AIRSHIP DREAMS

A project exploring Bedford's airship history and imagining its future

Nearly 100 years ago, the government had a dream that Bedford would be home to an airship airport. They imagined people flocking to Cardington to fly all around the world in these huge crafts.

Do you dream of escaping gravity?

Will airships return to Bedford?

Did the airship dream have to end?

Bedford Creative Arts, The Higgins Bedford and the Airship Heritage Trust have joined forces to investigate this history and question why airships are such an important part of Bedford's heritage.

Made in 2021 as part of the Airship Dreams project, led by Bedford Creative Arts in partnership with The Higgins Bedford and The Airship Heritage Trust, supported by National Lottery Heritage Fund, Arts Council England and Harpur Trust. Resource pack designed by Katie Allen. With thanks to Bedford Central Library and the Aircraft Research Association.

HARPUR TRUST

BEDFORD BOROUGH COUNCIL

Airship Heritage Trust

The Higgins BEDFORD

HERITAGE FUND

LOTTERY FUNDED

Supported using public funding by ARTS COUNCIL ENGLAND

Welcome to Airship Dreams and the Airship Dreamers Club!

Hello, my name is Mike Stubbs and I am an artist who grew up in Bedford. I remember seeing huge balloons on the horizon at Cardington when I was a child. I am now making a new piece of art called 'Escaping Gravity' at The Higgins Bedford.
It is inspired by the stories of Bedford's airships and is going to open in 2021. I am using computer game technology, projectors, sound, music and much more in my work.

Artwork made by students of different ages will also be in the exhibition, as well as stories form local people about airships. I really hope you can make it. If you'd like to hear more about the project then you can watch this video bit.ly/ArtistMikeStubbs

Hello, my name is Sita Thomas, I'm the host of the Airship Dreamers Club. You might have seen me on Channel 5's Milkshake. I have been so inspired by learning all about Airships and the history and heritage of Bedford and Cardington. I hope you will join me in finding out more, and having your own airship dreams!

In this booklet you will find lots of interesting facts and fun activities to help you think about what it might be like to fly. I've made you a documentary about Bedford's airship history to get you started and you'll find links to other videos in which I am joined by a special guest, from children's book author Vashti Hardy, Little Science Lab's Kristina Castle, to artist and illustrator Mique Moriuchi.
Once you have done the activities, tick them off on the wall chart at the end of this booklet and let us know what you've done by emailing hello@airshipdreams.com and you can get your certificate and badge.
Head over to bit.ly/AirshipIntro to get started!

In the 1920s airships were made in Cardington in two huge hangars called "sheds". The sheds are still there! Have you seen them?
The town of Shortstown was built to provide homes for the people building the airships, and their families.
In July 1930 the R100 airship flew to Canada from Cardington. It was a huge success! However in October another airship called the R101 crashed and 48 people sadly died. That was the end of the airship dream for Cardington.

Video Guide

Use our family friendly videos to help your exploration of Airships. Each activity in this pack links to one of these videos, and you can watch them in any order you like.
Pick which ones look the most fun to you.

Title	Description	Image	URL
Introducing Bedford's Airship History	Discover Bedford's fascinating history as the centre of the UK's airship industry and learn about R101's tragic fate.		bit.ly/AirshipIntro
The R100 - Cardington to Canada and Back	The R100's eventful first Transatlantic flight to Canada.		bit.ly/CardingtonToCanada
Stories of the R101	Fascinating interviews with people with personal connections to the R101.		bit.ly/R101Stories
Airships on Screen	A mash-up of Airships found in movies!		bit.ly/AirshipsOnScreen
Den by Ben - An Airship Animation	Airship Enthusiast Den Burchmore's words brought colourfully to life!		bit.ly/DenByBen
Airships Unboxing Series	A series of Airship enthusiasts sharing their treasured airship posessions.		bit.ly/UnboxingAirships
Adam's Science Of Flight	An exciting insight into the science of flight, with fun activities that you can try!		bit.ly/ScienceOfFlight
Paper Straw Rockets	Little Science Lab's Kristina helps us investigate the science of flight making paper straw rockets.		bit.ly/PaperStrawRockets

Video Guide

Use our family friendly videos to help your exploration of Airships. Each activity in this pack links to one of these videos, and you can watch them in any order you like.
Pick which ones look the most fun to you.

Title	Description	Image	URL
Film Cannister Rocket	Let's make a rocket that can fly up into the air!		bit.ly/FilmCannisterRocket
Parachuting Experiment	What goes up, must come down? Experiment with parachutes!		bit.ly/ParachutingExperiment
Write An Airship Story	The amazing process of developing our own stories... about airships!		bit.ly/AirshipStorytelling
Airship Literature	How can we spark our imaginations thinking about flight and fantasy in stories?		bit.ly/AirshipLiterature
The Brightstorm "Skyship" with Vashti Hardy	Vashti tells us all about her fantasy adventure book series, Brightstorm.		bit.ly/Brightstorm
Make An Airship Model	Six year old airship expert, Bethany, helps us to make our own airship.		bit.ly/AirshipModel
Make Your Own Airship Mobile	Illustrator Mique Moriuchi shows us step-by-step how to make a brilliant airship mobile.		bit.ly/AirshipMobile

The R101 Airship in Shortstown

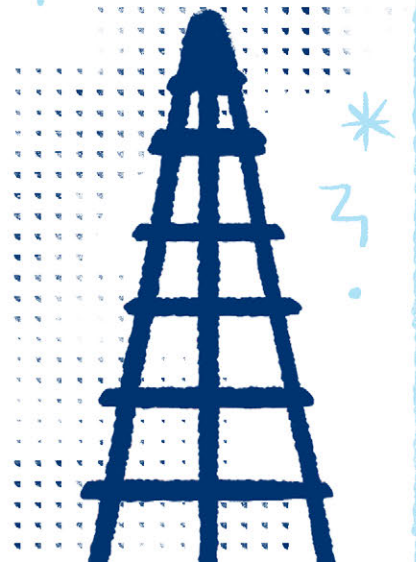
The R101 was a famous airship that was built in the Cardington Sheds, (the giant hangars), in 1929 by workers who lived in Shortstown.

Shortstown is named after the Short Brothers who built airships in Bedford from 1916. The Government took over the running of airships just three years later, but the name stuck.

The R101 was part of the Imperial Airship Scheme, a government plan for airships to fly from Bedford taking travellers all around the world.

Airships are filled with a gas that is lighter than air which makes them float, like a boat floats on water. The R101 used hydrogen which is very light but highly flammable. After a few test flights, engineers decided the R101 wasn't lifting very well and decided to extend the ship. This made it the world's longest flying aircraft at the time.

The R101 had a sister ship called the R100 which flew successfully to Canada from Cardington on 29th July 1930.



The sad end of the R101 Airship

The R101 was supposed to fly to India in September 1930 but high winds delayed the flight. After pressure from officials to fly the ship, the R101 eventually took off from Cardington on 4th October 1930 and started its flight to Karachi. However, winds were still bad and not all pre-flight tests had been completed...

On 5th October the airship crashed in Beauvais, France, bursting into flames shortly after hitting the ground. Sadly 48 of the 54 people on board lost their lives.

The crash was a national tragedy. Those who lost their lives were laid in state at Westminster, London before being brought to Cardington to be buried. There is a memorial in Cardington in the cemetery of St Mary's Church.

The government decided not to continue with the Imperial Airship Scheme and dismantled the R100 airship, selling it for scrap.

Make your own model Airship

Design your own personalised airship using the big outline on the next page. You could make a rough sketch here first!

Photo credit: The Higgins Bedford

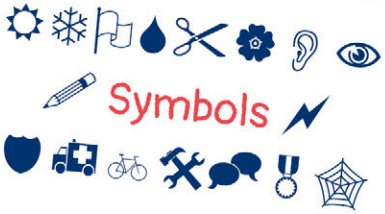
Check out the R101. It has a sleek design. They have used formal lettering to clearly let people know the model of airship. (G-FAAW is its registration number!)

Think about what your airship would be used for.

- Will your airship be like a school bus?
- Perhaps it will be a posh way to go on holiday?
- Who will use it, and what will be inside?
- Will it be free to ride?

How will your airship be decorated? Could you use...

LETTERING



TAKE IT FURTHER

Once you have designed your airship, could you make a 3D model?

You might like to make a mobile with Mique, here:

bit.ly/AirshipMobile

or make a 3D model with Bethany, here:

bit.ly/AirshipModel

Make your own model Airship

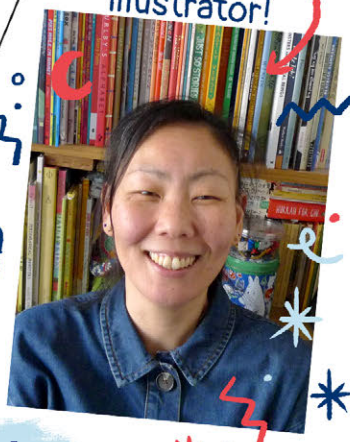
Draw a logo or crest for your airship here!

What symbols would represent you?

ARTY TIPS

Could you stick on decorations or cut out and glue pictures, coloured paper or letters?

Mique is an illustrator!



DRAWING TIPS

Artists Bethany and Mique say:

- Plan a design idea first
- Practice on a spare page if you're not sure
- Draw lightly with a pencil in case you need to rub it out
- Look at a picture to help you

The Science of Flight with...

Scientist Kristina from little Science LAB

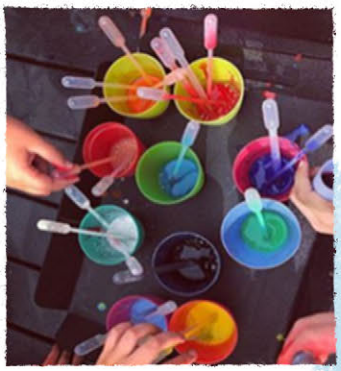
Let's explore Newton's third law of motion which states:

Every action has an equal and opposite reaction.

In this experiment we will turn a film cannister into a rocket and launch it as high as possible.

EQUIPMENT

- Watered down paint or water alone
- A pipette or another measuring device
- A film cannister or any other small pot with a push on lid (NOT A SCREW TOP!)
- Alka Seltzer tablet or any other effervescent tablet



METHOD

STEP 1: Using a pipette add approximately 6mls of water or paint to your film cannister.

STEP 2: Take a quarter of the Alka Seltzer tablet and crush into small pieces. Put these pieces into the lid of your pot.

STEP 3: When ready, countdown from 5...4...3...2...1! On 1, add the tablet to the paint (or water) and push the lid on tightly. Place the cannister lid facing downwards on a hard, flat surface.

STEP 4: Take a big step back and wait!

TIP: put your experiment on some paper to make art!

SPLAT!

THE SCIENCE

Alka Seltzer tablets are EFFERVESCENT, this means that when added to water they create a gas (Carbon Dioxide in this case).

Gas molecules are a bit like small children after eating sweets – they need lots of space to run around! When we close the lid on our cannister we trap the gas molecules inside and they really, really want to escape.

The only way out is by pushing the lid of the cannister down (this is the ACTION).

The REACTION is the pot and paint flying upwards!

Check out Kristina's video to help you do this experiment!
bit.ly/FilmCannisterRocket

The Science of Flight with...

Scientist Kristina from little Science LAB

Parachutes are a great way to learn about the other important forces involved in flight: GRAVITY and AIR RESISTANCE.

In your experiment you can test two variables:

1. Different materials used for the parachute
2. The weight of the item using the parachute.

EQUIPMENT

- Newspaper, tissue paper, plastic carrier bags, tin foil, fabric
- Scissors
- A ruler
- Tape
- A hole punch
- Four pieces of string or wool of equal lengths
- A toy soldier or lego person
- A stopwatch or timer

METHOD

STEP 1: You need a roughly 20cm square piece of parachute material. Take your chosen material and cut a square shape using the ruler and scissors to make it accurate.

STEP 2: Put some tape over each corner of the parachute to strengthen it and then use a hole punch to make a hole in each corner through the taped area.

STEP 3: Cut four pieces of string or wool the same length as the sides of your square (so 20cm in this case!) Thread and tie strings through the holes in each corner.

STEP 4: Tie two strings together on each side to make loops and attach the loops to your lego person's arms.

STEP 5: GERONIMO! Hold the parachute by the toy and toss it upwards, what happens? Time how long it takes to float down. You could stand on a chair to get a bigger drop.

THE SCIENCE

If you dropped a lego person without a parachute what would happen? It would fall to the ground quickly because gravity is pulling it downwards.

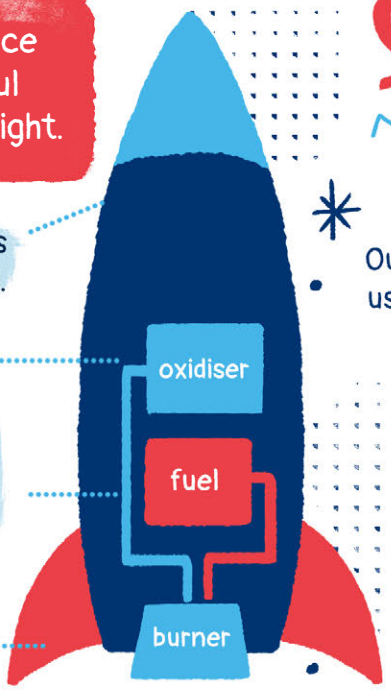
When you drop the parachute it still falls to the ground because gravitvy is still pulling it downwards but it happens much slower.

The parachute will slow the fall of the lego man because the parachute has a LARGE SURFACE AREA so it has a greater air resistance acting upwards in the opposite direction to the gravitational pull downwards.

Check out Kristina's video to help you do this experiment!
bit.ly/ParachutingExperiment

The Science of Flight with...

Paper rockets still follow the same science as giant rockets! The trick to a successful flight is to get all the component parts right.



Aerodynamic shape of the NOSE CONE helps prevent air from slowing the rocket.

The BODY is the main section

The FUEL SYSTEM is a mixture of fuel and a chemical called an oxidizer that gives off oxygen. The fuel and oxidizer burn together to launch the rocket from the ground.

The FINS help guide the rocket to fly in a straight line.

Our paper rockets in this experiment use air as the fuel to launch, and the launch pad is a straw!

EQUIPMENT

- Paper, various types and sizes
- Tape, scissors
- A straw

METHOD

STEP 1: Take a strip of paper approx. 6cm wide by 10cm long and wrap around the end of a straw.

Tape it together – this is the body.

STEP 2: Fold or tape over one end of the tube to make a point – this is the nose cone.

STEP 3: Add fins to the body of the rocket at the back. The easiest way to make triangular tailfins that are of equal size is to fold a piece of paper in half and cut across a corner producing two triangular offcuts!

STEP 4: LAUNCH! When you blow through the straw you introduce air into the rocket body to launch the rocket.

You can measure the distance flown and re-engineer your rocket to fly further.

THE SCIENCE

In this experiment there are important forces at work. THRUST of the rocket which propels it up into space because of the air you blow through the straw.

The fins act like rudders on the rocket, to keep it travelling on a smooth path and exerting a force called DRAG which pulls the rocket backwards and makes sure it doesn't do somersaults! Without DRAG all of the force is in the front of the rocket making this part TOO HEAVY and likely to somersault over and crash. The longest distance will be the straightest flight path.

Lastly, the pointed nose cone ensures that the rocket is AERODYNAMIC and flies far and straight through the air.

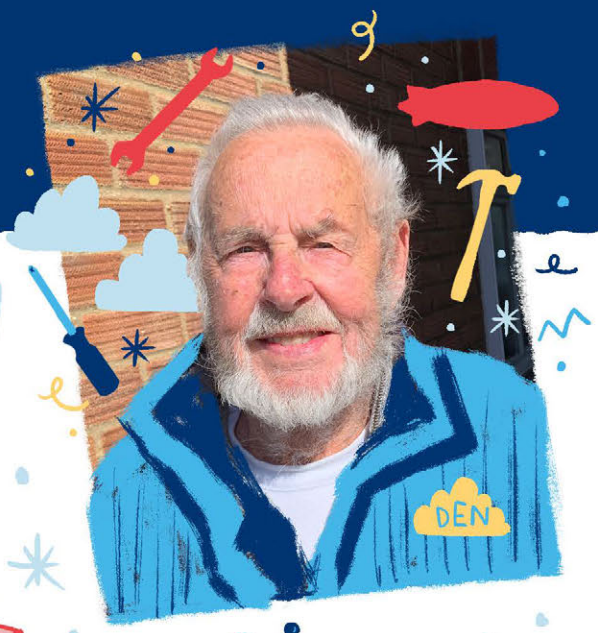
TAKE IT FURTHER

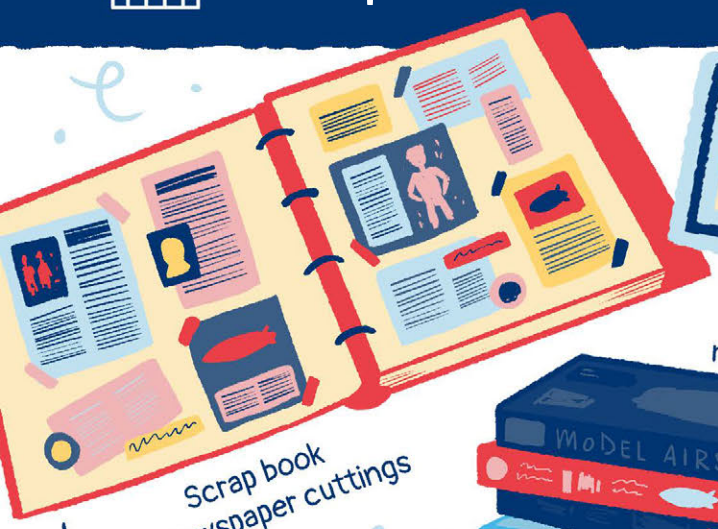
You could add extra tail fins, make the fins larger or different shapes, use a different material – is paper too heavy? You can also test the angle that you launch your rocket – does this make a difference?

Check out Kristina's video to help you do this experiment! bit.ly/PaperStrawRockets

And if you want more... you could watch: bit.ly/ScienceOfFlight

Explore Den's Shed





Scrap book of newspaper cuttings

Framed photos of airships

Unmade plastic model airship kits

A metal airship moneybox

Den Burchmore worked in the Cardington Sheds in the early 1950s. When he retired in the mid 1990s he was asked to look after lots of interesting objects and documents relating to airships. He kept these at the workshops at the RAF base. He became one of the early members of the The Airship Heritage Trust and opened up a larger collection of interesting airship objects which were displayed in 3 large rooms and open to visitors for many years. In 1999 the collection closed, and the building was later knocked down.

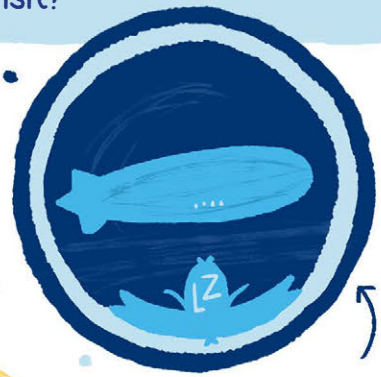
Den even had a chair for visitors to sit on!

The objects and documents were then moved to The Shuttleworth Collection, and he ran the office and small display there until 2006. Since then he has kept a collection of these interesting items and artefacts safely in his shed. It is like a miniature museum in his garden!

In 2021 Den is lending his collection to The Higgins Museum and Art Gallery in Bedford so that everyone can see them as part of the 'Airship Dreams: Escaping Gravity' exhibition. Perhaps you'll visit?

Photo albums full of airship pictures

Over 100 airship books



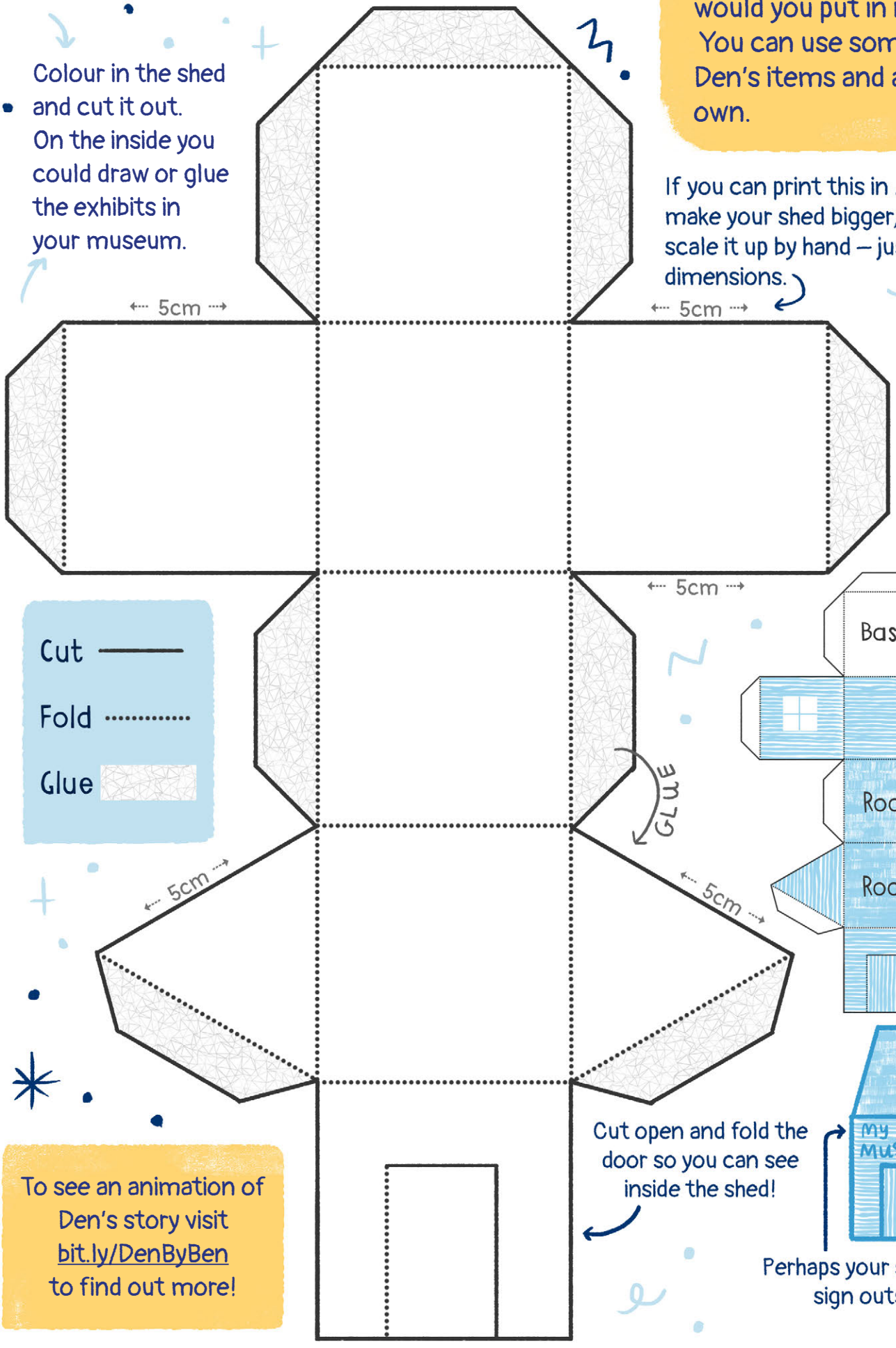
'Graf Zeppelin' fancy dinner plate

Make a Mini Museum

If you had a miniature museum in a shed, what would you put in it? You can use some of Den's items and add your own.

Colour in the shed and cut it out. On the inside you could draw or glue the exhibits in your museum.

If you can print this in A3 then it'll make your shed bigger, or you could scale it up by hand – just double the dimensions.



Cut open and fold the door so you can see inside the shed!

Perhaps your shed has a sign outside?

To see an animation of Den's story visit bit.ly/DenByBen to find out more!

Read a book about Airships

We asked Librarian Sue Shead and children's literature expert Rachael Rogan to recommend the best books about Airships. Below are a few, but there are loads more in our Big Book Lists!

Top reading tip:
All the books can be borrowed from Bedford Libraries!

Age 9+ Fiction
Brightstorm by Vashti Hardy
Age 9+ Non-Fiction
The Story of Flight by Jakob Whitfield

Age 7+ Fiction
Fortunately, the Milk by Niel Gaiman and Chris Riddell
Age 7+ Non-Fiction
Piggles' Guides to... Airships by Kirsty Holmes

Age 5+ Fiction
Ocean Meets Sky by The Fan Brothers
Age 5+ Non-Fiction
Piggles' Guide to... Gliders by Kirsty Holmes

Age 3+ Fiction
The Great Balloon Hullaballoo by Peter Bently and Mel Matsuoka

Check out our video of author Vashti Hardy reading from her book: bit.ly/Brightstorm

Twins Arthur and Maudie Brightstorm's famous explorer father has died in a failed attempt to reach the southernmost point in the world. Not only that, but he has been accused of stealing fuel before he died! The twins don't believe the news, and they answer an ad to join a new attempt to reach South Polaris. It's their only hope of learning the truth... and salvaging their family's reputation.

Hear literature expert Rachael talk about the books here: bit.ly/AirshipLiterature

What book did you read?

Title.....

Author.....

Tell us a bit about the book! If it was a fiction book, what happened? If it was a non-fiction book, what did you learn?

How many stars would you give it out of 5?

(colour in the stars!)

Draw us a picture from the book

What will you read next? We have a Big Book List here: bit.ly/BigBookList

Write a Story...

with Storyteller Jane from Wassledine

Once upon a time people could only dream of flying. Inventing, building, and flying an airship across the world was a huge achievement and an exciting adventure for everyone involved.
What an amazing story the first airship passengers had to tell about the day they flew to Canada in the R100 airship.

Imagine you could fly away on an adventure. Where would you go? Who would you meet? Here you can have a go at making up your own story about "The Day I Flew Away". **Follow the 7 story steps below.**

STEP 1. THE BEGINNING

Midnight Dawn Sunset Midday

Teatime Breakfast time

...or another time?

.....

You can choose from one of the examples, or write your own idea in each box!

STEP 2. HOW DID YOU FLY AWAY?

Spaceship Helicopter Airship

Hot air balloon Eagle Flying carpet

...or another way?

.....

Could you fly away to another country, a make-believe land or somewhere you know?

STEP 3. WHERE DID YOU FLY TO?

Castle Forest Mars

Canada Seaside Desert

...or somewhere else?

.....

Step 4. Introduce another character.

Who did you meet in your story?

Pilot Lion Scientist Royalty

Alien Gran ...or someone else?

.....

Every adventure needs excitement, a problem to overcome, or a bit of danger to make the story interesting. What could that be?

Perhaps a character is in trouble or something has happened to your flying machine?

Step 5. What is the problem?

Someone or something could be....

Trapped Lost Hungry

Broken Stolen Attacked

...or something else?

.....

Step 6. Resolution. How do you overcome the problem?

You or the character in your story could....

Mend Save Magic Unlock

Find Win ...or something else?

.....

For more storytelling tips from Jane, go to bit.ly/AirshipStorytelling

And for more inspiration, go to bit.ly/AirshipsOnScreen

Step 7. The End

Happily, ever after Back in time for tea

No one would believe me It had all been a dream

It would never happen again

Everyone said I was a hero ...or something else?

.....

.....

Now, write your story down, adding in more details and descriptions. Perhaps you could find out more about the true story of the R100 airship flight. Can you can find someone to tell your story to?

Now illustrate your story with pictures here!

Photo of Don and Reg Clarke courtesy of the Clarke family.
Map of Cardington courtesy of Bedfordshire and Luton Archives and Records Service.

AIRSHIP DREAMERS CLUB

Tell us what you did to receive a badge!

I made an airship ☐

I did an experiment ☐

tick the boxes when you complete an activity!

I told a story ☐

I found out about airships ☐

Go to airshipdreams.com to find videos to help you with each activity

Share what you did using #airshipdreams or email hello@airshipdreams.com