

SCIENCE APPRENTICE



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Contents

Lesson Plans and Ideas 2

Extension Activities 7

At Home Learning Tasks 8

Printables 9



Lesson: Paper Planes

[Suitable for Infants – 6th class]

Subject: **SCIENCE**
Strand: Energy and Forces
Strand Unit: Forces
Integration: History, Visual Arts

Introduction:

On the board, show the children an image of the Wright brothers and the first ever successful plane. Ask them to answer the following questions (this can be done in pairs with the older classes)

What, do you think, this plane is made out of?

How is this plane different to the ones we see today?

Why was the plane an important invention?

Read Aloud:

Infants - 2nd class: In 1903 two brothers, Wilbur and Orville Wright, invented the first successful airplane. They called their plane the Flyer. It was made from wood, fabric and really thin wire. The engine was made from metal and used gasoline. After three months of building, the Flyer was ready. The brothers tossed a coin to see who would take the first flight, Wilbur won. The Flyer only managed to stay up in the air for about 3 and a half seconds, but the brothers knew that this was the beginning of something exciting!

Read Aloud:

3rd -6th class: In 1903 in North Carolina, two brothers named Wilbur and Orville Wright, invented the first successful airplane. The plane took six years of research and planning, followed by three months of building. The frame of the plane was built from wood and covered in French sateen fabric. It was named 'the Flyer'. On the 14th Decemeber 1903 the Wright Brothers tossed a coin to see who would take the first flight and Wilbur won. The Flyer managed to stay in the air for 3 and a half seconds. There were two more short flights that day. On the second flight, Wilbur traveled 50 metres up into the air, and then came straight back down. On the third, Orville managed to fly for 15 seconds. The brothers were extremely excited, the knew that they had invented something that could change the world.

Activity: Make a plane

You will need:

- Paper or paper card
- Scissors
- Pencils
- Aluminium foil

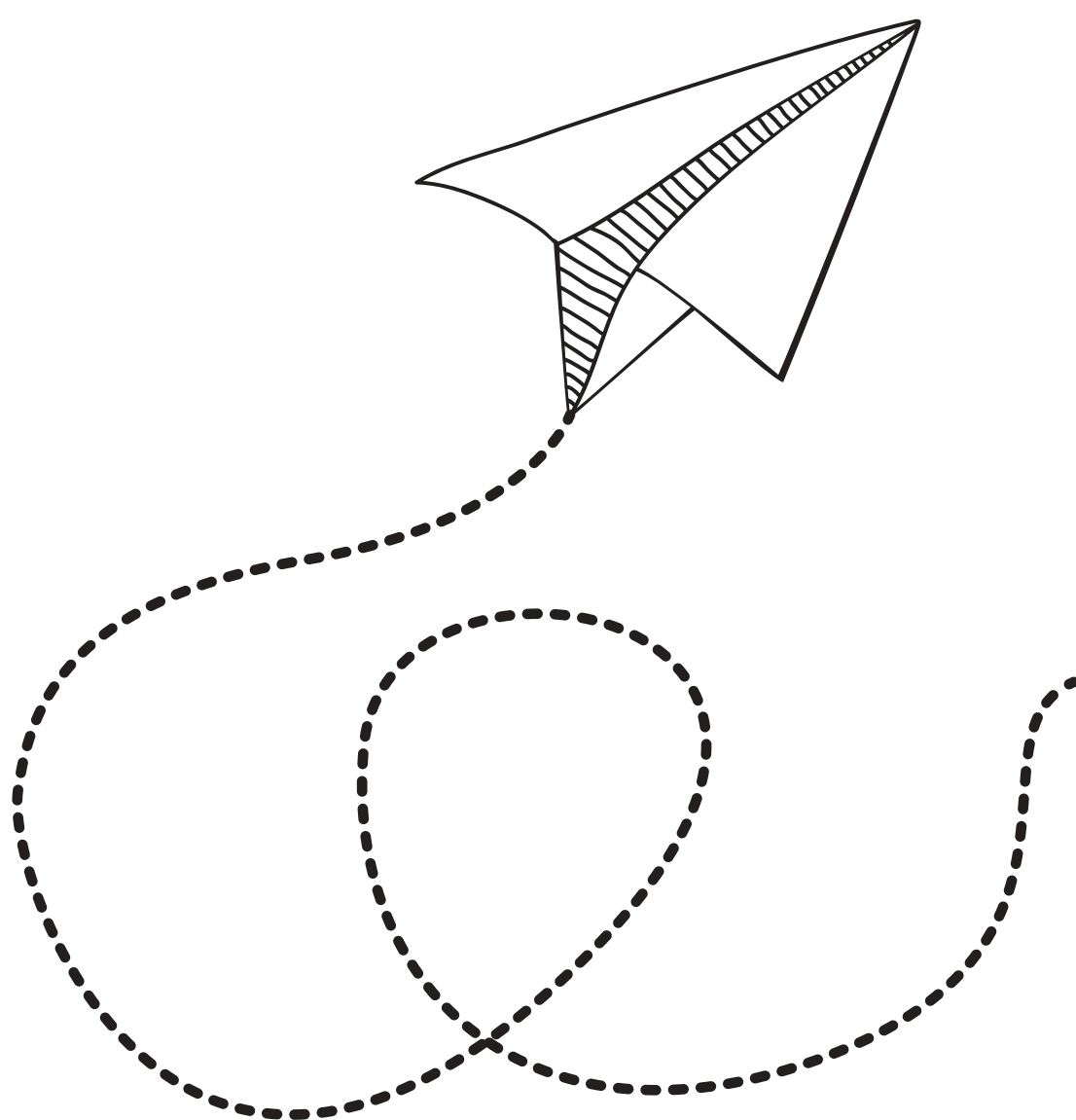
1. Explain to the children that today they are going to make a paper plane. To successfully make a plane, the children should consider what a 'good' plane is. A good plane is one which can fly successfully. For the Wright brothers, a successful flight was one which lasted more than a few seconds, and covered a specific distance. Ask the children to decide how long they think their successful flight should be, and what distance it should cover. For younger classes you can set the success criteria, e.g. 2 seconds in the air, covering 1 metre.

2. Once the class have decided on their success criteria, give them all of the above materials. With younger classes, this may be just paper, pencils and scissors. For older classes adding choice will add a new element of problem solving to the task as the children will have to consider the best material to use.
3. Give the children time to create their airplane. For older classes, you can add to the challenge by having the children make a plane that can carry two coins.

Conclusion:

Bring the children to the school hall, or clear the classroom of hanging objects that might prevent the planes from flying successfully. Have them time the duration and measure the distance of each others flights.

For older classes, you can discuss the scientific process by getting the children to repeat the flight three times, and get an average time and distance to allow for accuracy. Older classes might graph their planes to illustrate which ones were the most successful. They could then analyse what the successful planes had in common, before repeating the experiment to create new and improved paper planes.



Lesson: Air Quality Investigation

[Suitable for 3rd – 6th class]

Subject: **SCIENCE**
Strand: Environmental Awareness and Care
Strand Unit: Caring for the Environment
Integration: Visual Arts, Geography

Introduction:

Ask the children to brainstorm all the causes of air pollution they can think of.

Read Aloud:

Air pollution comes from many different sources, both natural and human made. In Ireland, emissions from cars, smoke from factories, smoke from homes, forest fires and burps from cows are among the leading causes of air pollution. Scientists in Ireland check the air quality every day to make sure it is safe. They grade the air using the Air Quality Index. It shows exactly what the air quality is like in your area. It is important to remember, that air moves around. If air pollution happens in one area of Ireland, it can cause problems many miles away. This is why we all need to work together to combat air pollution.

[You can look up the air quality index online with older classes have them figure out the quality of air in their locality, see <http://www.epa.ie/air/quality/index/>]

Activity: Experiment to Investigate Air Quality

You will need:

- Vaseline
- Paper Clips
- Paper Card
- String

1. Explain that today the class will investigate the air quality in four areas in the school. Ask the children to choose four areas which are different to each other, e.g. the playground, the classroom, the hall way, the sports hall. You may also choose four areas in the classroom, e.g. at the door, the board, the toilet, etc. Both investigations can be carried simultaneously.
2. Ask the class to predict which of these four areas has the worst air pollution, and the best air pollution. Prediction is an important part of the Scientific Method. Make sure the children try and justify their predictions.
3. Explain to the class that because Vaseline is sticky, it can be used to gather dust and dirt from the air. Spread Vaseline across four squares of paper card.
4. Thread a paper clip through the corner of each square.
5. Tie a string on to the paper clip.
6. Using the string, hang the paper clip in each of the locations.
7. Leave the squares for two days with a sign saying 'Experiment in progress, do not touch'.
8. Collect the squares and ask the children to examine them. First have them examine them with their eyes, then they can use a magnifying glass.
9. Ask the children to count the dust particles they see. To allow for an accurate reading, you can divide the paper into 8 small squares and have each child count the dust particles in a specific area.

Conclusion:

Ask the children to graph or record their results. These could be presented to the school as part of an air pollution awareness campaign.

Extension Activities

These activities can be given to individuals or groups of children who wish to explore more about all things UP IN THE AIR!

1. Imagine you are a news reporter who has been given the chance to interview one of the Wright Brothers on the 15th of December 1903, the day after they made the first successful flight. Write out the interview conversation (script) with a partner and perform it to the class.
2. List five ways that the students and teachers can improve air quality in your school. Can you create a poster illustrating these?
3. Air pollution has lead to global warming. Can you find out ten facts about global warming. You should try and answer the following questions while doing that: What is global warming?
How does it affect humans?
Can we stop it?
4. People often do not realise that air pollution can affect human health. Write an article for your local newspaper telling your community about the negative effects of poor air quality.
5. What do you think air transport will look like in the future? Write a paragraph explaining your answer and draw a picture to illustrate it.

Do more at home!!

Only a small amount of a child's life is spent under their teacher's guidance. Therefore, it is really important that children's learning extends beyond the classroom door! Encourage your class to complete mini projects at home, and to figure out the answers to these questions!

1. Although the Wright Brothers took the first ever controlled flight, using an airplane powered by gasoline, the story of human flight began with hot air balloons in the 1780s. Can you create a project about one type of aircraft? It could be anything from a balloon, to a glider, to a rocket.
2. Alpine Swifts are a type of bird that almost never land. They drink, feed and sleep in flight. Can you create a fact file about Alpine Swifts?
3. In UP IN THE AIR Dr. Blánaid White explained why bees are important. Read pages 16 and 17 to remind yourself. Can you think of ways to make your garden at home more bee friendly? List some ways and try and implement them in your garden. You could even ask your principal if you can have a bee friendly patch in the school garden.
4. Can you repeat the Vaseline squares air pollution experiment at home? Find out what room in your house needs an air pollution solution.

SOMETHING I KNEW
BEFORE READING UP
IN THE AIR..

SOMETHING NEW
THAT I LEARNED ..

SOMETHING THAT
I FOUND
INTERESTING ..



SOMETHING THAT I
REALLY ENJOYED..

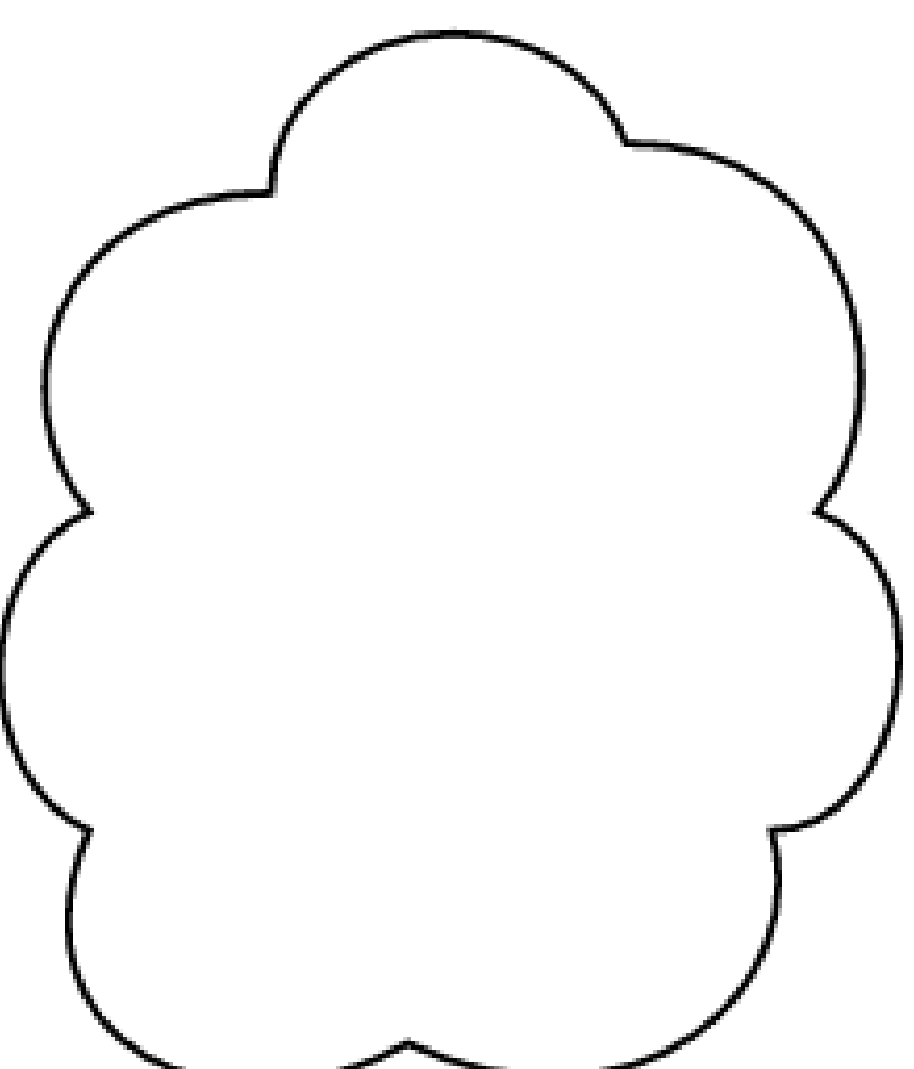
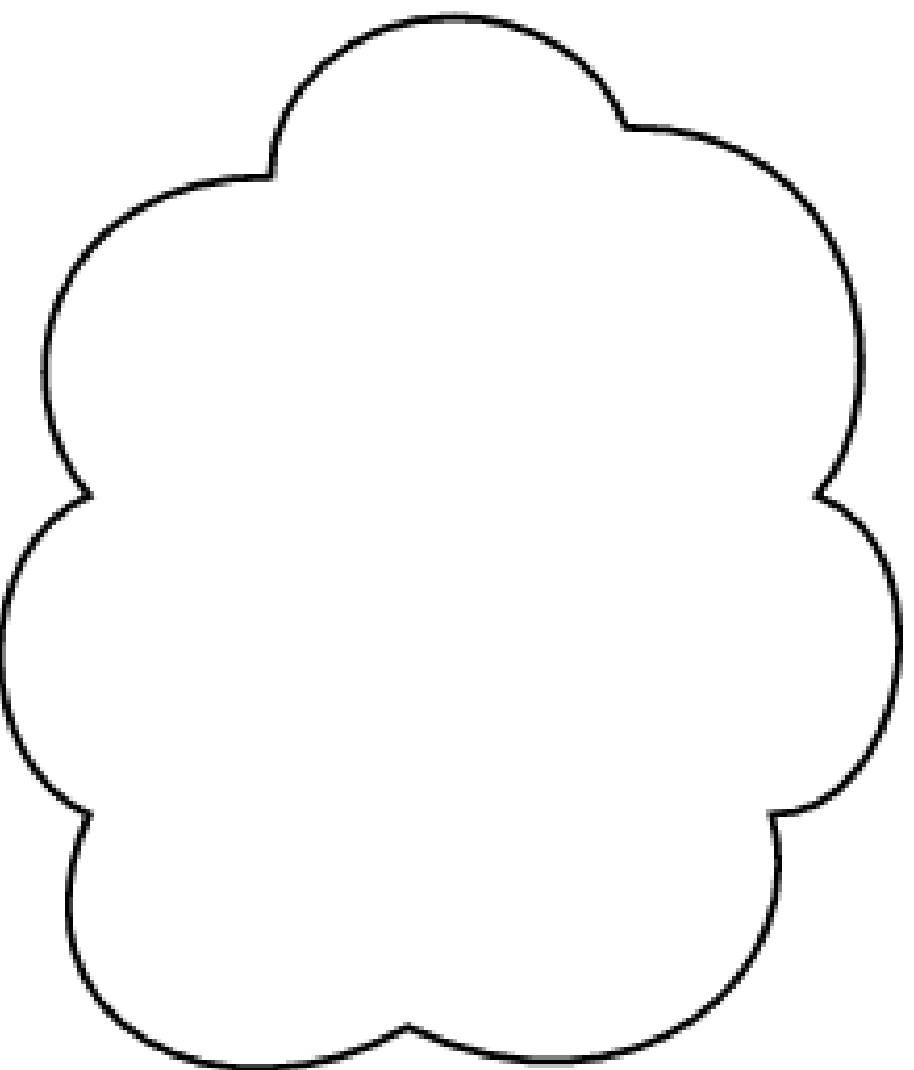
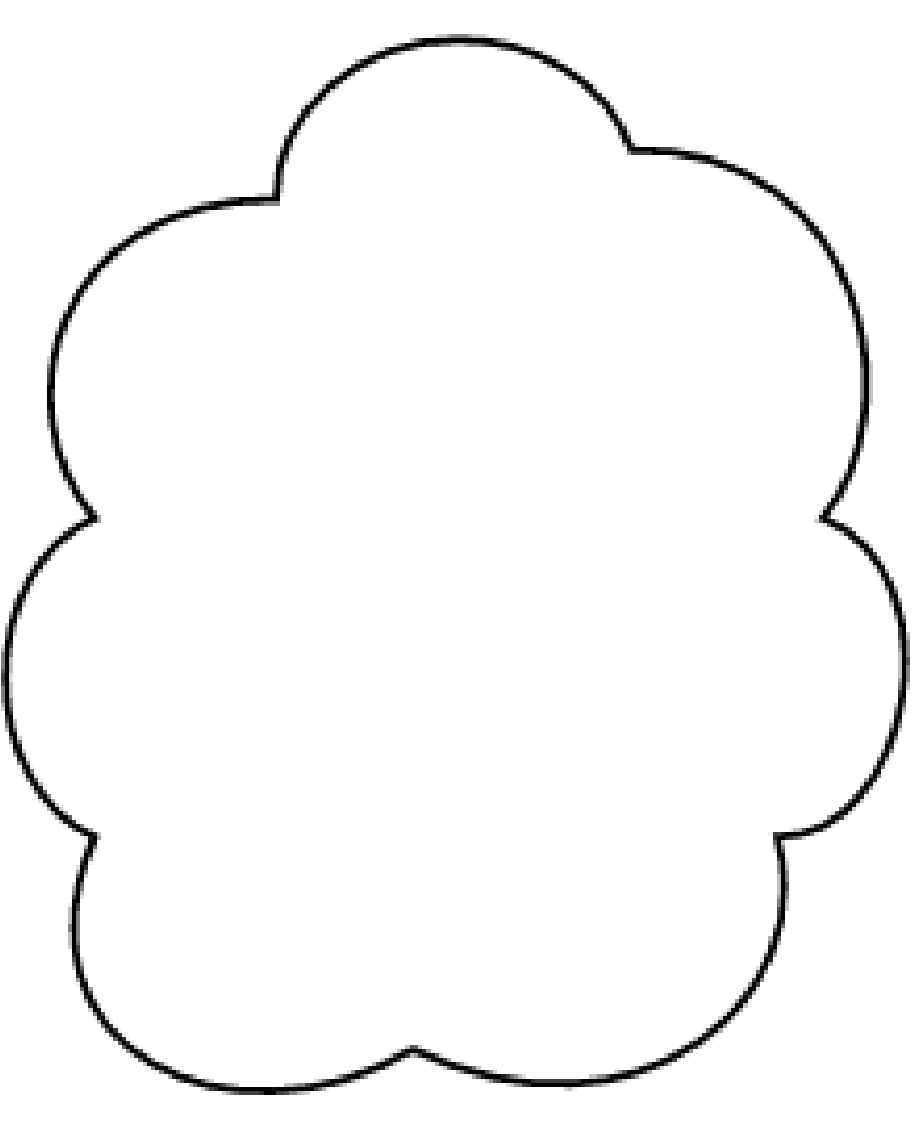
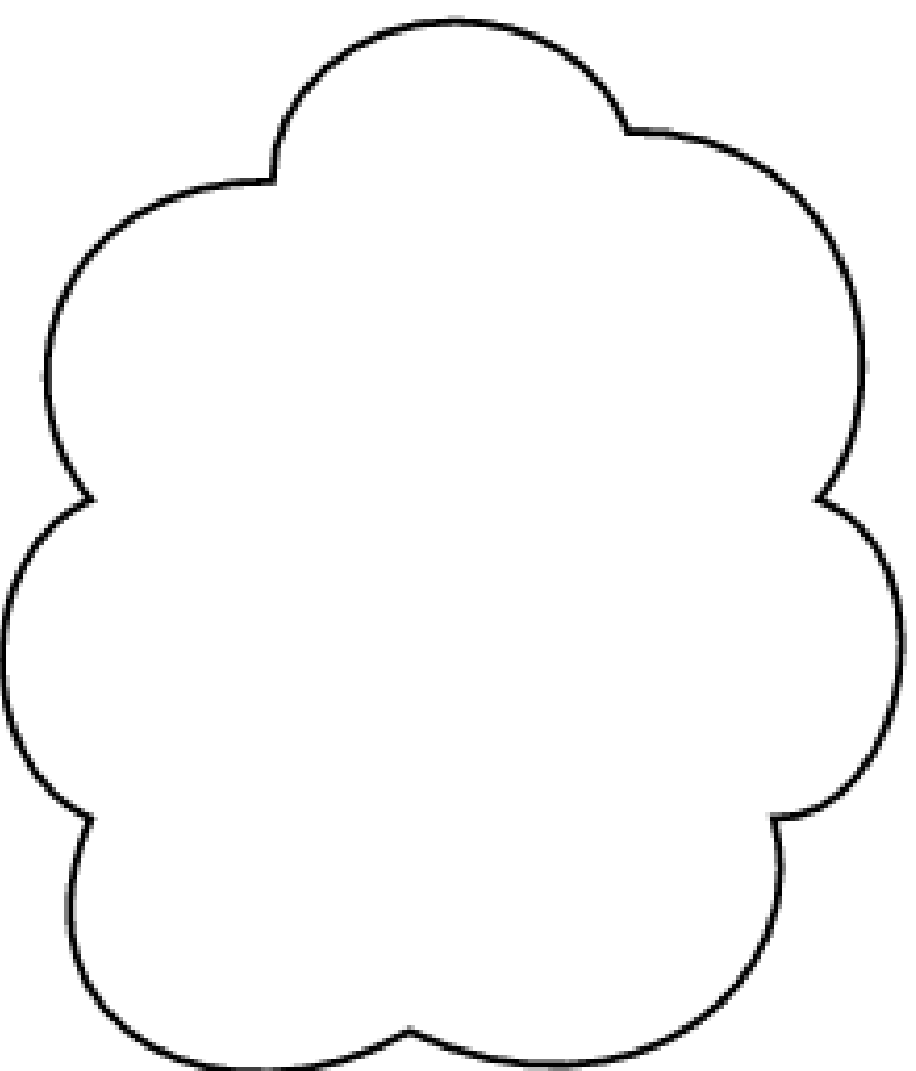
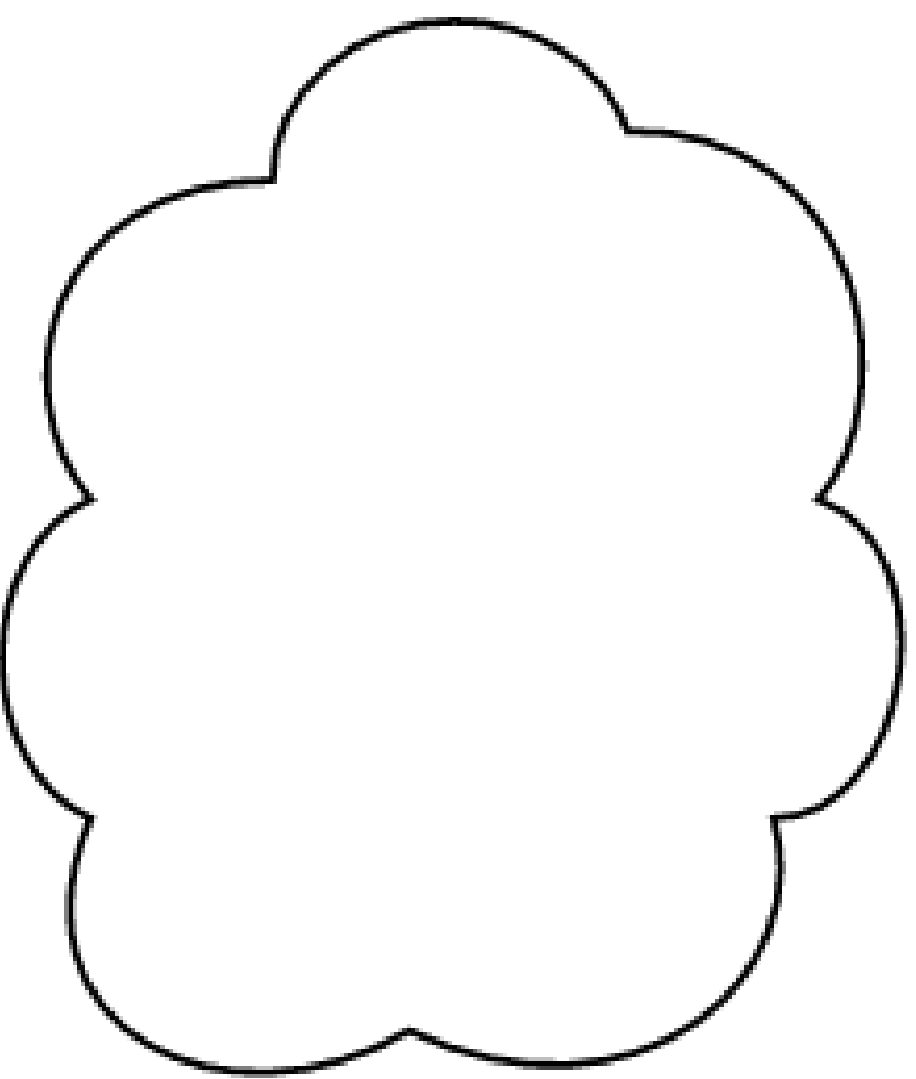
SOMETHING I WANT
TO KNOW MORE
ABOUT ..

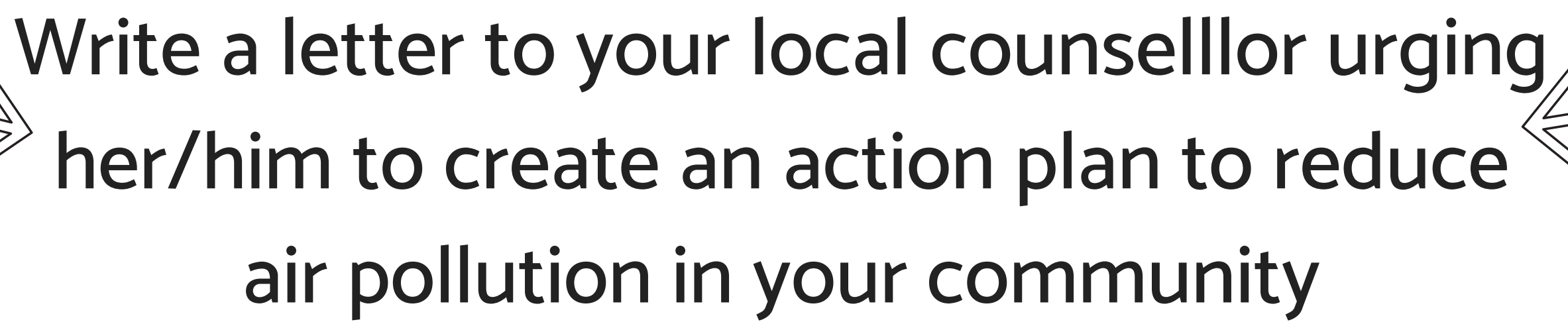
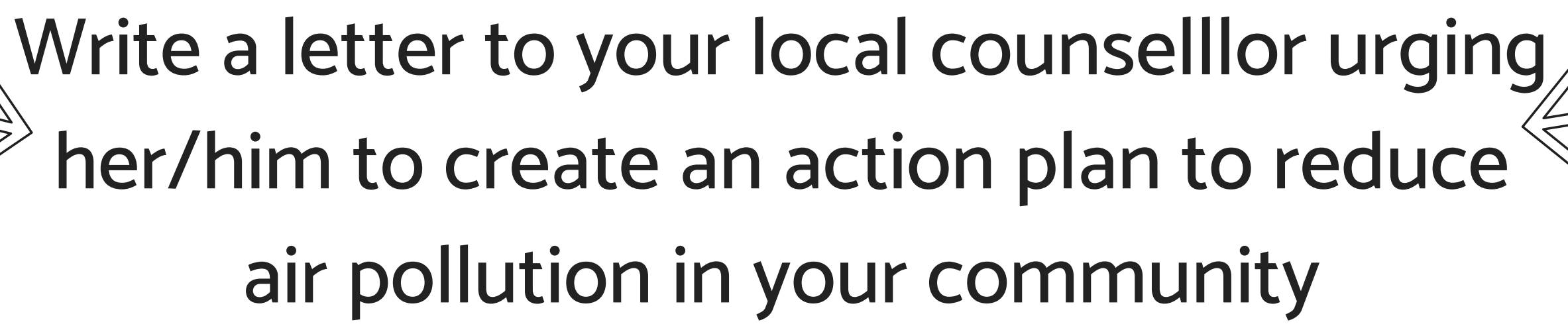
SOMETHING THAT I
WANT TO TRY
IN SCHOOL OR AT
HOME ..

SCIENCE APPRENTICE

UP, UP AND AWAY!!

Can you name and draw five things
that you would find up in the air?





This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

Experiment Write Up

Aim of the experiment:

Equipment needed:

Steps Taken:

- 1.
- 2.
- 3.
- 4.
- 5.

Results:

Learning Canvas
Created and Written by
Sorcha Browne
Illustrated by
Martin Beckett

