

Critical Components of Lesson Design

*Elementary Example

Planning

Name:	Subject Area: <i>Math</i>	Lesson Date:
Unit Title (if applicable): <i>Systematic listing and Counting</i>	Lesson Plan Title: <i>Fruit Smoothie Combinations (lesson 1 of 3)</i>	Grade Level: <i>4th grade</i>
Time Required: <i>40 minutes</i>	Materials and Media: blank array chart displayed on SmartBoard, SmartBoard markers, blank array on paper (guided practice activity), pencil	
<p>Aligned State Standards:</p> <p>AZ- Common Core State Standards (2012) Subject: Mathematics Grade: Grade 4</p> <p><i>Domain:</i> Operations and Algebraic Thinking (OA) Use the four operations with whole numbers to solve problems.</p> <p><i>Area:</i> Use the four operations with whole numbers to solve problems.</p> <p><i>Standard:</i> AZ.4.OA.A.3.1 Solve a variety of problems based on the multiplication principle of counting.</p> <p>a. Represent a variety of counting problems using arrays, charts, and systematic lists, e.g., tree diagram. b. Analyze relationships among representations and make connections to the multiplication principle of counting.</p>		
<p>Measurable Goals and Criteria for Mastery (quantitative and references the assessment):</p> <p>All students will correctly create 10 smoothie flavor combinations using two ingredients from five possible choices (ex. strawberry, banana, peach and pineapple, apple) and presenting their results on an array chart with 90% accuracy.</p>		
<p>Differentiation: Remediation:</p> <p>Teacher will work with struggling students at back table offering multiple examples (modeling) and manipulatives (fruit picture cards).</p> <p>Differentiation: Extensions:</p> <p>Create an array chart using 6 different fruits (ex. Possible fruits: apple, banana, peach, grape, kiwi, orange) to create 15 of their own flavors (each creation needs to include 2 flavors) of sorbet ice</p>		

cream. (ex. possible sorbet flavors: apple-banana, apple-orange, apple-kiwi, apple-peach, apple-grape, peach-grape, peach-kiwi, peach-orange, peach-banana, grape-kiwi, grape-orange, grape-banana, kiwi-orange, kiwi-banana, orange-banana)

Assessment

Pre-Assessment Data (Optional):

Beginning of the year STAR assessment (includes skills-based test items and in-depth reports for screening, instructional planning, progress monitoring, and standards benchmarking) indicated all students need additional instruction and practice with combinations and fractions.

Post Assessment:

The completed/correct array chart with all 10 possible combinations using 5 different fruits.

Independent Activity: Reinforce skills and synthesize their new knowledge by completing a task on their own and away from the teacher's guidance.

The students will create 10 new color combinations using 2 colors together from a choice of 5 colors (ex. Blue, green, yellow, purple, orange). Create an array chart to display the data.

Instructional Sequence

Anticipatory Set with Purpose:

"I need your help! Who remembers what my favorite breakfast food is that I make almost every day?" (From previous discussions the students will share out a Smoothie) "Everyone knows me so well! Yes, I make a smoothie for my breakfast everyday and my favorite kind of smoothie is strawberry/pineapple. Raise your hand if you like strawberry and pineapples." Look for raised hands. If not all students raise their hands ask the questions "What are some other kinds of smoothie flavors?" Accept appropriate answers. "Before we begin creating smoothie flavors we are going to create an array chart as a class with milkshake flavors. Good thing lunch is right after math since we are all going to be craving smoothies and milkshakes by the time we are done today!"

Instructional Sequence:

1. Using the SmartBoard pull up the blank array chart with 5 rows (for flavors) and 10 columns (each possible combination) ask for a raise of hands with 5 possible ice cream flavors. (DI)
2. In the left hand column write 5 ice cream flavors (ex. Vanilla, chocolate, strawberry pecan

and cookie dough) by calling on students for suggestions. (DI, M, AE)

3. Ok, let's look at this chart and we will be mixing two flavors only. The goal is to find as many combinations as possible.
4. "I am looking for students with silent hands raised that would like to come up to the SmartBoard and choose the 1st combination." (DI)
5. The teacher calls on a student to come up and put an X mark in the first combination. (ex. Cookie dough/chocolate) (AE, M)
6. "Great, that sounds wonderful, what do the rest of you think?" Accept responses. (AE, CU)
7. The teacher continues to call on students to come up to the SmartBoard to choose the remaining combinations. (vanilla/chocolate, vanilla/strawberry, chocolate/strawberry, vanilla/cookie dough, strawberry/cookie dough, vanilla/pecan, chocolate/pecan, strawberry/pecan, cookie dough/pecan, vanilla/pecan) (AE, CU)
8. "Does anyone think there are any more combinations?" Accept responses. "I agree, there are not anymore possible combinations" (CU)
9. "Can everyone see by the array graph here that we have 10 possible combinations of flavors if we use just 2 of every flavor?" Accept appropriate answers. This is also a good time to see who may need remediation or enrichment. (CU, DI)
10. "Now, you are going to create as many smoothie combinations you are able to with 5 different fruits." (IA)
11. "Use the following array chart (hold up blank array chart) to create your own smoothie combinations. You will list five fruits and complete the activity independently exactly how we did with the different ice cream combinations." (DI)
12. "Are there any questions?" Answer any questions students might have regarding the directions. "What is the first step in getting started?" Call on student. "Correct, you will write down five different fruits in the left hand column just like we did for the ice cream flavors." (CU)
13. "As you begin I will be walking around the room assisting any student who need help." (GP, CU, AE)

Closure:

"Show me by a raise of hands if you created a smoothie using 2 different kinds of fruits that you would like to make at home." Look for raised hands. Have students share out as many as you have time. "For those of you that didn't share please turn to your neighbor and share your favorite 2 ingredient fruit smoothie." Allow students time to share with a neighbor. "I sure hope that smoothies are on the lunch menu today!"