

SCIDEAS

Science Ideas for Teachers by Teachers

Teachers Teaching Teachers in Local District 6, 7, 8

Thank you so much for the positive comments we received on our first volume of SCIDEAS. We hope to continue to live up to the expectations of a newsletter that promotes teachers teaching teachers.

This edition will highlight the topic of 'flying things' and as is our intent, the materials will be easy to gather and the learning rigorous. The lessons presented have targeted grade levels, however, due to the spiraling nature of science concepts, introduce them to your students based on their developmental stages. The lessons may be assigned as problems to be done at home.



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lesson plans to:

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Kids' Corner

This section is dedicated to the young boys and girls who delight their colleagues and teachers with their spontaneous jokes and joyous outlook on life. Here are their jokes:

Why did the monkey fall from the tree?
Because the branch broke.

Why did the rabbit fall from the tree?
Because it was stuck to the monkey.

Jokes from Charles
Cowan Avenue Elementary School

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Flying Things

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Local Districts 6,7,8

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Bumble Bee Flyers

Materials

Bee pattern
Scissors
Glue
Paper Clip

Discussion

1. How does the support and rudder help the bee fly?
2. What changes do you see with or without the clip?

Science Standards

Grade K – 4.b

Grade 1 - 4.b

Grade 2 1.b, 1.e, 4.a, 4.d

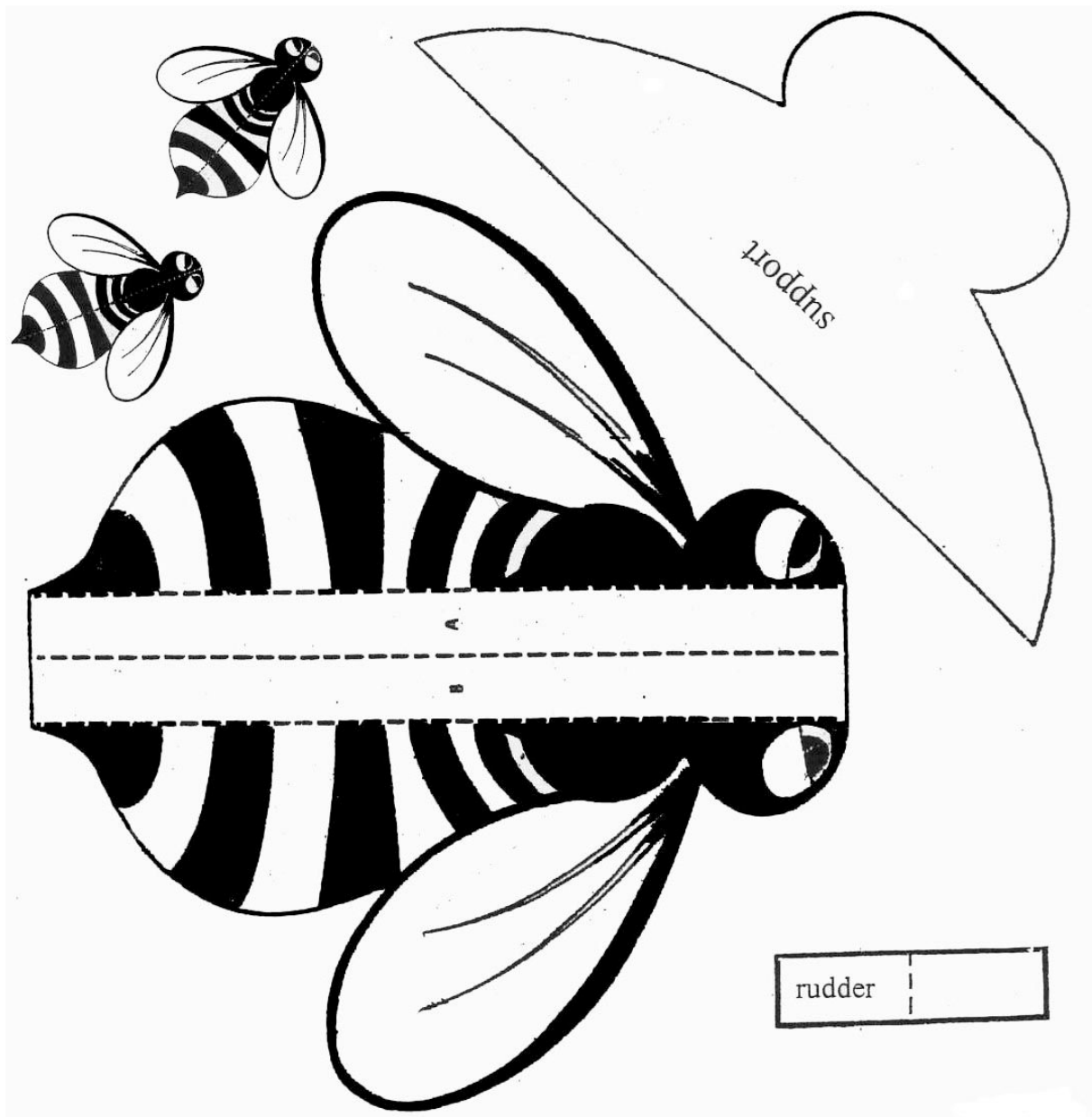
Procedure

1. Cut out pieces on solid lines.
2. Glue the support to the bee pattern. Let dry.
3. Fold the bee on the dotted lines. Glue A to B.
4. Fold the rudder. Glue to rear of support hanging down.
5. Fly the bee. See what happens.
6. Clip the paper clip to the nose of the bee.
7. Fly the bee. See what happens.

Note:

Students discover ways to overcome the sea of air as it impacts the flight of the bumble bee. Use this lesson in conjunction with lessons on properties of air and air as a source of energy. A good resource is the FOSS unit entitled Air and Weather.

Enlarge the Bumble Bee template 120% or to desired size.



Meat Tray Gliders

Science Standards
Grade 2 – 1.b, 1.e
Grade 3 – 1.e, 5.a, 5.c, 1.e
Grade 4 – 6.c, 6.d
Grade 5 – 6.c, 6.e

Materials

Styrofoam meat trays (from students or Smart and Final)
Scissors
Tape

Optional Materials to Enhance

Basic Design

Streamers
Paper Clips

Getting Started

1. Which glider design makes the best flyer?
2. Which design makes the glider stay in the air longest?
3. Which design makes the glider cover the most distance?

Discussion

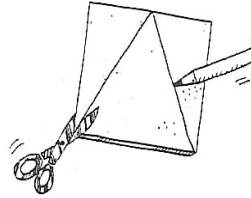
1. Which designs make the best gliders?
2. How can you improve on your current design?
3. How would you share your design with others?

Note to Teacher

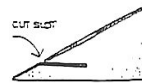
The use of a science notebook would promote the self-discovery of the chronology of their problem solving skills. As students draw their designs and record their flights, they begin to see the importance of recording information. Students can use their notebooks to share their findings with fellow students. Since notebooks of practicing scientists never look alike, you may want to accept all entries. The single commonality among notebooks, however, is that they are dated. For further information regarding science notebooks, see "Science Notebooks" by Brian Campbell and Lori Fulton available for checkout at the San Pedro MST Center. Contact Craig Yokoi, Science Advisor, or Channa Scott, Administrative Assistant, at 310-832-7573 for availability of the book.

Procedure

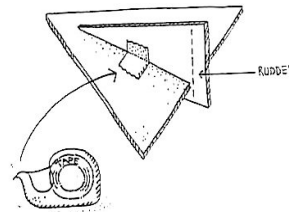
Draw a triangle on the meat tray.
Cut the pattern.



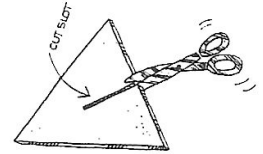
Cut a smaller triangle from the left over pieces.
Cut a slot in the middle of the rudder.



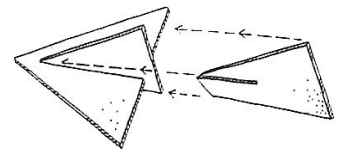
Tape the rudder to the wing.



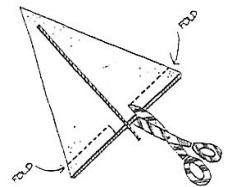
Cut a slot in the middle of the base.



Slide the rudder into the wing.



Make a 1 cm cut on each side of the rudder. Make fold lines. These flaps are the elevators.



Take Out Box Airplanes

Materials

Styrofoam, large take-out box
Scissors
Paper Clip
Airplane Template (page 4)

Optional Materials

Packaging 'peanuts'
Brads

Procedure

1. Print pattern onto cardstock. Cut patterns.
2. Trace the patterns onto the Styrofoam take-out container. Cut out the fuselage, wing(s) and horizontal stabilizer.
3. Cut the solid lines for the ailerons, elevators and rudder.
4. Score and cut the insert for the wing and the horizontal stabilizer.
5. Insert the wing into the fuselage and the horizontal stabilizer into the vertical stabilizer of the airplane.

6. Attach a paper clip (or brad) to the nose of the airplane. (May need additional weight for stability.) A piece of packaging peanut can be attached to the nose of the glider to protect it from crash landings.

Discussion

1. Which wing design makes the best airplane? Why?
2. How does the addition or removal of the paper clip(s) affect the flight?
3. How can you improve the design for better lift? Duration?
4. How does bending the ailerons, elevators and rudder slightly (trimming) control the flight?
5. What are the design components that engineers use to design airplanes?

Note to Teacher

This is the basic design of the airplane. Students may want to explore the size and shape of the wing, placement of the horizontal stabilizer, and placement of ailerons on the wing.

Currently scientists and engineers at NASA are studying the flights patterns of raptors such as red tail hawks in hopes of designing better fighter planes. The engineers have created prototypes that simulate the versatility of the wings of the raptors that dive for prey or maneuver through dense foliage. Students may want to explore the size and shape of the wing, placement of the horizontal stabilizer, and placement of control devices, such as ailerons, elevators and a rudder, on airfoils.

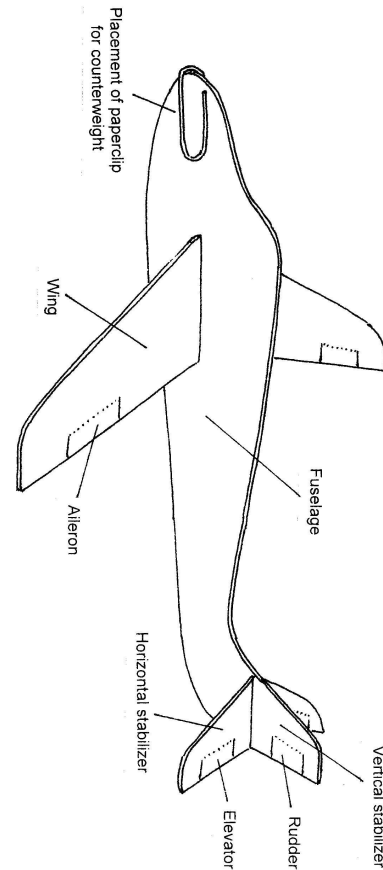
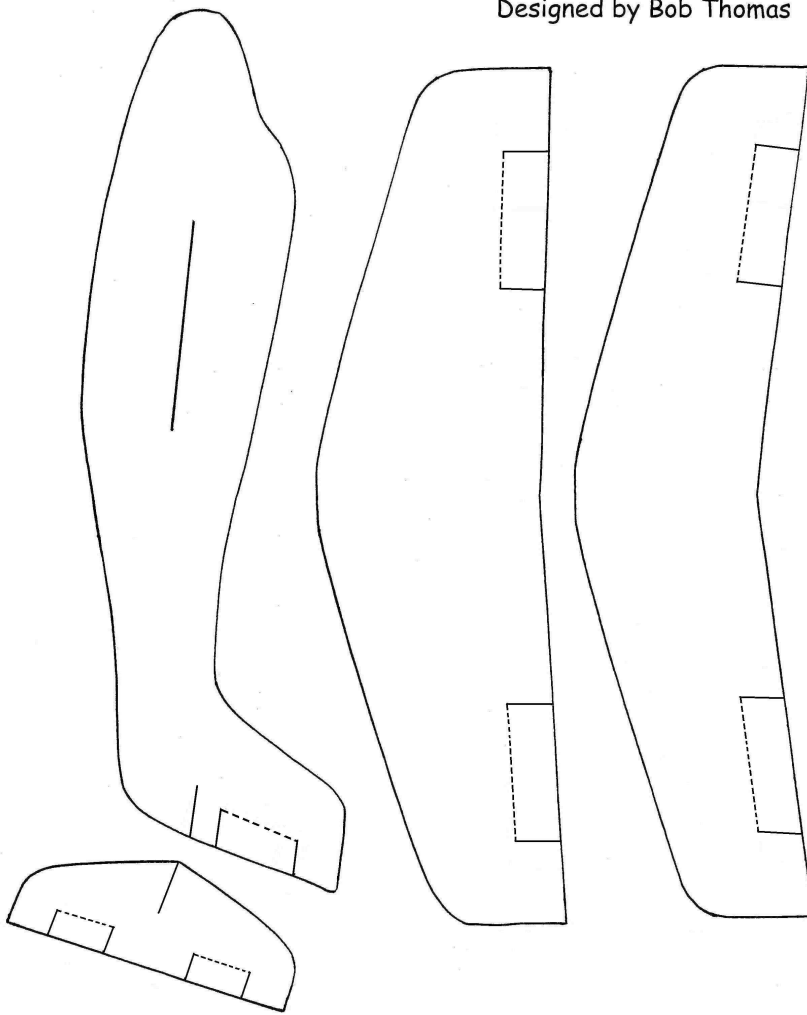


Science Standards
Grade 2 – 1.b, 1.e
Grade 3 – 1.e, 5.a, 5.c
Grade 4 – 6.c, 6.d
Grade 5 – 6.c, 6.e

Designed by Bob Thomas

Take Out Box Airplanes

Enlarge the airplane template 175% or to desired size.



Bits & Bytes

A song to help student remember the rock cycle has been suggested by Teresa Canosa-Carr and Carol Sagastume from Bryson Elementary School, Local District 6. Visit the web site: www.chariho.k12.ri.us/curriculum/MISmart/ocean/rocksong.htm

For more information on flight and patterns for paper airplanes, look at the following websites. You can find patterns ranging from simple to complex. These sites have links that will provide additional resources.

Paper Planes and More
<http://paperplane.org/>

Paper Airplanes: The Best Origami Paper Planes
<http://www.bestpaperairplanes.com/>

Exploratorium Magazine: Paper Airplanes
<http://www.exploratorium.edu/exploring/paper/airplanes>

Amazing Paper Airplanes
<http://www.amazingpaperairplanes.com/>

Flight and Airplanes
<http://www.kathimitchell.com/flight.html>

Au Nuggets



Academy Award Winning Documentary

The 'gold'en nugget this month is
'An Inconvenient Truth'
Classroom Presentations

John Zavalney, Secondary Science Advisor, is part of the national team of teachers, scientists and politicians working with Former Vice President Al Gore on disseminating information on global warming. This prominent committee of distinguished women and men have been trained on the use of the Academy Award nominated documentary, "An Inconvenient Truth". John is available for classroom presentations. He will change the discussion to meet the needs of elementary students. Contact John at 310-832-7573.