

# How to classify an alien?

Primary: (ages 7 – 11)

Science

While there are several classes of living beings, most commonly animals fall into the following: mammals, birds, fishes, amphibians, reptiles and arthropods. Once students have gained an appreciation of these classes, they engage in a project where they merge two unlike animals from different classes. They will present their new alien creations to their peers and have their classmates classify them according to their individual understanding of the alien creations.

**Time allocation** 2 lesson periods

**Subject-content** Problem solving to classify living things based on characteristics  
Reinforce class groupings of mammals, birds, fishes, amphibians, reptiles and arthropods and understand their distinctions.

**Creativity and critical thinking** This unit has a **creativity** and **critical thinking** focus:

- Explore and generate unusual ideas and propose how to solve a scientific problem in a personally novel way
- Identify and question assumptions and consider several perspectives on a scientific problem
- Appraise, review, and reflect on a scientific solution relative to possible alternatives

**Other skills** Communication

**Key words** taxonomy; classes; classification; living beings; mammals; birds; fishes; reptiles; arthropods; combination; alien; extra-terrestrial

## Products and processes to assess

Students create a new being and take a position on what class it should belong to. At the highest levels of achievement, their output is imaginative, they are able to justify their position with good reasoning, relate it to alternatives, and understand its strengths and limitations. They are open to the ideas and feedback of others and able to acknowledge assumptions and uncertainties.

## Teaching and Learning plan

This plan suggests potential steps for implementing the activity. Teachers can introduce as many modifications as they see fit to adapt the activity to their teaching context.

Step	Duration	Teacher and student roles	Subject content	Creativity and critical thinking
1	Lesson period 1	<p>The teacher introduces the topic by reviewing the six major classifications of animals (mammals, birds, fishes, amphibians, reptiles and arthropods).</p> <p>Students engage in a 10-15 minute discussion describing the most common characteristics of each major class and providing as many examples as they can for the different groups.</p>	<p>Systems of classification</p> <p>Characteristics of classes</p>	<p>Making connections and generating ideas for examples of animals in each class</p>
2		<p>The teacher instructs students to use the lists they have generated to pick two or three animals they can combine to make a new creature/alien to share with the class. Students are tasked with producing a physical depiction (2D or 3D) of their aliens and deciding what characteristics the alien will have. The teacher must specify that the new creatures cannot simply have all of the combined characteristics of the root animals.</p> <p>Students spend the rest of the class drawing or creating their aliens in 3D and detailing in a short paragraph the new characteristics their aliens possess and what class they believe their alien belongs to and why.</p>	<p>Classifying new beings</p> <p>Justifying their classification in writing</p>	<p>Playing with unusual and radical ideas</p> <p>Proposing how to solve a problem in a personally novel way (e.g. which class does this alien belong to?)</p> <p>Justifying their opinion with logical criteria and reasoning</p>
3	Lesson period 2	<p>Students are put into small groups and each student presents to the rest of the small group. They present their new aliens and use their short paragraphs to describe their aliens' characteristics. Presenters are not to reveal the class they think their alien belongs to until the activity concludes.</p> <p>The rest of the students in the small group detail all classes the aliens could be classified into and write approximately three sentences describing which class is most appropriate for the alien and why.</p> <p>As the perspectives of different students are discussed and compared, this can be extended as appropriate to a discussion about the process of classification. Why do we classify? How do we reach agreement about what class something belongs in? What is certain about the process? What is uncertain about the</p>	<p>Describing the characteristics of new beings</p> <p>Classifying new beings</p> <p>Justifying their classification</p> <p>Considering classification systems</p>	<p>Proposing and communicating their output and taking a position on what classification it belongs to</p> <p>Comparing perspectives on a scientific problem</p> <p>Identifying and questioning assumptions and generally accepted ideas of classification</p> <p>Explaining strengths and</p>

process? What other methods exist to classify animals?

weaknesses and reflecting on  
chosen approach relative to  
possible alternatives

## Resources and examples for inspiration

### Web and print

- Pictures of animals that represent each of the main classes (mammals, birds, fishes, amphibians, reptiles and arthropods )

### Other

- Projector, poster board, markers and pencils
- Optional recyclable materials for modelling creatures

### Opportunities to adapt, extend, and enrich

- Further links could be made with literacy and language and visual arts. For example, students could be asked to write a script for an interview with the alien or a play about the process of classification or could be asked to produce a series of visual arts pieces that illustrate the characteristics of different classes in an unusual and memorable way.

**Creativity and  
critical thinking rubric**

	<b>CREATIVITY</b> Coming up with new ideas and solutions	<b>Steps</b>	<b>CRITICAL THINKING</b> Questioning and evaluating ideas and solutions	<b>Steps</b>
<b>INQUIRING</b>	Make connections to other scientific concepts or conceptual ideas in other disciplines	1,2	Identify and question assumptions and generally accepted ideas of a scientific explanation or approach to a problem	3
<b>IMAGINING</b>	Generate and play with unusual and radical ideas when approaching or solving a scientific problem	1,2	Consider several perspectives on a scientific problem	3
<b>DOING</b>	Pose and propose how to solve a scientific problem in a personally novel way	2,3	Explain both strengths and limitations of a scientific solution based on logical and possibly other criteria (practical, ethical, etc.)	2,3
<b>REFLECTING</b>	Reflect on steps taken to pose and solve a scientific problem	3	Reflect on the chosen scientific approach or solution relative to possible alternatives	3