Hunter Model – Sample 2

Adapted from a lesson prepared by Brad Heltsen, ED 381 UWSP – Posted to thesecondprinciple.com 9/2019

Area of concentration: Mathematics

Grade Level: Middle School, Level 7

<u>Aim</u>: Students will use manipulatives in order learn new concepts.



<u>Goal</u>: After using manipulatives, students will be able to draw on retrievable mental images to solve more complex or related problems.

Brad's note to readers: This lesson is about the ability to transfer concrete experiences as a foundation for future learning. For this unit students will be using manipulative materials to help them understand the properties and operations of fractions in mathematics. Pattern blocks are the most helpful and common manipulative used to model fractions.

Materials needed: Multiple sets of pattern blocks, overhead projector

Anticipatory Set

(Note: Many students choosing to use this model fail to realize that any scripted dialogue must be accompanied by an activity! In the sample below the author states that prior to the main activity students and teacher will be <u>reviewing and discussing</u> <u>prior knowledge</u>. Please make sure your lesson includes an activity that gets the learners set for the body of the lesson. That is the intent of the "*anticipatory set*," to get the learner to anticipate the lesson.)

Intro: "Today we will first review and discuss our knowledge of division, multiplication, addition, and subtraction of whole numbers. We will also discuss and review the concept of least common multiple (LCM), which is needed for fractional addition. Next, we will review fractional amounts by slicing and dividing a baked pizza. Finally, we will divide the pizza equally and eat it!"

Activity: The teacher begins and engages students in the related discussion, and then serves pizza after the students have helped divide it. These activities get the students ready to work with pattern blocks. Instead of pizza, types of dividable candy like mint patties or pastries could be used too.

Stated Objectives

A. The students will be able to model the following operations with pattern blocks:

- 1. Multiplication the repeated addition model or the area model.
- 2. Division sharing model and measurement model.
- 3. Addition grouping or set model.
- 4. Subtraction taking away model.

B. At the end of the lesson, students will be able to use pattern blocks to solve five different problems from each of the four operations (20 problems).

C. The students will write their answers in simplest form, that is the number represented by the least number of blocks of the same color.

Modeled Practice

"Today we will use pattern blocks to model the operations of addition, subtraction, multiplication, and division of fractions. Every pattern block will represent a fractional unit. For example, the hexagon, trapezid, rhombus, and triangle could represent the fractions of 1/4, 1/3, 1/6, and 1/12. These pattern blocks can now be used to see the mathematical relationships that occur under a specific operation."

The teacher will model several examples of each operation on the overhead projector containing special pattern blocks. The examples include the concepts of finding a common denominator required in the adding or subtracting of fractions. Finally, reducing fractions is taught when there is more than one pattern block of the same shape or color in the final answer.

Guided Practice

- The students will be given a set of pattern blocks to use to model a few of each operation listed on the board.
- The teacher will observe the students and assist anyone who still does not understand how to model any of the problems. After the majority of the class has modeled the problems, students will volunteer to show their model on the overhead projector.
- Here the student will verbally explain what was done and how he/she arrived at the final answer.
- After the answer is presented, the students or teacher will discuss the correctness of his/her answer.

Independent practice

Students will pair up and play a game involving fractions and pattern blocks called "Wipeout." This is a two person game.

The game goes like this:

First, you need a cube or dice with faces marked $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{1}{5}$, $\frac{1}{6}$, $\frac{1}{8}$. The goal is to be the first to discard your blocks. Each person starts with the same number of hexagons, either one, two, or three. Follow these rules:

- 1. Take turns rolling the cube.
- 2. You have three options on each turn:
 - a) to remove a block (only if it is the fractional part of the hexagon indicated by the fraction face up on the cube),
 - b) to exchange any of your remaining blocks for equivalent blocks, or
 - c) or do nothing and pass the cube or dice to your partner

*You may not remove a block and trade on the same turn; you can only do one or the other.

A brief homework exercise of 10 problems will be given to reinforce the fractional modeling concepts. The students will model each operation by drawing the shapes and showing what is being done.

<u>Closure</u>

The next day, the students will volunteer to give the answers from their homework assignment. They will explain their model and how they solved the problem. Again, a class discussion will follow regarding the correctness of the answers given.

The teacher will wrap-up the topic by summarizing the entire unit and allowing the class to ask any questions they may have relating to fractions and the use pattern blocks.

(**This lesson plan has been generously donated by one of my former students from my Educational Psychology – ED 381class. If you use the plan or parts of it, please acknowledge the original author and the web source.)