” -“One partner in your group will grab white boards from the back of the classroom, while the other partner will grab markers, erasers, and dice from the front of the room.” -“What questions do you have for me before we begin?” (Allow wait time for students to ask questions and clarify as needed). -Students will then have the remainder of the work time to work on their assigned task. The teacher will have directions and supplies for the additional activity at a designated area of the room for students to grab as they begin their partner work. -The teacher will then move around the room to monitor student work and answer questions within partners as needed. 	
2 minutes	<p>Closure (wrap up and transition to next activity):</p> <ul style="list-style-type: none"> -At the closure of partner work time, the teacher will instruct the students to put away their materials and then return to their desks. The teacher will again ask the students the 1, 2, 3 reflection question to gauge student understanding: <ol style="list-style-type: none"> -1: I still have some questions and would like some more examples. -2: I am not an expert, but I am confident that I can try the problems on my own! -3: This makes sense, and I am ready to work on my own! -Students will respond with their fingers in the air and the teacher will then scan the room before moving on to the next activity for the day. 	
<p>Formative Assessment: (linked to objective, during learning)</p> <ul style="list-style-type: none"> • Progress monitoring throughout lesson (document of student learning, data collection) 		<p>Summative Assessment (linked back to standard, END of learning)</p> <ul style="list-style-type: none"> -Not applicable for this lesson.

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-Pear Deck Checks: students will be working independently on their iPads respond to different steps in the traditional algorithm method. Student responses will be viewable in the pear deck by the teacher as they work through each practice problem, allowing the teacher to see at a glance student understanding at each step during the solving process.

-1, 2, 3 Finger Response: before students move into their partner work and at the conclusion of their partner activity, students will respond on a scale of 1-3 about their confidence in using the place value and partial products method on their own. This will allow the teacher to quickly gauge student understanding.

Teacher Reflection (What went well? What did the students learn? How do you know? What changes would you make?):

Teaching this lesson with the students provided many opportunities for formative assessments of the students as they worked through the review and activity practice problems of the standard algorithm with two two-digit numbers. I was very nervous at first that students would struggle with the dice activity, but the partners that I had set up made the pairing very successful and provided a great independent group work environment.

I used many formative assessments during this lesson that were critical in the overall success of the lesson. Using the Pear Deck presentation during the review of the method allowed me to see what steps each student was using to solve the problem based on what they remembered from the previous day of instruction. On the teacher iPad, I was able to see which students were imploring the correct steps and which ones needed to receive a little bit of review on the method. Having this information at my fingertips was very helpful for pacing of the lesson, as I could see which students were done working through the problems and which needed more time. I was then able to bring the class back together by locking the student's screens and then displayed the work of a student on the front TV. I had planned four practice problems, but after seeing the student's success with the first two, I asked the class for their feedback on if they would like one more practice problem or if they were ready to begin the activity. About half the students raised their hands to indicate they wanted on more practice problem, so this quick formative assessment showed me the readiness of the students to move on.

When moving into the dice activity, I quickly realized the pairs that I had created for this activity were excellently matched. High-flyers were challenged enough by the spontaneity of each problem to still have to critically think about each problem, to which they were then able to evaluate their answer and determine why it did or did not match up to their partner's answer. I paired a lower scoring student with a high-flyer to provide them with the support during the problem-solving process, but both students did an excellent job at holding each other accountable in respectful manner by evaluating where one of them went wrong in the steps to solve the problem. It was a great example of student collaboration that led to deeper understanding of the standard algorithm for both the students who were struggling and the high-flyers.

Considering that I adapted the course of this lesson just two days before I was going to teach it, it was very much worth it. I recognized that the students were not ready for the partial products and place value method that they were supposed to learn, according to the curriculum pacing. After talking with my practicum teacher, we both decided that it would be more beneficial for them to move into the standard algorithm. I was very proud of this adjustment and that it worked so well for the students because it showed that veering off from the curriculum pacing is okay as long as it fits the needs of your students.