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FLITE TEST STEM

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LESSON OBJECTIVES

STUDENTS WILL:

- Understand the basic usage of the Flite Test engineering and design process
- Practice the process through a simulated problem
- Understand the basics of flight
- Work in teams and collaborate on designs

TIME: 60 to 90 MINUTES

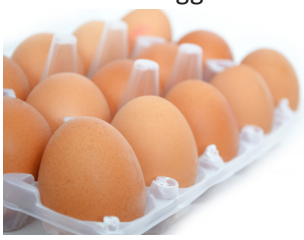
PROVIDED LESSON

THE SPARROW'S EGG

MATERIALS NEED

The FT Aircraft needed for this lesson is the Sparrow. See store for purchasing options.

A few cartons of eggs!



The following are possible materials needed for egg caring mechanism;

- FT Foam Board
- Cardboard
- Cotton balls
- Bubble wrap
- Straws

The tools needed for this build are included in the FT Crafty Kit. See store for purchasing options.

Hot Glue Gun and hot glue sticks
IMPORTANT SAFETY NOTE
REGARDING HOT GLUE

Hot Glue Guns get extremely hot, and should always be handled with care. Young students should always be supervised when using hot glue. Review hot glue safety with your students prior to using hot glue guns.

Utility Knives

(if you are working with younger kids, you can use plastic cards instead of knives.)

Sponsored Lesson

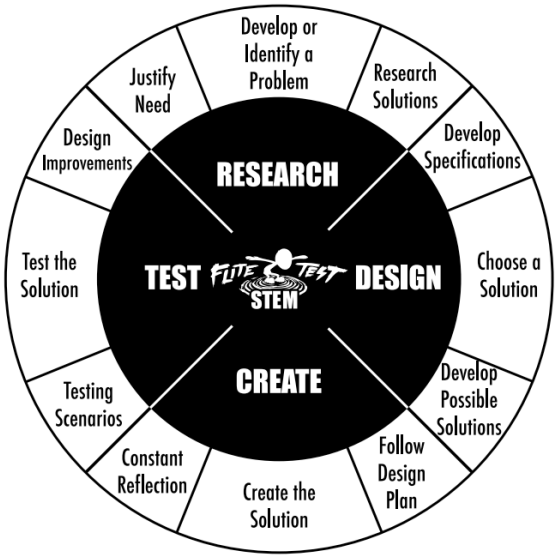
ACTIVITY ONE

INTRODUCTION

Explain the Flite Test engineering and design process. This process has four stages: Research, Design, Create and Test. Engineers use this process to solve problems, and this is the process students will use to complete this project.

The diagram below illustrates the stages of the design process.

See Link for download and printing of the basic FT EDM



STEP 1

RESEARCH

Instruct students to create an onboard attachment for the FT Sparrow glider that can safely transport an egg 20 feet when hand tossed. Tell students to research possible attachment designs and make a list of ideas to try. Suggest that students search FliteTest.com, YouTube or Google for inspiration.

STEP 2

DESIGN

Students should now use what they learned from the Research stage to develop a design. Instruct them to sketch out a few possible solutions on scratch paper.

STEP 3

CREATE

Part 1

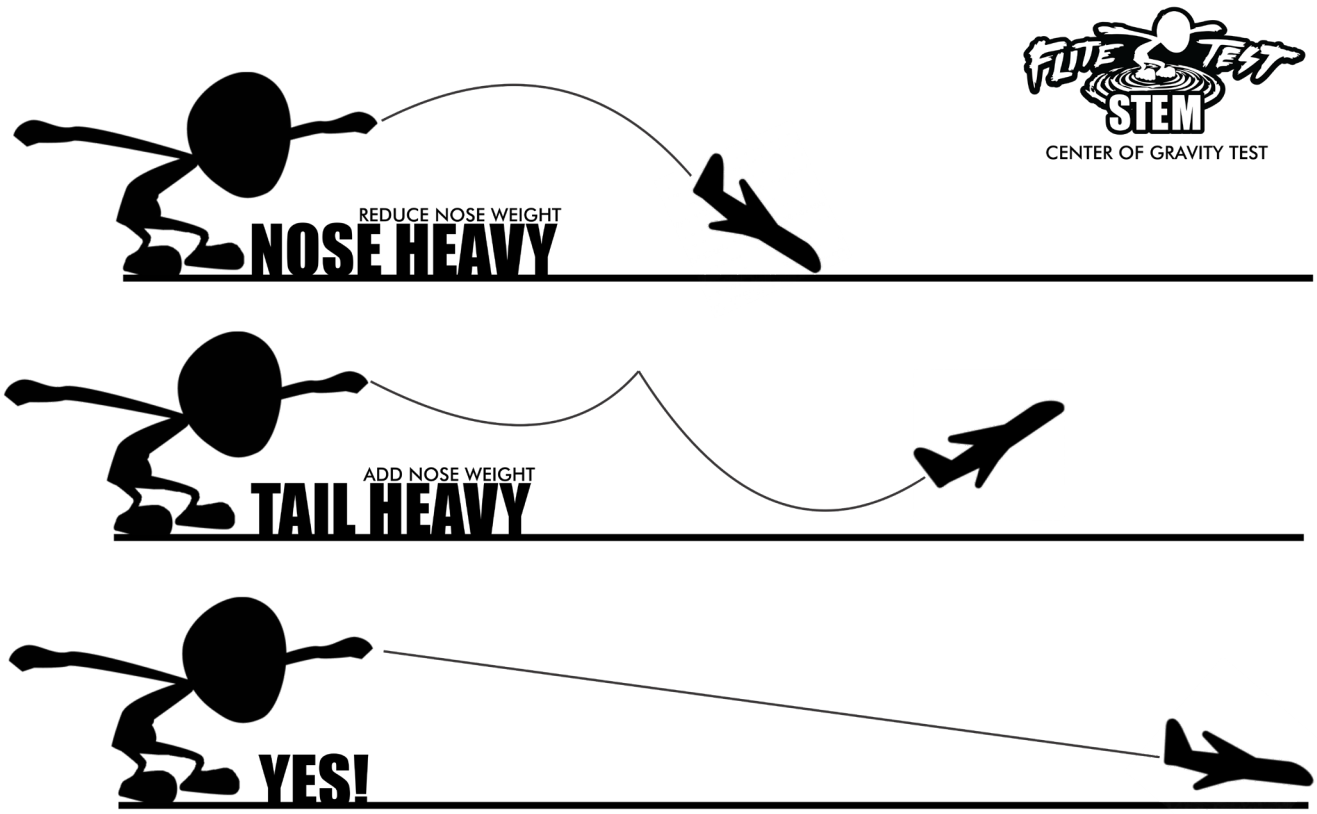
In this stage, students will build their FT Sparrow glider. Complete the following steps to build the gliders, and watch the Build video for reference:

ACTIVITY TWO

CREATING THE ONBOARD EGG MECHANISM

Once their gliders are built, students should use foam board and the tools provided to create their egg-carrying mechanisms they designed and attach them to the planes.

NOTE: Make sure to have the students keep in mind the Center of Gravity of their FT Sparrow. Their egg-carrying mechanism will need to be designed and placed properly on the aircraft to make sure its glide slope is correct. See reference below;



ACTIVITY THREE

TEST

Set up a safe area to test the planes. Move any objects that could obstruct flight out of the way, and keep students behind the launch line. Mark a spot 20-feet away from where students will toss their planes, and let the testing begin!

Set a basic testing scenario for students;

- Sparrow must exceed 30 feet while not breaking the egg.
- Longest distance test before breaking the egg.

After the students have all tested their gliders, ask them to write a brief summary of their project. Students should talk about how far their glider traveled, whether their egg was still in tact, and ideas for changing their attachment designs to prevent the egg from breaking.

EXTENDED LEARNING

Problem to Solve: Without adjusting the FT Sparrow's fuselage, redesign the main wing and back stabilizers to accommodate longer flight times while still supporting your engineered egg support mechanism.

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