



**ASTRO**EDU

Peer-reviewed Astronomy Education Activities

# Star Hats

**Learn about the shape of stars and  
make a star hat**

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## KEYWORDS

Creativity, Stars, Star shape, Art



## CATEGORY

Stars



## LOCATION

Small Indoor Setting (e.g. classroom)



## AGE

4 - 6



## LEVEL

Pre-school, Primary, Secondary



## TIME

30min



## GROUP

Individual



## SUPERVISED

Yes



## COST

Low Cost



## SKILLS

Asking questions, Communicating information



## TYPE OF LEARNING

Interactive Lecture, Fine Art focussed, Fun activity



## GOALS

Students will learn what a star is and explore what stars look like up close and how we see them in the night sky. Students are encouraged to be creative, combining art and science to consider how to represent a star.



## LEARNING OBJECTIVES

- Students will be able to explain that stars are gigantic balls of hot glowing gas, but we see them as pointy in the night sky.
- Students will demonstrate that they understand stars can be represented both scientifically and culturally by drawing stars that are either stylized or scientifically accurate.
- Students will show excitement to learn about stars and astronomy, demonstrated by their demeanour and the number of questions they ask about stars.



## BACKGROUND

When we look at the sky at night we can see celestial objects like the Moon, a few planets, and an uncountable number of stars that appear to us as small bright points of light. For centuries, the stars in the night sky served as inspiration to people all over the world. Stars have been featured not only in scientific study, but also in cultural stories and art. Astronomers have observed stars for centuries, first with naked eyes, later with telescopes from the ground and then from space. Little by little they have understood what a star is.

In art, stars are usually represented as pointed objects with five (or more) points. This is because the light from stars passes through the Earth's atmosphere through moving pockets of hot and cold air, causing stars to twinkle and look pointy. We see stars as very small as they are very far away. They look so small in fact they are just a small tiny dot of light. When our telescopes see these stars, the light gets bent inside around the rods which hold the mirrors in the telescope, giving a star four points. A similar thing happens in the eye due to structures inside it. This does not happen when we look at planets in our solar system

because they look bigger so are disc shaped rather than a point of light. Up close, stars do not have any points. They are large spheres of very hot gas, like the Sun. The Sun is the star closest to our planet.

There are different types of stars. Our Sun is a yellow dwarf star. Stars have different colours and are classified as red, yellow, or blue. Red stars are the colder ones, while blue stars are the hottest, just like the different colours of the flame on a gas stove. Apart from yellow dwarves, there are many other types of stars, such as red giant. The red giant, or supergiant star, is bigger and cooler. When stars like our sun, run out of fuel (i.e. it runs out of hydrogen atoms to convert to helium atoms), the star expands to its red giant phase.

We have also heard of shooting stars. These are not actual stars but are meteorites: small pieces of rock flying through space that burn as they travel through the Earth's atmosphere.



## FULL DESCRIPTION

### Step 1:

Start with a discussion with the students. Use content from the background information section.

Drive the discussion with:

- What do they see in the sky at night?
- Name the different celestial objects they know
- Why are stars important? (Draw out both scientific and cultural answers and demonstrate why it is useful to combine art and science.)
- Explain that stars are important not just for science but also for cultural purposes, such as storytelling, religion, and art.

### Step 2:

Distribute the materials and ask students to draw a star on coloured sheets. Note that some students may draw stars with points. Generate a discussion on why stars appear to have points.

### Step 3:

Now show the students images of different stars and introduce them briefly.

- A star in the night sky
- The Sun
- Red giant up close
- Cartoon-style illustrations of stars (5-pointed, 6-pointed, etc.)

Warning: NEVER look directly at the sun through binoculars, a telescope, or with your naked eye.

Serious eye damage and even blindness can result. Astronomers and experienced skywatchers use special filters and glasses to safely observe the sun.

### Step 4:

Distribute coloured sheets and ask the students to once again draw a star. Compare it with their previous version and discuss the change. Now that they are aware of other ways stars can look, ask them to draw more.

### Step 5:

Ask the students to cut out the stars they drew. Then decorate them and glue the stars onto a rectangular piece of cardboard. This cardboard can be stapled (by the instructor) into a star hat.

### Step 6:

Students can present their hat and describe the different representations/types of stars on the star hat. During this presentation, students could also talk about what stars mean to them in their lives, family, culture, etc. and tell some stories they know about stars.



#### EVALUATION

The activity can be evaluated by asking the students: - What is a star? - What is the shape of a star? - How do we see stars and why? - Explain their drawings of stars

In addition, the teacher can listen to whether students are inspired to ask questions about stars and what types of questions are asked, in order to tell how deeply the students are thinking about stars.



#### CURRICULUM

Country | Level | Subject | Exam Board | Section --- | --- | --- | --- UK | KS1 | Art and Design | - |



#### ADDITIONAL INFORMATION



#### CONCLUSION

Students learn about and draw artistic and scientific representations of stars. These form their star hat, which they then present to the class.

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#### CITATION

Nava, T. S., , *Star Hats*, [astroEDU](#), 1418 doi:10.11588/astroedu.2014.2.81345

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