



LESSON 1.3



ANALYSIS OF GLIDER DESIGN

LESSON CONTENT

Technical Skills	Academic Standards	21st Century Skills (p21.org)

MATERIALS & RESOURCES:

- 1 Plank Design Sheet
- 1 Piece Foam/Student
- 1 Playing Card/Student
- 1 Ruler/ Pair
- 1 Pair Scissors/Pair
- 1 Roll Tape/Quad

SEQUENCE OF INSTRUCTION

Time	Section	Description of Instructional Activity
Day 1		
	Prepare	Setup the test area in the classroom, if it isn't already set up. Again, two is better than one.
15	Engage	<ul style="list-style-type: none"> • Hold up a sample plank and another glider design • Ask them "which one they think will fly better?" • Have a short discussion on what better could mean. • Have them sketch the two planes in their journals, and fill in their hypothesis.
5	Discover/Explain	<ul style="list-style-type: none"> • Hand design sheet & rulers to students • Remind the students the planes are in 1:2 scale. • Tell them they will be expected to build this glider design, get it airworthy, and test it on the flight line. The need to be extra careful because the other students in the class are going to need the data too.
25	Practice	<ul style="list-style-type: none"> • Students should build their gliders <ul style="list-style-type: none"> ○ Circulate around the room and solve any issues. ○ As students finish they should: <ul style="list-style-type: none"> ▪ weigh the plane ▪ Do the weight and balance ▪ Fill in the AW-SG worksheet ▪ Get their tail number from you. ○ Extra time should be used for decoration
5	Wrap Up	<ul style="list-style-type: none"> • Tell students that tomorrow they will be collecting data from all the planes
Day 2		
15	Engage	<ul style="list-style-type: none"> • Have students complete a gallery walk of the planes with their partners. They should sketch each plan and make a hypothesis of how

		that plane design will do in terms of distance, accuracy and ability to carry weight.
25	Discover/Explain/ Practice	<ul style="list-style-type: none"> • Have students continue working on decorating their planks • They should also weight them • Students can also begin to fill in the AW-SG • Call them over in groups to test their planes in the test area <ul style="list-style-type: none"> ○ They should add <XX> washers and tape them on ○ They should also adjust the eleveons until straight and level flight is achieved. • Weigh Again • As students finish filling in AW-SG, and have planes already to go, they should bring them to you for certification. This is an assessment. Verify all the information. • Add a nose hook • If they have completed everything, they should be given a tail number for their plane, and checked off on the pilot record for building a plank • Any planes without tail numbers cannot be flown on the flight line.
10	Wrap Up	Students should take a couple minutes to update their data sheet, as well as their findings. You can illicit responses on what was most shocking.
Day 3		
5	Engage	<ul style="list-style-type: none"> • Have the students take their planes out, they should all have a tail number at this point.
40	Discover/Explain	<ul style="list-style-type: none"> • Safety Brief <ul style="list-style-type: none"> ○ Before you leave for the flight line, review the flight line procedures in the pilots handbook ○ Review movement and non-movement areas • Each student should launch their plane, recording the distance that it flies in their workbooks. When one person is flying their partner is writing down distances. • Repeat with all launcher running until everyone gets two test flights in. • Have materials on the line for quick repairs or adjustments
5	Wrap Up	Students should reflect on their experiences in their workbooks

ASSESSMENT:	ADAPTATION/DIFFERENTIATION:
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