

SPACE CAMP GUIDE

How to run low cost, space themed residential, learning experiences in primary schools.



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Introduction

Space Camp is a programme of residential experiences that you can run yourself in your own school and will immerse your pupils in the amazing world of Space Science. This guide aims to support you in planning and developing a Space Camp programme in your school.

After winning the Let Teachers SHINE competition, the pilot for this project was launched at Shrubland Street Primary School in Warwickshire in 2013. Following the success of the pilot, The SHINE Trust supported the Space Camp team in sharing their project with another 32 schools across the UK from 2014-2017.

Now, as part of the legacy of Professor Stephen Hawking, the Stephen Hawking Foundation wish to enable access to Space Camps for a greater number of young people across the UK. The Space Camp team are aiming to support another 120 schools across the United Kingdom in setting up their own Space Camp programmes from autumn 2018 to 2020, leading to Space Camp learning experiences for over 6000 children.

The inspirational theme easily links with many areas of the curriculum and provides a wealth of fabulous learning opportunities that will ensure that these are experiences that will create memories that last a lifetime.

In organising residential learning experiences that fully utilise the school environment and facilities, schools can provide a broad extended curriculum that can benefit the entire learning community for little financial cost.

Space Camps can create incredible, inspirational adventures that are packed with awe and wonder moments, while developing scientific curiosity and creativity beyond the curriculum.

Planning and preparations

- 1. Form your Space Camp Crew you need a team of staff to help you run your Space Camp and ensure that you have the appropriate child to adult ratios following the advice of your local authority. You will need a first aider, people to lead workshops and a breakfast support team. It might be that some of your volunteers just come to help with one aspect of the Camp to take the pressure off the sleepover supervisors.
- 2. Plan for safety it is each individual school's responsibility to fully assess any hazards and levels of risk in their setting and carry out the required precautions to ensure safety for all. There is advice in this guide and on our website to help you with that. It is important that you plan a Space Camp experience that works for your setting.
- **3. Plan your programme** Will you have a theme? What activities are you going to do? How will you organise your time? There are several sections in this guide to get you started with putting together an awesome programme, designed especially for your Space Campers.

- 4. Choose your date if you are going to be stargazing there are often more clear nights in the winter months and of course it gets darker earlier so the children don't have to stay up too late to get started. Nevertheless, Space Camps can work equally as well in the summer months so go with what ever fits well with the school calendar.
- **5. Book the kit** Arrange to borrow the Space Camp kit from the lead school in your partnership and book visitors and any additional resources that you intend to
- **6. Communicate plans** Let parents and carers know the plan, collecting information about dietary and medical needs. Example letters and kit lists are available on our website: www.spacecampuk.com
- 7. Plan and make arrangements for catering Plan refreshments and a breakfast fit for an astronaut.

Space Camp Partnerships

There is quite a lot of equipment needed to run a Space Camp and if you are only intending to run one Camp a year it can be a great deal of expense and take up a large amount of storage space. We find that working in partnership with local schools means that you can share resources so that they are fully utilised as well as collaborating to support and inspire each other when planning your Space Camps.

Space Camp partnerships are a fantastic way to develop collaborations with your wider learning community; sharing in CPD opportunities, running family learning nights that are open to the wider community, holding Science Fairs, organising collaborative field trips and just sharing good practice. By working together, you can reduce your work load while continuing to develop amazing learning opportunities for the families you serve.

SPACE HACK

The lead school who stores and organises the kit will need to develop an ordering system.

What does a Space Camp look like?

The Space Camp model is straight forward. After a day of Space themed lessons children go home to have their dinner and then their parents/carers bring them back to school with their kit bag in the early evening.

As they arrive they are allocated a tent (all named after Space Missions) and they have some time to set up their beds and unpack. The children then participate in a range of activities over the evening always including night sky observations, a science workshop, a creative workshop and some physical astronaut training. You could arrange to have an astronomy expert come to visit from the local University or astronomical society and end their evening with a space cinema event. The children then enjoy hot chocolate and marshmallows before tucking up for the night. It is a very busy evening and they all fall asleep very quickly.

In the morning the children continue their Space learning with more Space themed learning activities. Perhaps Space Ambassadors/ University Outreach Officers might be able to run planetarium shows or Space Science workshops for your Space Campers. After lunch, families are invited to school for a pupil led assembly where the children share their experiences telling parents and carers about what they have learnt and the activities that they have enjoyed. This is a great opportunity to share photos from the camp. The children can then have an early finish to go and catch up on their sleep.



Resources

Each partnership that the Space Camp UK project supports will get the following kit to get them started:

15 pop up tents - to be set up as "shuttles" or "Space pods".

SPACEHACK

You could make labels with a space theme to put on your "pods".

10 sleeping bags – we suggest that you ask your children to bring their own sleeping bags, however you can offer one from your kit if a child needs one.

SPACEHACK

Hand out used sleeping bags at staff meeting to be washed.

10 Roll mats – again we suggest that you ask children to bring their own. SPACEHACK – remember to ask your caretaker to leave your heating on, on a Space camp night.

Rokit kits – bottle rocket launchers and air pump for rocketry workshops.

1 set of Celestial Buddies – a set of 13 cuddly planets including, the Moon, a comet and your very own black hole to keep them all in.

Telescope

5 pairs of binoculars – binoculars are great for observing the moon and are much easier to use (particularly for the very young)

Optional Extras:

Books with a Space theme A Space movie iPads with Stargazing Apps



Sample KS1 Space Camp Programme Grand Day Out:

Lets go to the Moon

am

- Assembly with Moon songs
- Set the scene with a picture book or short film (Grand Day Out)
- **English Activities**: Writing a postcard from the Moon, writing a travel guide for the Moon, researching the Moon and creating a fact file.
- Maths Activities: Exploring shape in rocket designs, investigating paper straw rockets (measuring distance), measuring moon rocks (measuring mass) and measuring craters.

pm

Circus of Moon Activities:

- Making Space Cakes or Cheesey Stars to take on a picnic to the Moon.
- Modelling phases of the Moon.
- Mapping the Moon Moonsaics.

End of school day

Children go home at the end of the school day to have their dinner and collect their Space Camp kit to return to school at 5.30pm.

Evening

- Children arrive and unpack in their Space Modules (tents).
- Large scale junk modelling Build your rocket challenge.
- Science Workshop- Investigating Rockets
- Creative Workshop Modelling the lunar landscape sculpt your own crater
- Picnic on the Moon Refreshment break
- Stargazing session Observing the Moon with telescopes and binoculars
- Space Camp Cinema Fly me to the Moon
- **Bedtime Story** *If you decide to go to the Moon* by Faith McNulty and Steven Kellogg

C/NI /V

Early am

- Pack away Lunar Space Camp and have astronaut breakfast.
- Early morning Astronaut Training and second half of Space Camp Cinema

Late am

- Space visitor (Space Ambassador/University Astronomy Expert/ Planetarium Show)
- Additional Science Workshop Crater Investigation, Borrow the Moon Workshop
- Practical Team Challenge Building a KNEX lunar buggy
- Prepare for family Space Camp assembly in the afternoon

pm

- Lunch break pupil lead astronaut training
- Final preparations for assembly and packing up.
- 1.30pm Family Space Camp Assembly with an early home time for tired Space Campers.

Sample KS2 Space Camp Programme Grand Day Out:

Starlight

ENO XVO

• Assembly with Sun/Star songs – PSHE Focus 'Sun Health'

- Set the scene with a picture book *On a beam of light*: A story of Albert Einstein by Jennifer Berne
- **English Activities:** Sun poetry, Creating Constellation creatures and writing their stories, researching the life cycles of stars, writing a guide to 'The telescope'
- Maths Activities: Exploring numbers in 'A hundred billion trillion stars by Seth Fishman', collecting and analysing data from the Sun (Shadow size and direction, light levels over 24 hours, UV index over months), What is a light year? Measuring distance in space, investigating the sizes of telescopes over history.

pm

am

Circus of Star Activities:

- Make constellation projectors.
- Make and test a telescope.
- Mission Starlight UV Science investigations (Royal Society of Chemistry).
- Make a pinhole camera to observe sunspots.

End of school day

Children go home at the end of the school day to have their dinner and collect their Space Camp kit to return to school at 5.30pm.

Evening

- Children arrive and unpack in their Space Modules (tents).
- **Science Workshop** Light Lab: How do astronomers learn so much from starlight? Making Spectographs.
- **Creative Workshop** Messier Art: Art inspired by images from the Hubble Space telescope/Pixel Art in the style of INVADER.
- Stargazing session Constellations and Clusters.
- Space Camp Cinema ET.

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Early am

- Pack away Lunar Space Camp and have astronaut breakfast.
- Early morning Astronaut Training and second half of Space Camp Cinema

Late am

- Space visitor (Space Ambassador/University Astronomy Expert/ Planetarium Show)
- Additional Science Workshop James Webb Telescope Workshop
- Prepare for family Space Camp assembly in the afternoon

pm

- Lunch break pupil lead astronaut training
- Final preparations for assembly and packing up.
- 1.30pm Family Space Camp Assembly with an early home time for tired Space Campers.

Check out the extended 'Sample Space Camp Programmes' on **www.spacecampuk.com** with further details about the suggested activities and useful links to supplementary resources.

Risk Assessments

Risk Assessing your Space Camp is the most important part of your preparations. You will need to follow the policies of your school for safeguarding and health and safety and ensure that all children participating in your Space Camp are kept safe. This will include planning for:

- The appropriate number of adults for supervision,
- · Ensuring that there is a first aider present,
- Ensuring the appropriate CRB checks have been made for all adults
- Informing the local Police and Fire Service of your intentions

Premises such as village halls, schools and museums which were not designed as sleeping accommodation are increasingly being used to hold sleepovers. During the day people using these premises will be awake and aware of their surroundings, if you are planning a sleepover you must ensure that suitable fire safety measures are in place so that people who may be asleep are alerted to and can escape safely in the event of a fire.

A risk assessment for a Space Camp is particular to that setting so it would be inappropriate for us to provide one however we have a number of documents to assist you in risk assessing your setting which are available on our website including our top tips for running a super safe Space Camp.



Stargazing

One of the significant motivators in including the sleepover element is that it creates the opportunity for children to engage in Stargazing opportunities, so of course every partnership needs a telescope. However, telescopes can be tricky to set up and need constant attention to track objects as they move across the night sky. Hopefully you will have a member of the team who is willing to become the telescope expert and go outside, ahead of the children to set it up. Alternatively, you could find a parent/career or a member of your local Astronomical Society to help out with this aspect of the evening.

Children can find using a telescope really tricky and often binoculars are the better options for taking a closer look at clusters of stars, the Moon and planets but if you are look for constellation patterns then the naked eye is always the best approach.

You don't need stars for stargazing! Of course, there is a very good chance that the weather will not be ideal for stargazing but as long as it is dry the children can go outside and use a night sky App on an iPad to explore what they would have seen.

Check out the stargazing section on the **www.spacecampuk.com** website for more advice on running a successful stargazing session.

SPACE HACK

Make sure children are wrapped up warm and have all been to the toilet before you head outside to save constant trips back inside.



Science Workshops

The sample Space Camp plans earlier in the guide identify a few ideas for Space Science workshops but there are so many to choose from:

Having an extra-terrestrial theme to your Space Camp? Why not investigate Martian soils using the 'Is there anyone out there?' resource? Access it here: www.stem.org.uk/elibrary/resource/30199

Focusing on maned and unmanned missions to space? Use the Eggstronaut challenge to learn about air resistance and safe landings, or the ablative shield challenge to learn about re-entry. Find resources to support you in planning these workshops on our website, www.spacecampuk.com

Interested in having a comet theme for your space camp? Plan a night when it is possible to observe a comet, use the amazing 'Once upon a time', Rosetta resource to engage children in the topic and model making a comet and investigate melting comets. www.esa.int/spaceinvideos/Sets/Once_upon_a_time_Rosetta_cartoons

Learning about materials? Why not adapt the Space Case resources for your classroom to identify the best materials for a spacecraft? www.stem.org.uk/resources/elibrary/resource/36346/space-case

Exploring what conditions need to be created for humans to survive in Space? Children are always fascinated about how astronauts got to the toilet in space so why not run a Urine Filtration Challenge to investigate how filtration can be used to recycle water on the ISS. Access lesson plans and resources on our website: www.spacecampuk.com











Astronaut Training

Tim Peake's Mission to the ISS inspired the creation of a huge collection of resources linked to human spaceflight.

Mission X is a physical astronaut training programme funded by NASA which links to learning about health and fitness. The programme runs every spring, but you can use the amazing resources at any time of the year. www.nasa.gov/tla

The Usborne Official Astronaut Handbook is a wonderful nonfiction text all about preparing for and working in space. A fantastic resource for English lessons – it is even worth considering getting a class set.

UNSA Science Challenge is a programme of English Maths and Science Challenges linked to Tim Peake's mission to the ISS with engaging videos to introduce each challenge and mission patches to collect.

www.unspaceagency.com

Space to Earth Challenge is a wonderful programme and resources from the British Triathlon Trust where schools make a combined effort to run, cycle or swim (or any combination of) the distance to the ISS or better still, The Moon.

www.spacetoearthchallenge.org.uk

What astronauts eat while working is space is always of great interest to children. Space Dinners is a great set of classroom resources that explore nutrition and diet and provide opportunities for children to create inspirational astronaut menus.

www.stem.org.uk/elibrary/resource/36321

Get Creative

Space is a fantastic context to inspire artwork during Space Camps. There is such a wide range of activities you could run for children to develop their artistic talents and the completed work will help to create an eye-catching Space Camp display to celebrate the children's experience. The amazing space photography that can be accessed from NASA and ESA websites can be used to stimulate children's imagination while providing opportunities for the to learn even more about our cosmos.



Space Printing

Children make their own Space stamps from card, fabric and string. The stamps are sealed with PVA glue and allowed to dry. The children can then experiment with different paints and colours to print their space inspired masterpieces.

Check our the
Creativity section of
our website for more
information and other
ideas.

www.spacecampuk.com





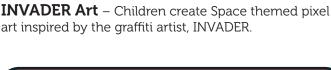
Constellation Projectors

A super creative project for every Space Camp. Children draw common constellation arrangements on card and then use a split-pin to pierce holes in the card, they can then use their torch to project the constellations onto the roof of their tent at bedtime for a starry night slumber.





nspired



Messier Art – Children create images, inspired by Hubble Space Telescope photographs of Messier objects.



There are many sources of high quality Space and Astronomy images available that you can use in the classroom to inspire children art work.

NASA's Astronomy Picture of the Day and Archive - https://apod.nasa.gov/apod/astropix.html

ESA catalogue of 'Space in Images' - www.esa.int/spaceinimages/Images

With the 50th Anniversary of the Moon landings approaching, perhaps you might want to create art inspired by the Apollo 11 mission. There is an extensive gallery of images and videos available here: www.nasa.gov/apollo11-gallery

Books

KS1

- "Stars" by Mary Lyn Ray
- "Our Stars" by Anne Rockwell
- "How to catch a star" by Oliver Jeffers
- "Zoo in the sky" by Jaqueline Mitton
- "A hundred billion trillion stars" by Seth Fishman
- "Beegu" by Alexis Deacon
- "Man in the Moon" by Simon Bartram
- "Goodnight Spaceman" by Michelle Robinson and Nick East
- "The Darkest Dark" by Chris Hadfield and Kate Fillion

KS2 Fiction

- "George's secret Key to the Universe" by Lucy and Stephen Hawking
- "Cosmic" by Frank Cottrell Boyce
- "The Jamie Drake Equation" by Christopher Edge

Non-Fiction

- "Curiosity: The Story of a Mars Rover" by Markus Motum
- "A Galaxy of Her Own: Amazing Stories of Women in Space" by Libby Jackson
- "Hidden Figures: The True Story of Four Black Women and the Space Race" by Simon Bartram







Films

Year 1 - Grand Day Out

Year 2 - Fly me to the Moon

Year 3 - Planet 51/ Space Chimps

Year 4 - Home/ Capture the Flag

Year 5 - ET/Hidden Figures

Year 6 - Apollo 13 or Earth to Echo



Physics and Astronomy University Outreach

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Regional STEM Ambassador Hubs

Visitors and Speakers

https://www.stem.org.uk/stem-ambassadors/localstem-ambassador-hubs

Detailed list of Astronomers available to give talks in schools from the Royal Astronomical Society:

https://www.ras.org.uk/education-and-careers/forschools-and-teachers/1834-list-of-school-speakers

National Space Academy Masterclasses

https://nationalspaceacademy.org/programmes-forteachers/masterclasses-for-students

ISSET – International Space School Educational Trust http://www.isset.org

Spacefund – Fun, educational, inspiring space and engineering shows

http://spacefund.co.uk

Get in touch with your local Astronomical Society http://fedastro.org.uk/fas/members-by-county/



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Taking it further

Space Education Quality Mark (SEQM)

Why not gain recognition for the great work you are doing? The Space Education Quality Mark (SEQM) is designed to support schools and colleges who want to inspire and engage their students in science, technology, engineering and mathematics (STEM) subjects. The SEQM is run by the European Space Education Resources Office in the UK (ESERO-UK). Support is provided to schools taking part in the SEQM in the form of teaching resources, suggested CPD for teachers, links to professionals from across the space sector and STEM Club resources and guidance. The Space Camp team will support you through this process and in participating you will be able to access additional resources and CPD opportunities.

Visit the website to register and find out more www. stem.org.uk/esero/space-education-quality-mark

Space Camp Max

Enjoying your Space Camp experience? Why not take it to the max? Plan a week-long Space Camp at a local Scout campsite for an intensive astronaut training programme and an experience your pupils will never forget. Visit the www.spacecampuk.com website to find out more.

Field Trips

Around the UK there are so many fascinating places to visit with a space theme. You could include a field trip in your Space Camp week to really enrich the experience and your Space Camp activities and workshops could really develop the learning from that visit. Check out the section on field trips on www.spacecampuk.com.

Space Week

Struggling to pick the activities for your Space Camp? Spoilt for choice? By now you will be realising the huge wealth of learning activities and resources for Space Education in primary schools and there is only so much you can do in two days. Consider running a whole school Space Week to tie in with World Space Week (www.worldspaceweek.org) or British Science Week (www.britishscienceweek.org), then you can inspire your colleagues to bring Space into their classroom and all of your pupils will benefit.







World Space Week October 4 - 10



Space Camp UK was a winning project in the Let Teachers SHINE competition in 2014 and the SHINE Trust provided funding for a Space Camp pilot project at Shrubland Street Primary School in Leamington Spa. Shrubland Street's Space Camp programme consisted of annual Space Camps for all children from Year 1 to Year 6 where the children developed their love of science through space science workshops, stargazing activities, cross-curricular and creative space activities and astronaut training.

The project was a huge success and the SHINE Trust supported the Space Camp UK Team in rolling the programme out to an additional 30 schools over the following two years. To find out more about the SHINE Trust visit www.shinetrust.org.uk.

In January 2018 the Stephen Hawking Foundation approached the Space Camp UK Team to find out if there was any way that they could support the development of the project even further so that more as schools run their own Space Camps and more children could participate in enriching and engaging space science residentials. The Foundation have generously pledged £100,000 for the Space Camp UK team to support 120 primary schools in creating their own Space Camp programmes.

The Stephen Hawking Foundation was launched on 29th October 2015 at The Royal Institution of Great Britain. The Stephen Hawking Foundation was established on the initiative of Professor Stephen Hawking to facilitate research into Cosmology, Astrophysics and Fundamental Particle Physics both at school and university level. It will also facilitate and support work relating to Motor Neurone Disease and those living with the disease.

To find out more visit www.stephenhawkingfoundation.org.









Don't forget to tell us all about your Space Camp: @SpaceCampUK

