



Classification: sorting animals



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For the Teacher

General Information

Welcome to Adelaide Zoo!

The Zoo is a great place for learning. Adelaide Zoo Education aims to support student learning by providing resources to assist classes to have educational and enjoyable experiences at the Zoo.

This booklet will provide a range of activities which may be undertaken by your students during their visit to the Zoo. A map and suggested order of activities is provided to give a logical circuit to travel during the visit.

Animal species change from time to time, and sometimes animals are “off limits” or out of sight during visits, so a flexible approach to completion of activities is recommended.

In planning, please consider whether

- ◆ you would like your class to regroup for lunch, animal feeds, the Envirodome or at the Entrance at the end of the visit. If so, relay the times and meeting places to students or supervisors (in writing if possible.)
- ◆ you would like a session with a Zoo Education Officer to support your study theme. The 45 minute interactive sessions need to be booked when you make your class booking.

Specific information relating to this Zoo Trail will follow for the teachers and for adult supervisors. Please ensure that supervisors have a copy of the relevant pages **before they come to the Zoo** so they can also be mentally prepared to maximise the learning for the students in their care.

TEACHER INFORMATION

This trail is aimed at giving students an introduction to the early stages of systematic organisation of living things – Classification. This includes,

- Placing vertebrates into appropriate Classes based on certain structural features,
- Using animals' body covering to determine which Class they belong to,
- Focusing on the unique features of the vertebrates in each Class.

The booklet is designed for completion by groups of students. Some of the activities require deep thinking and broad general knowledge and this is more achievable in a group situation. Teamwork in navigation, organization and writing will also add to students' involvement, learning and enjoyment of the trail.

Pre-visit ideas

- Get the students to consider some of the things that are classified or sorted into groups and sub-groups and how this helps people and makes life easier.

For example,

- ✓ Videos and DVDs in a video shop
- ✓ Belongings in your room
- ✓ Things in the school's Resource Centre
- ✓ Items at a supermarket
- ✓ Tools, equipment, etc. in a shed
- ✓ Cutlery, crockery and kitchen utensils at home.
- Discuss the meaning and use of words like grouping, sorting and classifying, both in general terms and for animals.
- Discuss the reasons that animals and other things are classified and the use of scientific names.
- Research some scientific names and their meanings in English.

Post-visit ideas

Discussion/Essay/Research tasks on animal classification. Possible topics,

- Some of Australia's Aboriginal people have very good knowledge of native animals, their habits and their uses for food, by-products, environmental indicators, etc. many animals are the subject of traditional stories. Discuss how Aboriginals may have classified Australian animals.
- Research to find out more about the system of classification and how animals fit into it. Students can select a vertebrate animal and attempt to find out its Class, Order, Family, Genus and Species. Students can research other animals that belong to the same 'Groups'.

Links to the Australian Curriculum (ACARA)

This trail is designed to be inquiry based and student focused. Its use by small groups of students, working cooperatively, should strongly support learning processes.

SCIENCE UNDERSTANDING - Year 7

Biological Science

There are differences within and between groups of organisms. Classification helps to organize this diversity.

Elaborations

- Reasons for classifying
- Grouping a variety of organisms on the basis of similarities and differences.
- Kingdom, Phylum, Class, Order, Family, Genus and Species.
- Scientific names.
- Using keys to identify organisms in local habitat.

Students visit a number of native and exotic species to observe and answer questions that will provide them with information about Classification.

Students are encouraged to use their observation skills, to read signs and to talk with Zoo staff. Supervisors should encourage students to discuss ideas and to express their own points of view.

Key



Observe carefully



Discuss and share ideas with your group



Write down your thoughts

Classification

A basis for Biological Classification

We could choose almost any characteristic as a basis for sorting animals. Some are more helpful than others.

For example, consider using colour. We might group together all animals that are blue; blue wrens, blue whales, bluebottles and blue crabs.

Or we may classify animals according to where they live, grouping together those animals, for instance, that are found in human households; humans, dogs, budgerigars, cockroaches, cats, mice, lice, flies, fleas – a very mixed bag!

Using an animal's colour or where it lives as a basis for classification is not, for a biologist, a very useful basis for a first sorting of animals because animals that are blue may have little or nothing else in common.

People who classify animals have found that if they use structural characteristics as a basis for classification, the animals they group together have a great deal more in common.

Levels of Classification

As a group of organisms is being classified, each sorting stage gives us a new level in the system of classification.

At the first level, sorting results in the kingdom level, for instance 'animal' kingdom or 'plant' kingdom. The groups that result from the second sorting make up the phylum level, the third sorting gives us the class level and further sorting gives us the order, family, genus and species levels in turn.

In this way most organisms are sorted into plant and animal kingdoms. Animals can then be classified into a number of phyla and each phylum in turn may then be classified into several classes, each class into several orders and so on. As we do this and move from a higher to a lower level of Classification, we find the animals in groups become more and more alike in structure.

For Example, consider the dog, Grey wolf and Red fox.

Because they have certain structural characteristics in common, they are classified in the same group at kingdom, phylum, class, order and family levels.

However, at the genus level, the dog and the wolf have more in common than the fox has with either, therefore the dog and the wolf are classified in one genus, *Canis*, and the fox in another, *Vulpes*.

Then, finally each is a different species and classified as such, based on whether they would breed together in their natural setting, rather than any structural features.

Level	Dog	Grey Wolf	Red Fox
Kingdom	Animal	Animal	Animal
Phylum	Chordata	Chordata	Chordata
Class	Mammalia	Mammalia	Mammalia
Order	Carnivora	Carnivora	Carnivora
Family	Canidae	Canidae	Canidae
Genus	<i>Canis</i>	<i>Canis</i>	<i>Vulpes</i>
Species	<i>familiaris</i>	<i>lupus</i>	<i>vulpes</i>

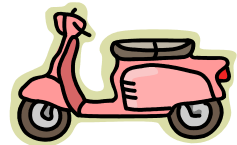
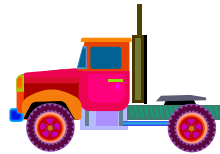


Classification

Pre/post visit activity

When things are grouped together there must be a feature that is similar or alike.
When things are placed into separate groups there must be a difference between them.

- Using two different coloured pencils, circle each of the transport pictures below to place them into 2 groups and state what feature you used to put them into each group;



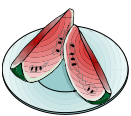
The objects circled in _____ pencil are the same because _____



The objects circled in _____ pencil are the same because _____

- For each group of objects below, write one feature that they have in common;

Group 1



Group 2



Group 3



Classification

Pre/post visit activity

There are lots of examples of classification happening in everyday life using everyday items.

- Here is a list of sports equipment:

Tennis racquet, football, discus, golf ball, soccer ball, basketball, hockey stick, golf club, cricket bat, javelin, table tennis ball, shotput.

Classify these items into two groups using the table below;



Equipment used in a team sport	Equipment used in an individual competitor sport

- Classify the sports equipment above into three groups according to the headings in the diagram below

SPORTS EQUIPMENT

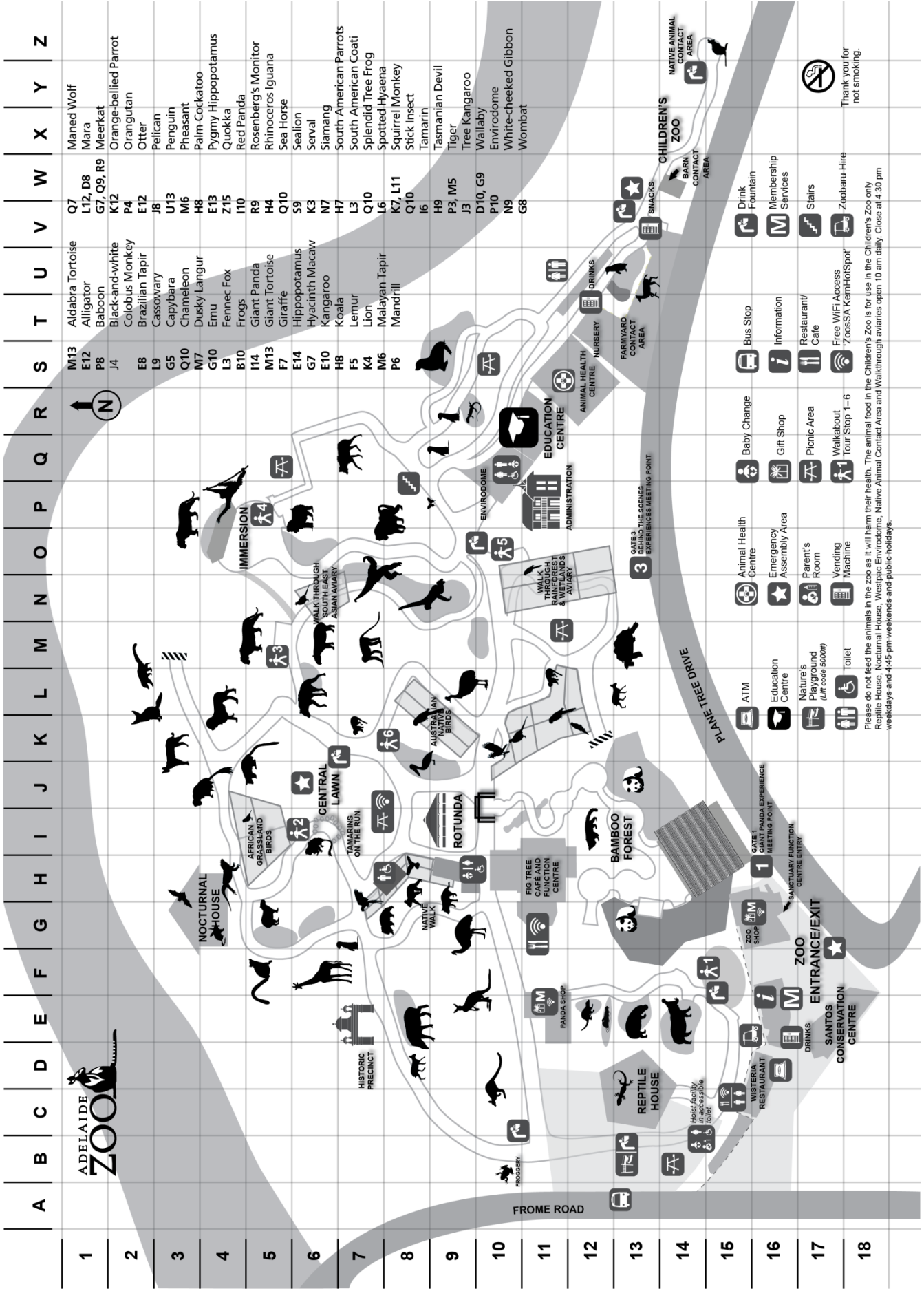
Used when throwing

Used when kicking

Used when hitting



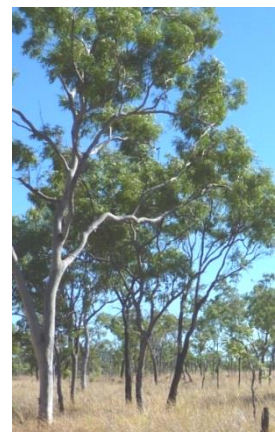
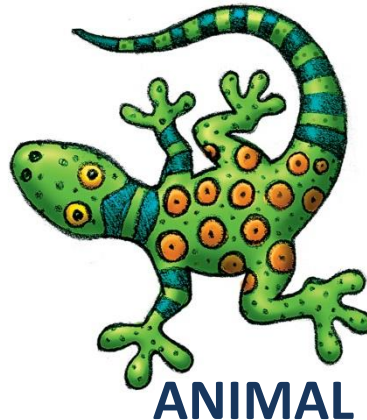
- Classify the sports equipment into two groups, like you did in the first activity at the top of this page, but this time you choose the characteristic.



Classification

At the Zoo

Three of the kingdoms of living things are Plant, Animal and Fungus.
Use lines to place the following living things in the correct kingdom:



Class Level (Vertebrates)

Mammal, Bird, Reptile, Amphibian (no fish currently on display)



- ◆ Observe these animals.
- ◆ Describe their appearance by using the features in the table below.
- ◆ You may complete the table by choosing some of your own animals.

Animal	Body Covering	Colour	Wings, Legs, Flippers	Tail	Size	CLASS Mammal, Bird, Reptile or Amphibian
Dusky Leaf Monkey (Map-7M)						
Cassowary (Map-10L)						
Poison Dart frog (Frogger, Map-10B)						
Alligator Map-12E)						
Penguin (Map-13U)						

- Which feature helped you the most when working out which Class each animal belongs to?

- All other features are not relevant for this type of grouping.

Scientists use body coverings as one of the structural features which help to divide the Phylum Chordates (which is mostly the Vertebrates) into the next level, which is Class.

For each of the 5 vertebrate groups divided using body coverings, name the Class and give one other feature, which all members of the Class possess. (This feature need not be unique to the Class.)



Body covering	Class name	Other features of the Class
Fur		
Feathers		
Wet Scales		
Dry Scales		
Wet Skin		

Can you think of any vertebrate animals which are difficult to put into a Class using body coverings as the method of classifying them? If so, give an example and explain what the difficulty is.







Australian Wetlands Aviary

(Southern end of the Australian Rainforest)



All of the animals for this activity are in the same Kingdom – **Animals**, the same Phylum – **Chordata** and the same Class – **Birds**. Just like certain features are used to sort animals into the same group, eg all are animals, have a backbone and feathers, there are features that we can use to separate these birds into different groups.

In the table below, use each feature in the left column to help you make up a group of birds and list them in the right column.

Read the signs, use the pictures and observe the following birds!

Black-winged Stilt, Glossy Ibis, Buff-banded Rail, Bar-shouldered Dove, Little Pied Cormorant, Pied Heron, Royal Spoonbill



Feature/Behaviour	Bird Species
Have feet for wading	
Eat fish	
Have a hooked beak (parrot beak)	
Spend time in the water	
Eat insects and/or fruit/vegetation	
Have webbed feet	



Enriodome (Invertebrates)

(Map - P10)



Write down the names of as many animals as you could find in this area.

For each one, what do you think is one important aspect of its structure which would help scientists to classify it?

Also, write down the name of another animal, not in the Discover Zone, which has the same feature.



Envirdome animal	Structure used for classification	Another animal with this structure



The work of Scientists benefits a lot of people!

Classifying living things takes many people a lot of time and discussion. There must be good reasons for scientists to do it.

For each of the following people, why is it useful having animals classified?

1. A farmer who is trying to control a bug in his wheat crop_____

2. A pet owner who is trying to provide the right food for her birds_____

3. A gardener who wants to get rid of some weeds without using any **spray** _____

Can you think of someone else who would find it useful to have an animal classified?

