



Shadow Drawing with Blocks

Materials:

- Unit blocks (or anything to build a structure such as boxes and toilet paper rolls)
- Natural light or a flashlight
- Large Paper
- Writing utensil
- Wifi
- Personal device

Description: During this activity students will explore light, shadows 2D and 3D shapes. They will accomplish this by building a structure that casts a shadow and tracing that shadow. They will then try to re-build the structure based on the shadow drawing. Students will also learn the vocabulary words “transparent” and “opaque” and be able to use them to describe an object.

Standards:

Next Generation Mathematics Standards:

NY-PK.G 1-3

NY-K MD 3: Classify objects into given categories; count the objects in each category and sort the categories by count.

NY-K G: 1-6

NGSS:

1-PS4-3: Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light.

Teacher Technology Skills: Google Classroom, FlipGrid

Procedure:

1. Create a Google Classroom assignment for students to participate in a discussion and submit their work.
2. Have the students build a structure with the unit blocks (or whatever is available) where there is a natural light shadow, or use a flashlight to create an artificial one.
 - Ask: Why doesn't the light pass through the blocks or objects?
 - Are the objects “transparent” or “opaque”? These questions can be answered via a discussion on Google Classroom or whatever platform your students are using.
3. Once they have completed their structure have them trace the shadow it casts and take a picture to submit via Google Classroom, or a video with FlipGrid.
4. After the students are done tracing their structure have them knock down the tower (the fun part!).
5. Next, have the students rebuild the tower to match the traced image.
6. Document the observations.
 - Did the shadow change? Why?
 - Did you need to use exactly the same shapes?
 - Does the color of the block matter?
 - Did some shapes make a different shaped shadow? This can be done via a discussion on Google Classroom, or whatever platform your students are using.
7. Have the students submit images of their work and their observations via Google Classroom.



Extension Activity:

- Discuss how time of day or weather can change the shadow.
 - Have the students create a sun dial.
- Have the students use different shapes to rebuild the tower.
- How can you make the shadow longer or shorter?