



# The Life Cycle of Stars

## Stellar Evolution

### Classroom Activity

#### Overview

**Age Range:**

9-12

**Prep. Time:**

10 minutes

**Lesson Time:**

1 hour 30 minutes

**Cost per activity:**

Low (print cost only)

**Includes the use of:**

Paper

#### Outline

Students will learn about stars, comparing their life cycles of birth, life and death to that of humans.

They will get to see how mass effects the type of star and the knock-on effect this has on the timeline of its life.

The class will complete the first activity all together and then go on to create their own human and star timelines.

### Pupils will Learn:

- The birth, life and death of stars
- How mass effects stars
- Creating and comparing timelines for humans and stars

### Lesson Plan:

Description	Time	Notes
Introduction to the subject	15 min	Use: <a href="https://www.youtube.com/watch?v=ZrS3Ye8p61Y">https://www.youtube.com/watch?v=ZrS3Ye8p61Y</a>

Online Observatory: [onlineobservatory.eu](http://onlineobservatory.eu)

The online observatory collaboration consists of the following partners:

Baldone Observatory, Brorfelde Observatory, Cardiff University, Harestua Solar Observatory, Helsinki Observatory



Activity 1	15 min	Use: starlifecycle_diagram.pdf and starlifecycle_activtyimages.pdf
Assessment	15 min	Use: starlifecycle_modelanswers.pdf
Break	15 min	
Introduction to activity 2	5 min	Link to activity
Activity 2	15 min	Use: starlifecycle_timelineinfocards.pdf
Assessment	10 min	

## Introduction to the subject:

While when we look up at the night sky all the stars may appear similar, they can in fact vary greatly. The stars can have extremely different masses and brightness's, appearing different colours depending on temperature, and their age will also affect their state. Think about how different people are, stars can differ just as much.

<https://www.youtube.com/watch?v=ZrS3Ye8p61Y>

## Activity 1:

- Cut out and distribute the images and information boxes for the life cycle diagram and distribute randomly amongst the class, you can choose whether you would like to also distribute the clues.

Either print out a large copy (e.g A3) of the star diagram or display it on the board. Both a white background and white background option are available.

1. Ask students to look at/read the piece they have been given, do any of them think theirs belongs in the first section of gaps, 'Nebula'.
2. Move along each section of the diagram, having students volunteer their piece when they believe it belongs to the gap in that section. You may want the class to vote on whether a piece belongs, especially when presented with more than one option.
3. It is unlikely the class will place all pieces correctly the first time, so now research the life cycle of low and high mass stars.
4. Have students rearrange any images and text they think is in the wrong order.

## Assessment:

Compare the class' diagram with the correct answers, how many did you have correct?



## Introduction to Activity 2:

If children are unaware of timelines bring up the idea of chronological order, where events are based in time order depending on when they occurred. Timelines are a display of events in chronological order, often within a graphic style.

Ask students to think about their lives and important events, they could consider a timeline of their lives so far or of their average day/week. You may want to have a look at different style timelines to give the students some ideas for creating their own designs.

## Activity 2:

- Print off the star life cycle timeline info cards
  
- 1. Have students consider the life cycle of people (babies, toddlers, children, etc.) and then draw a timeline for humans (how many years does each part last?).
- 2. Students should next create a timeline for a low mass and a high mass star, they need to consider what measurement of time they will use.
- 3. Compare all three timelines.

## Assessment:

Compare all three timelines:

- How many stages are there?
- Where do they spend the majority of their lifetime?
- Are there common factors?
- How would having a greater mass effect the stars timeline?
- How would having a lower mass effect the stars timeline?

## Further Activities:

Create a Hertzsprung-Russel diagram.