

Maker Project Idea

By David

**all names and identifiers have been masked/changed to retain anonymity*

The mathematical topic that underlines the manipulative that I am tinkering with is geometry, specifically shapes and patterns. I am choosing this topic because my four-year-old student loves shapes. In the classroom, Vincent will explore shapes in a variety of forms such as plush shape toys, magnetic shapes, and shape puzzles. Vincent loves shapes so much that he has learned more shapes than are required in preschool (circle, square, triangle, heart, star, oval, diamond, and rectangle) and has learned hexagons, octagons and quatrefoils. Furthermore, Vincent has started learning and understanding the concept of patterning. Vincent has matched, imitated and is now creating an AB, AAB, and ABC pattern. My goal is for Vincent to be able to create regular tessellation patterns by repeating regular polygons. More specifically, I want Vincent to explore the hexagon polygon by looking at the sides followed by putting different hexagons together to see the patterns he can come up with. I think Vincent would be able to make connections with patterns after exploring hexagons and manipulating them.

Prompt 2

I would like to create a variety of large, same-sized hexagons in different colors so that Vincent can manipulate and explore with them on the carpet of the classroom. I arrived at this idea from a discussion in which I received support and guidance from my professor. While meeting, we discussed the idea of polygons, hexagons and tessellations since my student loves geometric shapes and is currently learning how to pattern. I have not explored this shape on Tinkercad yet, but have made rough sketches of what patterns Vincent may make with the hexagons.

Prompt 3

I think my initial idea is a “good” one for my child’s learning because shapes and patterns are both important and appropriate topics for preschoolers. More specifically, it is developmentally appropriate for Vincent. Being able to explore a manipulative, answer questions about it, and find ways to be creative with it are some of the ways students learn best in a preschool setting. For example, if Vincent holds a manipulative and states that it is a “blue hexagon” and that it “has six sides” he is learning because he is able to generalize what he has already learned and connect it to a new and unfamiliar manipulative. Being creative is also beneficial. If Vincent can take what he has learned to create tessellation patterns using hexagons, it shows that he understands patterning and has made the connection that all sides are equal. Even if he cannot express it, he can show this understanding by placing/connecting the hexagons next to each other to create a regular tessellation pattern.

Prompt 4

I think my initial idea is a “good” one for a teacher’s teaching because it challenges the teacher to take a common topic such as geometry and shapes and find new ways to teach it and approach it. From a teacher’s point of view, to teach with a manipulative means to bring something tangible, physical and real, and use a visual to support learning. I could teach shapes to my students by verbally sharing the characteristics of shapes, but that would make the lesson flat and less impactful. The use of a manipulative brings different senses (sight, touch, hearing) into the lesson, and therefore creates a better learning environment. Manipulatives make the lesson “real” for the students when they are able to interact with it. Many students are visual learners and, for preschool, it is extremely helpful to be able to introduce topics through the use of different manipulatives and materials to help expand their knowledge and generalization

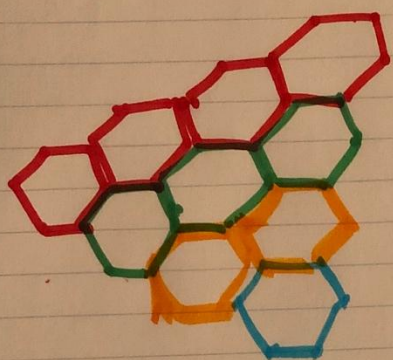
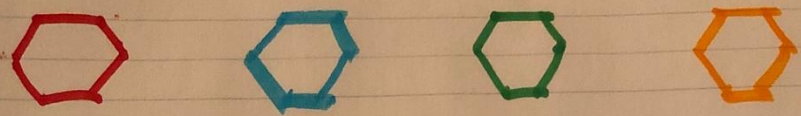
skills. There are similarities and differences with my initial idea for both a child's learning and a teacher's teaching. First, they are similar because they challenge both student and teacher. The student is given a manipulative (hexagon shapes) that he is familiar with yet will be asked to create something new with it as he explores its characteristics in more depth. This idea is also challenging for the teacher because he or she has to think of a way to present the manipulative that will keep the students interest as well as challenge them in a non confrontational manner that allows the individual to explore and be creative. On the other hand, my initial idea for both a child's learning and a teacher's teaching are different as well. For the student, he is given an unknown task that he will undertake. He does not know what the teacher will be asking or what the results will be until he experiments. However, the teacher is aware of different possibilities and outcomes the student may come up with after the specific task is asked. Yes, the teacher may be surprised with what the student does with the manipulative, but he or she will have an idea of some of the possibilities beforehand.

Prompt 5

At the moment, I am feeling very good about the project. However, it was a little bit of a struggle early on when trying to find a common manipulative that my partner and I could both use due to the large age gap of our students. While I will be working on a separate project and manipulative, I am excited to have found something that will be of great interest to my student. I am very curious to see if he can take his love of shapes and recently acquired patterning skills and apply them to a fun, yet challenging task.

He may stack the hexagons

by color



He may pattern and see (1) blue, (2) orange, (3) green, (4) red.

He may make an alternating AB tessellated pattern

