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Mathematics: The Language of STEM
Playing in Kindergarten

CONTENT AND TASK DECISIONS

Grade Level(s): Kindergarten

Description of the Task:

Students will create a kindergarten playground for our new school..

Indiana Mathematics Content Standards:

K.G.3 Model shapes in the world by composing shapes from objects and drawing shapes.

K.G.4 Compose simple geometric shapes to form larger shapes.

Indiana Mathematics Process Standards:

1. Make sense of problems and persevere in solving them: students will evaluate the playground pieces they create, decide if they work and determine if they need to make any changes.
4. Model with mathematics: teacher will encourage students to create 3D models of their playground equipment.
5. Use appropriate tools strategically: students will decide specific materials to use for their playground equipment.

Mathematics Content Goals:

SWBAT draw plans for playgrounds using shapes to create the playground equipment. Students will then create 3D models based on their drawing plans.

Language Objectives:

Students will correctly name shapes used to construct playground equipment.

Materials:

Book: "Pete The Cat Construction Destruction" by James Dean

Powerpoint program of various pictures of playground equipment

12 x 18 white construction paper

crayons, colored pencils, and/or markers

building materials: legos, lincoln logs, magnetic building blocks, any building blocks available

craft materials: popcycle sticks, toothpicks, marshmallows, ribbon, pipe cleaners, etc.

THE LESSON

Before:

- Student Actions:
 - Listen to story
 - Watch slide show of various pieces of playground equipment
 - Discuss various shapes that can be seen within the playground equipment
- Teacher Actions:
 - Read story
 - Review 2D and 3D shapes

Create Powerpoint slide show of playground equipment
Introduce vocabulary necessary: slide, swings, climb, names of shapes, etc.

During:

- Student Actions:
Draw a visual plan for the playground, discuss how we are all engineers and how/why we need to make a drawing/blueprint of what we will design
Work collaboratively in a small group of 3 students
Explore building materials, spend time just trying out the building supplies
Build playgrounds collaboratively
Students will participate in a safe math community
- Teacher Actions:
Conference with students
Monitor conversations and monitor inclusion of all group members
Answer questions
Ask questions to help students think about solutions
Support students
Provide a safe math community

After:

- Student Actions:
Collaboratively choose their favorite piece of equipment from their playground
Present their playgrounds to the class
Answer questions about their playgrounds
Describe their playground pieces using the names of 2D and 3D shapes
- Teacher Actions:
Provide sentence frames for use in describing playground equipment
“We used a _____ to make our slide.” “We put a _____ and a _____ together to make a _____.”
Facilitate oral presentations of projects
Take pictures and video of presentations

ASSESSMENT

Observe:

Student playground creations will be observed.

Can students name the shapes that were used to create their playground pieces?

Are all the students in each group contributing?

Students will verbally share their constructions with peers and adults.

Each small group will choose one piece of equipment from their playground that will be placed on the final school playground creation.

Ask:

What are the names of the shapes you used to create the playground equipment?

Which piece did your group pick as your favorite piece for the final playground?

How did you decide, as a group, which one piece to choose?