Jenny Au
Lesson 2
1/9/2014-1/10/2014

Summary of Lesson: Air Planes

In Mr. Vera's class, I brought in an activity for students to build paper airplanes. This was tied into their centroid topic where stability of an air plane is important.

Depending on the size of the class, there was three students in a group. In each group, there was a Recorder, Test Pilot, and a Speaker. The recorder would record their observations of the air planes flight. The test pilot threw the air plane in the hallway and aimed for longest and smoothest flight. The speaker would present the groups data in front of the classroom.

Some questions each group had to answer:

- Predict where the centroid is — explain it
- Find the real centroid — how close or far off was your prediction?

Test the flight of your air plane

- Was the air plane stable?
- Did it fly smoothly?
- Did it fall down or fly all over the place?
- What changes did you need to make if you made any?
- What would happen if you changed the centroid? — use paper clips

Each group presented their findings in English.

The air plane lesson plan turned out to be a success.

Students seemed to grasp the concept of changing the centroid of the airplane to increase the stability of paper air plane flight.

If the air plane was already flying stable, the students knew that no adjustments were needed and they left their plane as is.

A follow up question for the activity was, "what did you learn from this activity?" Students did their shout outs of what seemed important to them.

At the end of the day, if a person was to design an airplane filled with people, that person needs to make sure that the air plane flies straight and stable. The students understood that after seeing how their paper air plane flew.

GK-12 Lesson Plan

Teacher: A.J. Vera
Period: 1,2,3,5,7 **Class: Lawrence High School Geometry Class**
Date(s): 1/9/2014-1/10/2014

SETTING THE STAGE	
Essential Question	Where is the centroid of the paper air plane?
Content Objective(s) (Student-friendly)	Find the centroid of the paper air plane. Fly the paper air plane. Check for stability.
Connection to previous or future lessons	Students worked with centroid related to geometric shapes. Stability of an air plane is an important design factor. Using paper air planes, students can the importance of the paper air plane's center of mass to stable flight of the air plane.
Critical Thinking Questions	How close is the prediction and the actual centroid? Was the air plane stable? Did it fly smoothly? Did it fall down or fly all over the place? What changes did you need to make if you made any? What would happen if you changed the centroid using paperclips?
Key Vocabulary	Centroid, center of mass, balance, stability, flight
Materials Needed/Safety	Paper air plane fold-able outlines, scissors, tape, paperclips
ACTIVE INSTRUCTION	
• Launch (Engage)	Start with an introduction to applications of air planes. Students in groups of 4 were given instructions on how to fold their specific paper air plane model. After the paper air planes were constructed, each group went to the hallway and launched their paper air plane. The goal was for each group to have their paper air plane have the longest flight time and most stable flight.
• Investigation (Explore)	Modification to paper air plane using tape or paperclips was allowed to increase stability and longer flight time.
TIME FOR REFLECTION	
• Summarization (Explain & Extend)	Students seemed to grasp the concept of changing the centroid of the air plane to increase stability of paper air plane flight. If the air plane was already stable during flight, the students knew that no changes were needed. They also considered safety as a factor.
• Assessment (Evaluate)	Mr. Vera grades them for class participation in his own grading book.

Lesson Plan – Airplanes

Airplanes are used for many different purposes.

- Transportation of goods

- Transportation of people

- Military

- Research: (NASA X48 Drone Aircraft) / (Climate Control for each individual seat)

- Recreation