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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 remote controlled building and flight
- Work in teams and collaborate on designs

TIME: 120 to 180 Minutes

PROVIDED LESSON

SIMPLE WING DESIGN

MATERIALS NEED

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

Flite Test Power Pack B.
See store for purchasing options

Get the whole package today!

The tools needed for this build are included in the FT Crafty Kit and a box of dollar tree foam board. See store for purchasing options.

Click image!

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.)

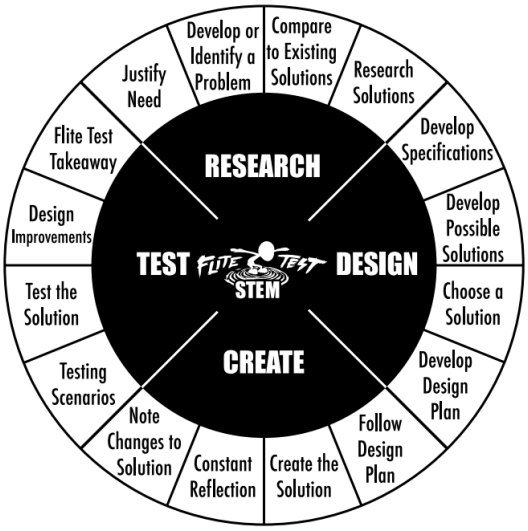
Sponsored Lesson

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.



STEP 1

RESEARCH "IDENTIFY THE PROBLEM"

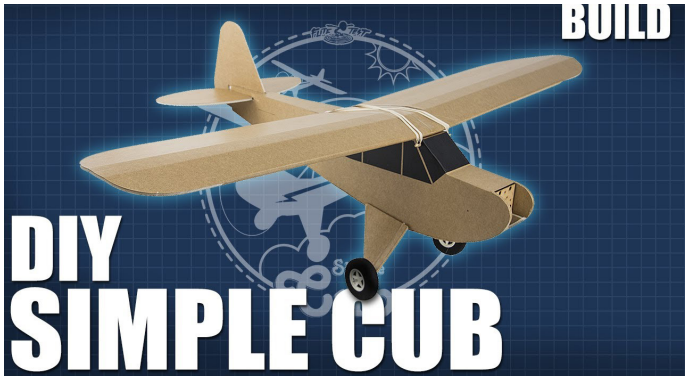
State the problem to the students; with only two sheets of dollar tree foam board, they are to create a new wing for the Simple Cub. When the students receive their FT-Simple Cub build kits, they are to remove the main wing and spar. With the problem stated, have the students begin researching different wing designs to use as a possible solution. Research could come in the form of a media presentation, on site aircraft, model planes present, computers, or phones. Students are to work in teams to solve the simple wing design challenge.

STEP 2

BUILDING THE FT-SIMPLE CUB

With a build per group of students, have them build the FT- Simple Cub, fuselage and tail section only, NO WING. Use the following build video as a resource for this step. You can skip the wing creation part of the video.

Build video for reference:



STEP 3

DESIGN

With the FT-Simple Cub constructed and ready for flight, it is now time for the team of students to design their new wing, using a sketch pad with some rulers, have the students design on paper what their wing solution will be. When ready, hand them their two foam board pieces. (Wings with Aileron's are okay!)

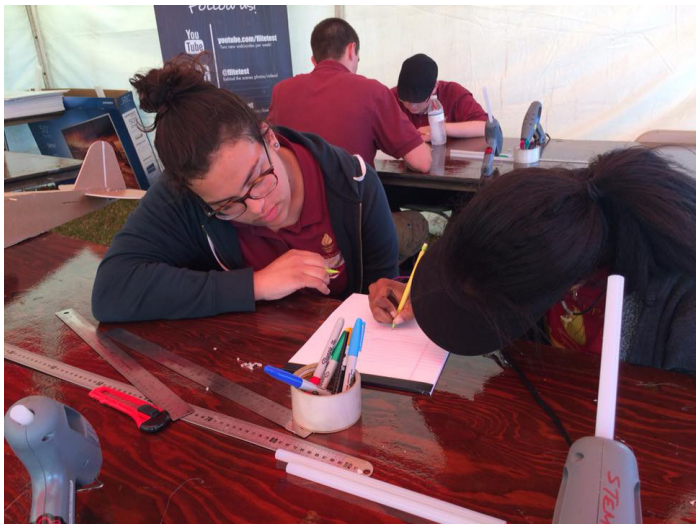
ACTIVITY TWO

CREATING THE MAIN WING

Once the students designs are complete and ready, have them push their measurements onto the provided foam board and begin cutting out and constructing their main wing. This process usually takes around 30 minutes, and keep them on a time crunch!

During this time while students are working, prep some power pods and make sure the student built FT-Simple Cubs are properly made and ready for a safe flight Use this as your preflight check prior to having them go out and test.

NOTE: Make sure to have the students keep in mind the Center of Gravity of their FT-Simple Cub when attaching their new wing to the fuselage. They might have to do some glide tests to figure it out. The student designed wings should also be able to attach and detach from the fuselage using the rubbers bands, just like they would if they were to use the original main wing from the build kit.



ACTIVITY THREE

TEST

Set up a safe area to test the planes. You want to establish a flight line that allows no pilot to cross until no planes are in the air. Depending on how many transmitters and gear you have will depend on the amount of the planes that can fly at once. Typical situations have 3 to 5 power pods and two transmitters. One transmitter for the teacher, the other for the student, we call this buddy boxing. With the power pods in the first couple of planes, you can test their wing designs, when they are done flying the next group without a power pod can get ready until it is their turn to try.

After the students have all tested their wing designs, ask them to write or verbally explain a brief summary of their project. Students should talk about whether or not their solution worked, what improvements can made to the solution, and if we were to revisit this problem again, how would they solve it differently?

EXTENDED LEARNING

Problem to Solve: Using the same fuselage and wing design idea, create a wing that can accommodate a certain weight requirement placed in the fuselage of the simple cub, how much weight can your wing carry?

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