



# Young Astronomers

## Stories of the night sky

Classroom Activity – Before visiting the Observatory

### Overview

**Age Range:**

7-10 years

**Prep. Time:**

30 min (reading stories, downloading and getting accustomed to Stellarium program)

**Lesson Time:**

1 h

**Cost per activity:**

Low

**Includes the use of:**

Equipment to show a Power point presentation, pens and paper, optional: free Stellarium software or online version

### Outline

What kinds of constellations are there in different cultures? How did they get their names?

In this assignment, pupils listen to stories about constellations and can then come up with and name their own constellation.

Use the Stellarium software to learn more about constellations in different cultures.

### Pupils will Learn:

- Different cultures see asterisms differently, as they are linked to myths and stories. Let's take a closer look at three patterns we can see in the sky and learn about their stories: the Plough, Orion and the Milky Way.
- There are no official descriptions of constellations, as each culture has looked at the sky in its own way. You can even come up with your own constellations.

## Lesson Plan:

Description	Time	Notes
Introduction to the subject	20 min	Power point presentation "StoriesOfTheNightSky Presentation.pptx"
Assessment	5 min	
<b>Activity 1:</b> Your own constellation	15 min	Use Stellarium or other star map / star chart.  You can download Stellarium <a href="https://stellarium.org/">https://stellarium.org/</a> or use the online version <a href="https://stellarium-web.org/">https://stellarium-web.org/</a>  Heavens above: <a href="https://www.heavens-above.com/skychart2.aspx?lat=51.4934&amp;lng=0.0098&amp;loc=Greenwich&amp;alt=0&amp;tz=GMT">https://www.heavens-above.com/skychart2.aspx?lat=51.4934&amp;lng=0.0098&amp;loc=Greenwich&amp;alt=0&amp;tz=GMT</a>
Assessment	5 min	Link to activity
<b>Activity 2:</b> Dive into the world of constellations	15 min or more	You can download Stellarium <a href="https://stellarium.org/">https://stellarium.org/</a> or use the online version <a href="https://stellarium-web.org/">https://stellarium-web.org/</a>

## Introduction to the subject:

This assignment focuses on three patterns we can see in the sky, along with their stories: the Plough, Orion and the Milky Way.

It's likely that people have seen figures in the night sky for as long as they have been looking up at the stars. Constellations have been used to track the passage of time and to help navigate during travel. It's easier to plot the night sky with the help of constellations. Connecting the constellations and stars with stories made them easier to remember.

Records of the movements of celestial bodies have been kept for thousands of years in different parts of the world. We still recognise some of the oldest constellations to this day, such as Taurus, Gemini, Cancer, Leo, Libra, Scorpio and Capricorn.

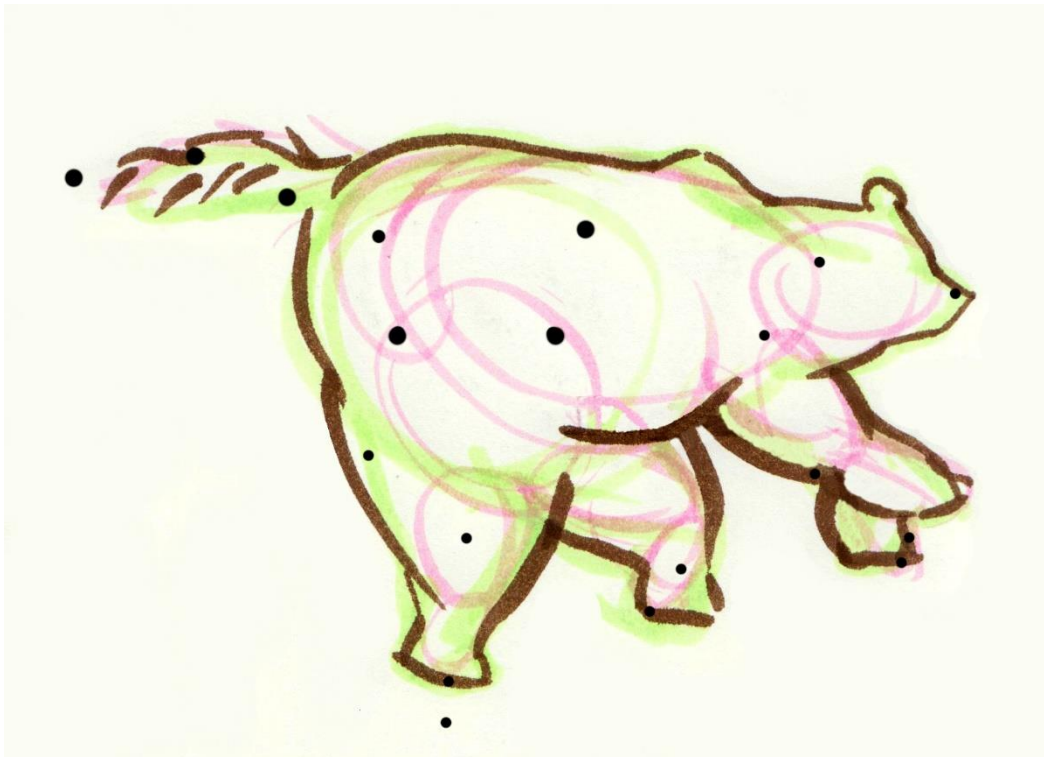
The ancient Egyptians linked constellations with their gods and important animals. The Arabic and Islamic tradition is exceptional among most cultures, as it almost exclusively named individual stars. In Finland, constellations have been primarily associated with important animals.



Find out about the stories of the constellations from the Power point slide show “StoriesOfTheNightSky Presentation.pptx” and learn about a few of the main patterns in the night sky and our own galaxy, the Milky Way, from the perspectives of different cultures. You can use these questions to start your learning journey:

- What kinds of stories are associated with constellations? Do you know any constellations? What kinds of patterns can you see in the night sky?  
[In the Ursa’s star map (<https://www.ursa.fi/tahtikartta-classic.html>) you can see the constellations of the northern hemisphere. On the webpage of the International Astronomical Union IAU (<https://www.iau.org/public/themes/constellations/>) you can find images of all the constellations in the night sky.]
- Have you ever wondered who named the constellations? Do constellations have the same names everywhere in the world?  
[There are no official descriptions of constellations, but the shapes have become generally accepted. Different cultures have come up with different figures. However, the borders of constellations have been officially defined: the International Astronomical Union has divided the sky into 88 constellations (link above).]

Find the stories of the patterns chosen for the Power point presentation below.



Kuva 1: The Ursa Major constellation. Credit: Saara Seppälä.

## 1. THE PLOUGH (OTAVA)



**Finland:** The old Finnish word *otava* means a net spread across a river, especially used to fish salmon. In the *Kalevala* national epic, the bear is said to have come from the Plough, or *Otava*:

*This is Wainamoinen's answer:*

*"Otso was not born a beggar,  
Was not born among the rushes,  
Was not cradled in a manger;  
Honey-paw was born in ether,  
In the regions of the Moon-land,  
On the shoulders of Otava,  
With the daughters of creation.*

The Plough is part of the Ursa Major constellation. The Plough can be used to locate the North Star, a star in Ursa Minor, which remains in the same point of the northern sky throughout the year.

**Greece:** Ursa Major, or the Great Bear, is actually Callisto, Zeus' favourite girlfriend. Zeus was walking in the woods with Callisto, when his wife, Hera, chanced upon them. Zeus turned Callisto into a bear so that Hera would not discover the affair. Hera had her suspicions, however, and forced Zeus to follow her to Mount Olympus immediately, leaving Callisto in her bear form. Meanwhile, Callisto's son Arcas was hunting, and encountered a huge bear. He aimed his bow at the bear's heart and shot it dead. In death, the bear turned back into Callisto, and Arcas realised what he had done. Overcome with grief, he cried out so loudly that it could be heard on Mount Olympus. Arcas understood that Zeus was to blame for the transformation. Zeus heard his cries and returned to Earth to persuade Arcas to keep the incident a secret. Zeus turned Callisto into the Ursa Major constellation and Arcas into Ursa Minor, or Little Bear. The Little Bear faces towards the Great Bear, so that Arcas can see his mother.

**China:** The Chinese night sky sports two ladles: the southern and the northern one. The Plough is the northern ladle, while the southern ladle is located in the Sagittarius constellation. The southern ladle signifies life and the northern one death.

**North America:** The Hopi, an indigenous tribe in North America, called the Plough *Sookuyapi* or *Sootuvipi*, which means star ladle or star sling, the hunting weapon.

**Egypt:** For the ancient Egyptians, the constellations around the North Star, such as the Plough, were important, because they could never be seen ahead of the rising sun. For this reason, they were associated with the forces of darkness and vicious animals, such as the crocodile and hippopotamus. The Plough was seen as the front leg of a bull or ox, a symbol of the evil god Set.



**Australian aboriginals:** Do you know why the Australian aboriginal tradition has no name for the Plough? Answer: The Plough is not visible in Australia!

## 2. ORION

**Finland:** In the *Kalevala* tradition, the belt and sword of Orion are seen as the scythe of the folk hero Väinämöinen.

Orion and its various parts have a huge number of different names in Finnish.

**Greece:** Orion, son of Poseidon, was a handsome giant who had goddesses vying for his attentions. Eos, goddess of the dawn, tried to stay with Orion, but in the morning, the stars of Orion faded into the blue sky and Eos wept, her tears becoming the morning dew. Artemis, the goddess of the hunt, wanted to marry Orion. Orion monopolised Artemis' attention, and her brother, Apollo, took revenge by tricking Artemis into shooting Orion dead with an arrow. Artemis found his corpse and placed it in the sky, covered with stars. Artemis laid Orion's hunting dogs, Sirius and Procyon, at his feet.

**Scandinavian and Ancient Norse mythology:** Orwandil (Orion) was travelling with the god Thor when his big toe froze while crossing an icy river. Thor removed the frozen toe and threw it into the sky, creating the star Rigel (the star at the lower right corner of Orion, the seventh brightest star in the sky). In some stories, another toe of Orwandil's became the star Alcor in Ursa Major.

**China:** According to Chinese legend, Shen or Shichen was the younger son of Emperor Gaoxinshi, and was always fighting with his older brother, Ebo. The father had to separate the brothers: he assigned Ebo to be in charge of offerings made to the star Shang (a group of three stars in Scorpio) and Shichen to be in charge of offerings to Shen (a group of seven stars in Orion). The brothers were to be like Shang and Shen: living far apart and never meeting.

**North America:** The Hopi had a constellation called *Hotòmqam*, "pearls on a string" or "strung up". The stars on the string are Betelgeuse, Alnilam and Rigel (stars in the constellation of Orion). According to another source, this name specifically refers to Orion's belt.

**Australian aboriginals:** In the Wiradjuri tradition of Australia, Orion is Baiame, the ancestor who trips and falls when the constellation goes beneath the horizon. This is why he appears upside-down to the Australian observer. Baiame looks similar to the Greek giant Orion.

**Egypt:** In Egypt, Orion was Osiris, the god of death, rebirth and the underworld. His wife was his sister, Isis. Osiris is the latinised version of the original name Usir, which means strong and powerful. He is the first child of Geb, the god of the earth, and Nut, the goddess of the



sky. His skin is often depicted as green, suggesting the fertile mud of the Nile. Osiris considered the Egyptians uncivilised and gave them laws, culture, the structure of religion and agriculture. Egypt became a paradise and Osiris' younger brother, Set, began to envy him. Set killed Osiris, put him in a coffin which he threw into the Nile, and finally hacked the body to pieces. Isis brought Osiris back to life. However, Isis could not find all of the pieces of Osiris' body in the Nile, and Osiris lost his powers. He became the god of the underworld. Osiris' children were Anubis (whose mother was Set's sister and wife Nephthys, disguised as Isis) and Horus (whose mother was Isis).

### 3. THE MILKY WAY

**The Nordic countries:** In Finland, the Milky Way or *Linnunrata* ("path of birds"), was thought to be the ski track of the great hunter in the sky, or the snowy path of a shaman. The Milky Way can also be compared to the Great Oak in the *Kalevala*, reaching up to the heavens and preventing the stars from moving. The Milky Way has also been seen as the path that soul-birds take to carry the spirits of the dead to the afterlife. Loons and geese were among birds thought to be soul-birds, possibly swans as well. In the ancient culture on the Finnish banks of the Baltic Sea, stars were associated with birth and death. In Swedish, the Milky Way is *Vintergatan*, "winter street".

**Greece:** According to legend, Zeus had a child called Heracles with a mortal woman, and he tried to feed the infant with milk from his wife Hera, who was asleep. However, Hera woke up during the attempt and pushed the child away, spraying milk from her breast. This spray of milk became the Milky Way.

**China:** In China, the Milky Way is a silver river. In Chinese tradition, the star Altair in the Eagle constellation is the Cowherd. According to legend, the Weaver Girl (the star Vega in the Lyra constellation) was the wife of the Cowherd and a grandchild of the Emperor of Heaven. She had been an industrious weaver of colourful brocade cloth for the gods and goddesses, but stopped this work when she married. The Emperor of Heaven was angered by this and ordered that the couple must be separated with a heavenly river and only allowed to meet once a year. On the seventh day of the seventh month, magpies would spread their wings to form a bridge between the lovers so they could meet.

**The Hopi (North America):** A son lived with his mother, not knowing his father. The grandmother told the boy that the Sun would know who his father was. The boy made a flour of turtle shell, cornmeal, coral and seashells and threw it into the sky to show a path (*Soongwuqa*, the Milky Way). He climbed the path to go up to the Sun and ask about his father. The Sun told the boy that he still had a great deal to learn. The boy fell to the ground. He then made a wooden box from a cottonwood tree, and used it to travel due west along the river. A female rattlesnake opened the box, and the boy continued travelling with her.



The boy and the snake saw a meteor fall into the sea on their way to the house of the Sun, and asked it if they could ride along. This took them to the house of the Sun, where they met the Moon, the mother of the Sun, working on a piece of turquoise. In the evening, the Sun returned to his house and the boy asked about his father again. The Sun replied that he believed himself to be the boy's father.

**Egypt:** The Milky Way was considered a heavenly reflection of the Nile river.

**Australian aboriginals:** The dark spaces in the Milky Way show a woman who floated up into the sky.

## Assessment:

- Think of some examples as to how different cultures and lifestyles could make people see different shapes in the sky. For example, would people living by the ocean be likely to see fish and other aquatic things in the stars?

## Activity 1: You own constellation

1. Think of your own constellation and make up a story for it! You can find a star map in Stellarium or for example on Heavens above webpage (<https://www.heavens-above.com/skychart2.aspx?lat=51.4934&lng=0.0098&loc=Greenwich&alt=0&tz=GMT>). You get a printer-friendly map by clicking the printer image in the upper right corner of the page.
2. Look at the star map (remove the lines showing the constellations) and connect the dots in a new way to find your own pattern! What is your constellation? What could it be called? Can you think of a story behind your constellation? You can draw, write, or make a performance of the story.

## Assessment:

- What figures can you think of? What about the person next to you? Why? What is the story behind your pattern?  
[Do the constellations of the pupils reflect our modern life?]
- What kinds of modern constellations could people today see in the sky? Can you see mobile phones, hoverboards or Pokémon in the stars?
- Is your constellation something that a person living in the past would be able to understand?



## Activity 2: Dive into the world of constellations

1. What other constellations and stories can you find in Stellarium? Open Stellarium and browse through the many stories of constellations from different cultures. Click “Sky and viewing options” window on the left and then choose “Starlore”.
2. How did the different cultures see the sky? What kinds of constellations and stories are there? The teacher can read the stories out loud (the stories in Stellarium are only available in English).

## Background Material/Knowledge:

We can all see patterns in the stars of the night sky. These patterns are called constellations. They have names and often interesting stories.

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The online observatory collaboration consists of the following partners:

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