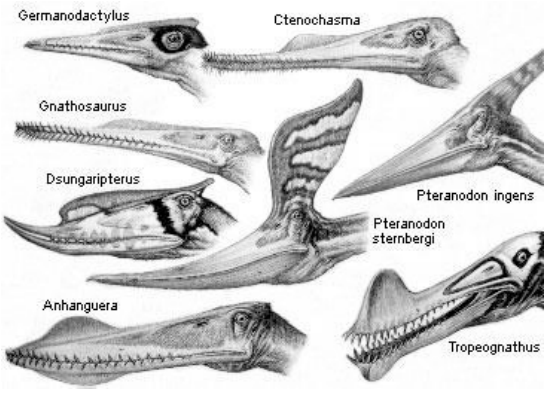
PTEROSAUR GLIDERS

Duration: 2-15 minutes
Institution: SMM
Skill level/Age Level: Grades K-12
Group size: Individual

INTRODUCTION

Pterosaur Paper Glider is a fun activity that allows visitors to play with pterosaur anatomy as a frame for a simple glider they will build. Visitors construct their glider with straws, cardstock as wings, tail, and crest, with a rubber band on the head to use as a launching mechanism. Visitors build and test different crest and wing shapes on their gliders using two stationary launchers, watching how well the glider's fly through the air, making changes to improve their flights



KEY CONCEPTS

This activity gives the learner a playful way to experiment with the concepts of evolutionary adaptation by creating a small glider with attributes of the body shapes of flying reptiles.
Adaptation is a modification of an organism or its parts that will make it more fit for existence (better suited for its environment by a change in a characteristic that affects their survival). Adaptation is passed down from generation to generation.

All adaptation is generated through some application of Natural Selection: evolution of adaptations.

Natural Selection brings Variation in the crest and body of the Pterosaur.

A variation in a Pterosaur/glider will produce a different glide. In the glider, a variation will be changes to the crest, which is the skull variation. According to scientists this is due to different flight patterns and different food sources. The body and wingspan variation on size depends on its powered flights and glide.

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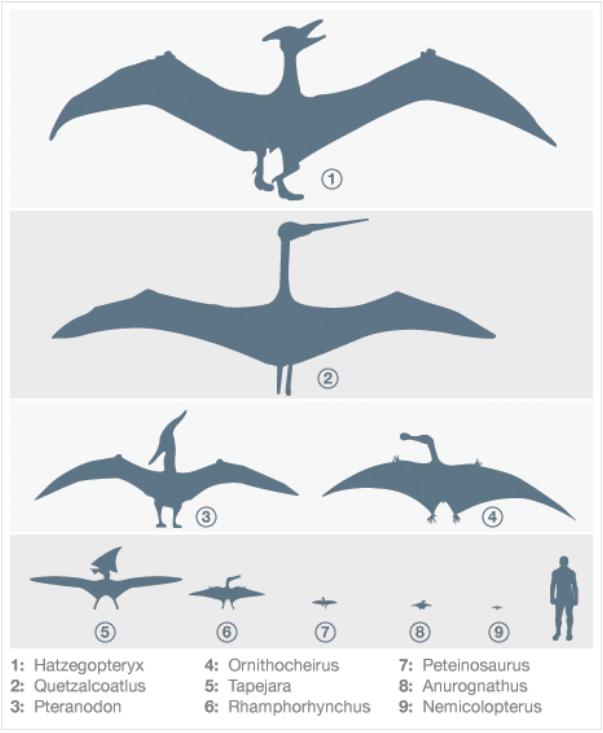
Not all Pterosaurs had a tail for navigation. These flying reptiles used their hind legs to help steer and for take off.



MATERIALS AND TOOLS

Essential
Tabletop container of 5-6 staplers
Tabletop container of 5-6 scissors
Tabletop container of regular straight straws (don't use bendable straws - 7 3/4" Giant Wrapped Straw with Red Stripe)
Box of rubber bands – we use 2.5' x 1/16"
2 tabletop container of colored markers and pencils
1/2 Launcher and 2/4 clamps depending on your table setup
Brightly-colored cardstock with templates photo-copied on them as well as blank sheets.
Extra straws, staples, and scissors
A few pre-made Pterosaur Glider examples (save good ones visitors create and leave behind)

Helpful
Pterosaur Glider tabletop sign and laminated version of printed instructions.

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HOW TO OR STEP-BY-STEP

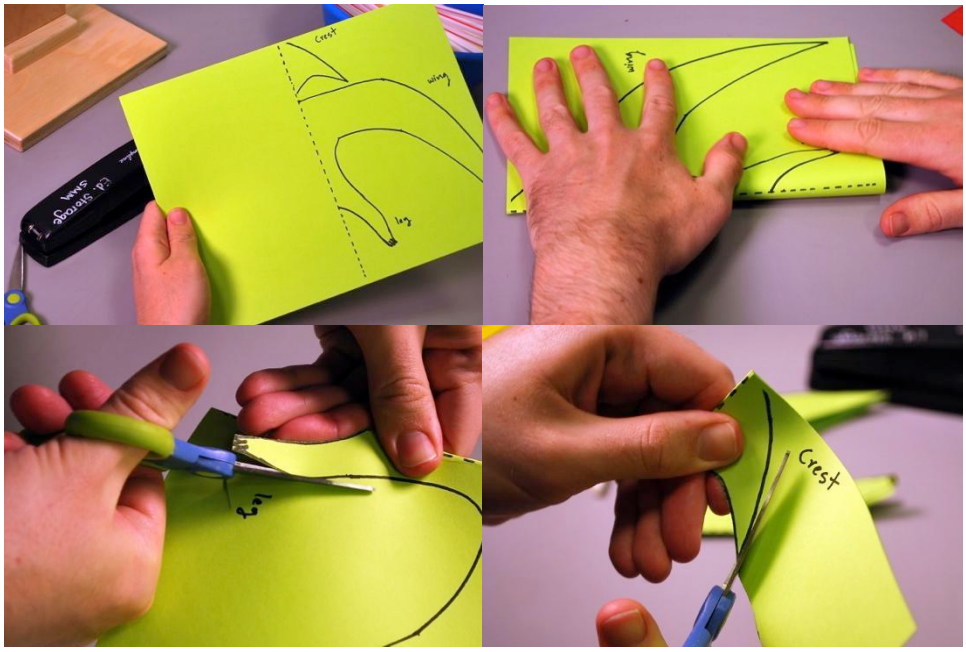
Set up

1. Set out cardstock, staplers, scissors, and straws all in tabletop container on the table.
2. Set out the launcher, examples, and tabletop sign on the table.
3. Double check that each tabletop container has plenty of supplies

Note: table setup **should not be** super neat and tidy, a little messiness and a lot of materials on the table will be more inviting and interesting to guests who come and play.

Step-by-Step

1. Take a piece of card stock and fold it in half hamburger style. Cut out a wing shape, crest skull, and tail/hind legs on the same piece of paper (of any size you want or follow a template on the table).



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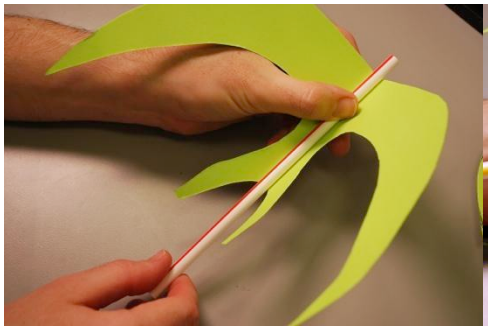
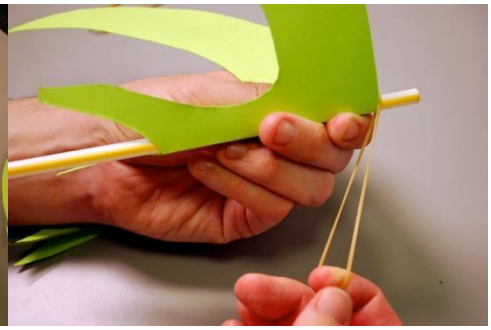
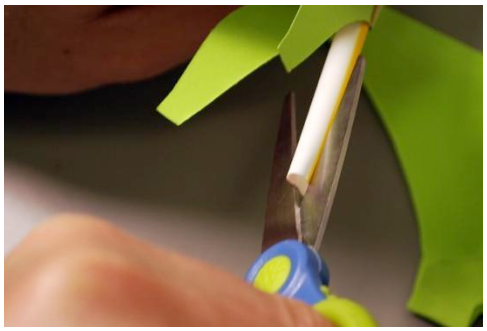
2. Unfold the wings/feet then place a straw on top of the fold, securing its place with a rubber band by looping it from the front and back (You can cut the straw shorter or add another).

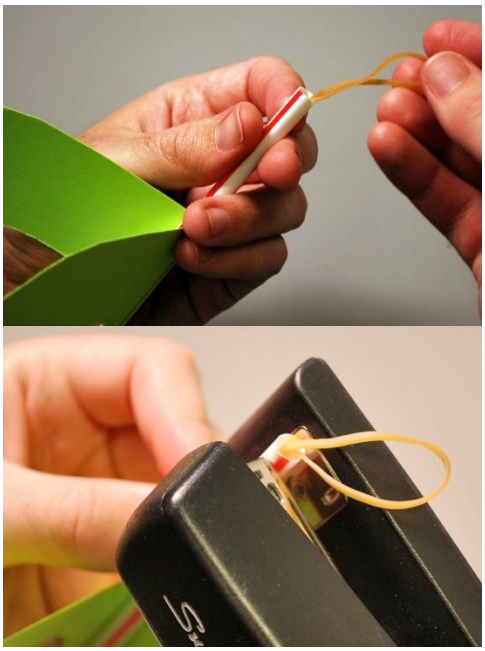




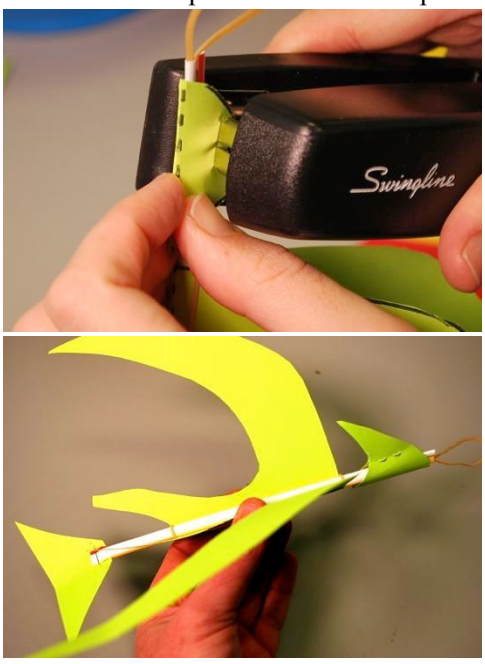
3. On the back end of the straw (based on what direction you put the wings, snip the end of the straw (about half an inch) and staple the hind legs / tail.



4. Place rubber band for launching into the other end (the front) and staple it in place.



5. Add the crest by folding it around the "head" area and staple it from the sides. This will pinch the crest into place.



You should be ready to test!

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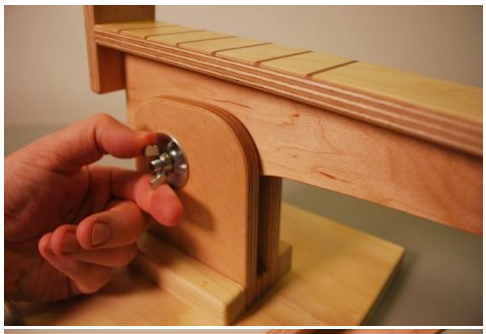
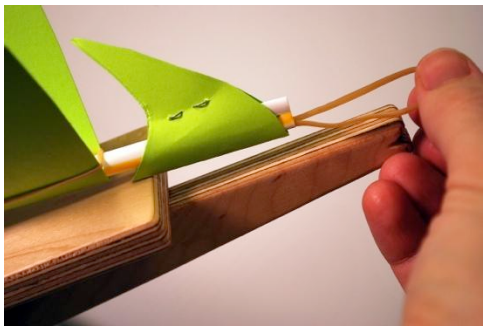
Step Two: Test the Pterosaur Glider

1. **Using the launching stations (you can use a simple ruler held in the hand as a launcher as well but we develop the table-top launcher to control the direction of the flight for indoors use and with groups)** The launchers are clamped down at the corner of the activity table using two quick-release clamps. Once it's clamped down, adjust the angle upwards. We try to point it above the average height of a 6-year-old as a precaution against kids walking into gliders being launched or the launcher themselves.



2. Align the rubber band with the mouth of the launcher.



3. Pull the glider back slowly and release!

4. Discuss with the guest what made their Pterosaur glide and how their structure allowed it to work as well. Encourage them to continue launching their glider or even make a new one. The guest may take their glider with them after they are finished.

PROMPTS AND QUESTIONS

Prompts and questions

- Have you ever thought about how a big reptile can fly?
- Can you build a Pterosaur glider that will glide in the air without a crest?
- Can you build a glider that flies straight or in a curved path?
- How does the glide change as you change the wingspan/shape, crest, and tail/hind legs?

MORE INFORMATION

National Geographic:

- http://education.nationalgeographic.com/education/activity/pterosaur-glider-experiment/?ar_a=1http://education.nationalgeographic.com/education/activity/pterosaur-glider-experiment/?ar_a=1

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- http://science.nationalgeographic.com/science/prehistoric-world/pterosaurs/#page=6

Images

- http://www.bbc.co.uk/nature/life/Pterosaurhttp://www.bbc.co.uk/nature/life/Pterosaur
- http://www.ucmp.berkeley.edu/diapsids/pterosauria.html
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Activities to do at home:

- Flight Adventure's Flight School: http://www.childrensmuseum.org/csi/flightadventures/http://www.childrensmuseum.org/csi/flightadventures/
- FPG-9 Glider Instructions: http://www.childrensmuseum.org/csi/flightadventures/pdf/instructions.pdf

KEYWORDS

Indoor, needs space for launching, safety: caution launching with young participants not always aware in a group where the launching is going to happen

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