

## Adventure Series: Cosmology

**Rationale:** To give students a better understanding of the Universe and everything it contains in a way that is easily accessible by any level of ability. Students must cooperate together to discover information and complete objectives. This lesson aims to engage students in critical thinking to develop an understanding of who we are, where we came from, and the future of humankind and the universe in the context of an English classroom.

### Lesson Goals

Students will:

- Use critical thinking to learn facts about our known universe
- Demonstrate an understanding of the requirements for life on Earth
- Apply learned concepts to construct a logically sound and well-reasoned argument

### Materials needed

- 4x Solar system cards cut out and laminated (**information cards** and **name and picture cards** separated)
- 1x Gliese star system cut out and laminated
- 4x Cosmic calendar
- 4x Cosmic calendar event cut outs (There are 2 on the PDF)
- 4x Journey to a new world worksheet

### Lesson Plan

#### 1. Introduction to cosmology (5 minutes)

Using the keynote, introduce what cosmology is. Explain that we will be thinking about the universe and asking questions is important for discovery. Such as 'how did it start', 'how has it evolved' and 'how might it end'.

#### 2. Warm up: Test your knowledge (5 minutes)

Guess the picture in teams. One student stands with their back to the board. Their team uses English or gestures to help them guess the word. The first team to say the correct word wins the point.

#### 3. Prior knowledge assessment: The Cosmic Calendar (15 minutes)

Use the keynote to explain the concept of a cosmic calendar. Explain that the universe is so big it's difficult to imagine its timeline, so we're going to use a 'Cosmic Calendar' which scales all events in the known universe down to a single year. A month is about 1.15 billion years. A day is about 37.7 million years. The calendar starts at 12:00am on the 1<sup>st</sup> of January, and continues until this moment, which is 12:00am on the 31<sup>st</sup> of December.

Hand out the **cosmic calendar** and the **event cut outs**. Groups match the dates to the events and make a timeline using a cosmic calendar. Let them use their own judgment when placing the events.

When the groups have finished, go through the answers on the keynote, asking them to guess which event is next, and how many billion or millions of years ago it was.

#### 4. Pre-task: Welcome to the solar system (15 minutes)

Hand out the cut out **solar system cards** (planets only). One set per group. Students place them in order of distance from the sun. Students then match the **information cards** to the **name and picture cards**. Use the keynote to explain the facts on the cards. Check answers using the keynote.

#### 5. Check answers and comprehension: Quiz (15 minutes)

Give students a minute to try and memorise the information on the cards. Then go through the solar system quiz on the keynote to check comprehension. This is important as it gauges understanding of the vocab on the information cards (diameter, day length, temperature, gravity, atmosphere), which will be necessary in the next activity.

#### 6. Main task: Journey to a new world (20 minutes)

Preface the next activity by asking students to think about what Earth will be like in the future. Use discussion questions on the keynote. Explain that we're going to look at a possible future for humankind. Let the video play.

Hand out two of the **Gliese (Glee-sa) star system planet cards** to each group. They must look at the information given to them and decide which planet they want to live on. They must consider the positive and negative points of their chosen planet. They must also think about ways in which to overcome such problems.

They will then report their information to the class. They can give extra information, such as proposed food or habitats for humankind but they must answer the questions on the worksheet.

#### 7. Report: Journey to a new world (10 minutes)

When ready, students practice presenting their report. Every student must speak. Let students ask questions if desired.

#### 8. Post-task: Vote (5 minutes)

The class must vote on the planet they liked best. They cannot vote for their own planet. You can get them to vote individually or as a group. When the students have chosen, explain that we are going to see what life is like on the new planet. Get a student to press the planet name on the 'make your selection' slide. A final video will play of the settlers on their new planet.