



PLTW Flight and Space Virtual Learning

8th Grade/Rudder - Yaw

May 21, 2020



8th Grade/Flight and Space
Lesson: May 21, 2020
Day 2 of 2

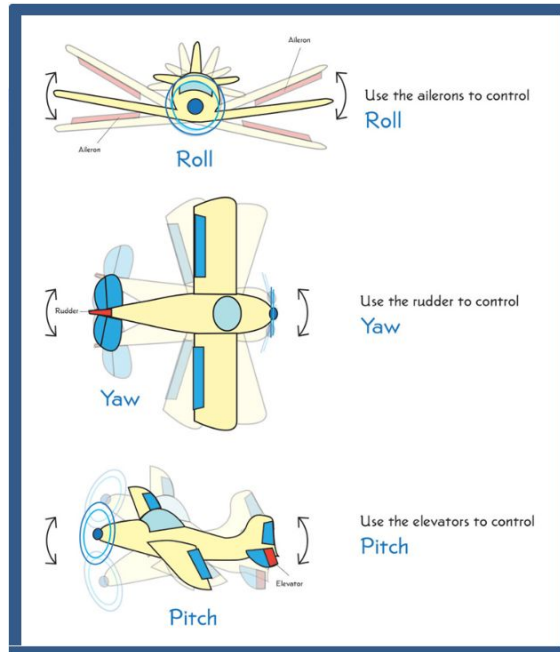
Objective/Learning Target:
Students will learn about the movement of Yaw that the Rudder creates.

Warm-Ups:

Review the airplane parts and the movements they create with this [Quizlet](#).

Lesson Introduction/Background Information:

Now that you have your styrofoam glider built you will make alterations to the rudder portion to test the results. The rudder helps control the yaw of the plane.



Practice:

1. Cut two 0.25 inch (6 mm) slits about 1 inch (2.5 cm) apart from each other on the vertical stabilizer of your styrofoam glider and then bend this area to the right and then left to crease it. The tab you have just made is called the _____.
2. Looking at your styrofoam glider from the front, fold the tab to the right so that it resembles the diagram on the Rudder - Yaw Web page. What motion do you predict will result when you fly your airplane? _____
3. Fly your styrofoam glider. Was the motion the same as your prediction in the question above? _____ If not, describe how it differed. _____.
4. The styrofoam glider should have yawed counterclockwise around its center of gravity if viewed from the front. Where is its center of gravity in terms of the length of the airplane?

5. Now bend the tab left. Predict the motion you will see when you fly the styrofoam glider:
_____.

Practice:

6. Fly the styrofoam glider again. Was your prediction correct? _____ If not, describe how it differed. _____
7. When the tab is deflected to the left, where is more force generated? _____
8. When would a pilot use the rudder to cause an airplane to yaw? _____
9. Where is the rudder located on a commercial jet? _____
10. Which type of airplanes have more than one rudder? _____
11. What is the advantage to having more than one rudder? _____

Self-Assessment:

In your notes describe the results of moving the rudder to the left and right.

Extend Your Learning/Continued Practice:

Watch a flight simulation that demonstrates flight control.

Learn more about how ailerons and rudders work together.

