Purche STEAM Magnet Elementary School

STEAM LESSON PLAN: MODEL AIRPLANE
(3rd – 5th)

Name: Emily Turner	**Grade: 3rd**

Objectives:

Students will be able to follow instructions, identify the functions of materials and tools, and use their knowledge of engineering and design to build a model airplane using a STEAM kit.

Students will engage in the engineering design process (define, ask, imagine, plan, prototype, test, improve) in this activity.

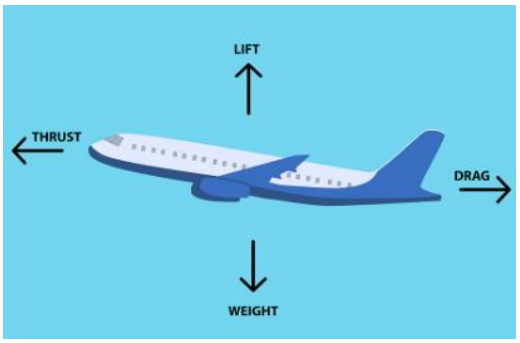
Key Points:
- Understanding the different parts of a model airplane and their functions.
- Identifying and troubleshooting common problems encountered during the building process.
- Collaborating with peers to share ideas and improve their designs.
- Reflecting on the importance of precision and attention to detail in engineering/building projects.

NGSS Standards:
Engineering Design (3-5):
-Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
-Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

Materials:	**Set up:**
Quantity: 22 STEM Engineering Building Kit by Tsomtto (5-in-1 STEM Kits - Total 132 pieces building blocks can be built into 5 different models, such as Airplane, Helicopter, Racing Car, Bulldozer and Motorcycle. The pieces are flexible and reusable.)	STEAM Lab or classroom

Lesson Steps:
Context: prior to this lesson in which students build the model airplane, students would have had a lesson focusing on the science of how airplanes stay in the air. That lesson looked like this:
- Show students a video of a real airplane taking off and flying.
- Ask students, "Have you ever wondered how airplanes are able to fly? What do you think makes them stay in the air?"
-Chart student responses

-Show video that explains how airplanes stay in the air, stopping at each point to discuss (https://www.youtube.com/watch?v=LO7XBAFXGrc)
- chart and discuss vocabulary: engine, thrust, lift force, drag, gravity
-discussion points: Engine provides the thrust. Shape of the wings provides the lift. Gravity is a force the pulls all objects on earth down. Air and wind produce drag.
- Students draw a diagram of an airplane and label the forces operating on the plane



-Assessment: students use their diagram to explain to a partner how airplanes stay in the air.

Day 2: Building the Model Airplane

Introduction to New Materials:
- Show the students the STEAM kit and explain that they will be using it to build their own model airplanes.
- Review concepts from yesterday

Guided Practice:
- Provide step-by-step instructions for assembling the model airplane, emphasizing the importance of following the instructions accurately and having a growth mindset when encountering challenges.
- Show students how to unpack materials, organize materials, and how to use tools provided in the kits.
- Begin the project together as a group

Independent Practice:
-Set expectations for students to continue to finish building on their own.
- Monitor student performance by circulating the classroom, providing guidance and support as needed.

Assessment/Reflection:

- Students will be assessed on their ability to follow the instructions provided in the STEAM kit to successfully build a model airplane.

-Reflection Form: Students will reflect on their experience by filling out a teacher-created reflection form. The reflection form will ask students to name a challenge they encountered in their build and how they resolved the challenge. Students will also name and describe 3 things they learned in this activity.

List of Materials

Quantity	Description	Unit Price	
22	STEM Engineering Building Kit by Tsomtto (5-in-1 STEM Kits - Total 132 pieces building blocks can be built into 5 different models, such as Airplane, Helicopter, Racing Car, Bulldozer and Motorcycle. The pieces are flexible and reusable.)	$23	$506* *all amount over will be covered by school.