

# Living things don't exist in isolation

Critical teaching ideas - Science Continuum F to 10

**Level:** Working towards level 3

## Student everyday experiences

Younger students tend to think of animals as individual rather than focusing on populations or interactions. (See Tytler & Hubber, 2004).

By the end of the Early Years students may begin to understand that animals of the same species have similar internal parts and offspring (See Keil, 1989).

Younger students interpret animal behaviour in terms of human emotions and motivations (the spider is scared, the rabbit likes to live in burrows, the bird protecting its nest is angry), rather than seeing it as adaptive. (See Tytler & Hubber, 2004).



Young students can understand simple food links involving two organisms, yet they often think of organisms as independent of each other, but dependent on people to supply them with food and shelter, eg. family pets (See Leach Driver Scott & Wood-Robinson, 1995).

## The scientific view

Every living thing is linked, directly or indirectly, with a multitude of others in an ecosystem. There is an interrelationship between organisms and their environment which affects their distribution, abundance and survival, (bees pollinate flowers and flowers rely on this for reproduction while bees rely on flowers for food).

The world contains a wide variety of physical conditions, living and non-living, which create a wide variety of environments: freshwater, marine, forest, desert, grassland, mountain and others. In any particular environment the growth and survival of organisms depends on the physical conditions. (See AAAS Maps)

## Critical teaching ideas

- Children should be supported to look at organism structures and behaviours in terms of their survival purposes (as biologists do)
- Animals and plants have a great variety of body plans and internal structures that contribute to their ability to make or find food and reproduce.
- Animals eat plants and/or other animals for food and may also use plants (or even other animals) for shelter and nesting.
- Organisms interact with one another in various ways besides providing food or shelter (See AAAS Maps) e.g. many plants depend on animals for carrying their pollen to other plants or for dispersing their seeds while animals may depend on plants for food.

(See AAAS maps)

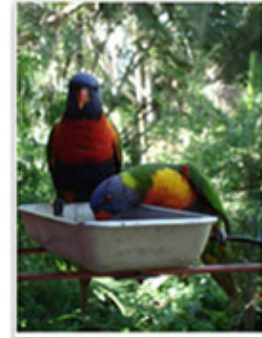
To build up a concept of structure/function relationship, students need to be exposed to a range of organisms, and within their habitats.

## Teaching activities

### Collect evidence/data for analysis.

Encourage students to investigate conditions necessary for plant growth. One approach is to have them develop suitable questions for investigation. eg. Will seeds grow in the dark? Do plants like salty water? Will seeds grow without water?

Students can determine what conditions they will change and what features of the plant they will measure. Encourage students to make and record observations using drawings in science journals or to make a visual record of germination and early growth using digital cameras.



### Provide an open problem that can be explored via play.

Set students the task of designing a “Theme Park” for “minibeasts” where they consider the features of animals’ and their structure in order to design rides, slides and amusements for them eg. a slater (or roly polly) might prefer a long tube through which it can roll when curled up in a ball. If animals have wings, how could these structures be used or protected in designing a ride or slide for them?

### Focus students’ attention on hitherto overlooked detail.

Provide students with hand lenses and encourage them to collect a variety of insects and plants from the local school yard. Using the hand lenses have students observe how the animals move and have them identify common features, eg. antenna, legs, abdomen & head. Encourage students to carefully observe and record various body structures and functions, which relate this to animal’s habitat and everyday function and survival. Have students look closely at the underneath of leaves for caterpillars, lerps, scale, aphids or other insects which may use the leaf as a source of food or protection.



### Promote reflection on and clarification of existing ideas and challenge some existing ideas.

The River Story – <http://www.qld.waterwatch.org.au/resources/storyofariver.html> activity captures the journey of a river as it moves from catchment to sea and is shared with students as a class story. Students add various items to the river as the story is told where the purpose is to demonstrate the impact of human intervention and natural processes such as erosion etc. on water quality. The activity can be adapted to follow life of a particular organism within the waterway, e.g. a platypus. Students can discuss the impact of the changes on the organism’s survival, how the impact on the waterway could be improved and how our behaviour impact on our waterways? The River Story website provides a story outline and equipment needed.

## Further resources

Science related interactive learning objects can be found on the [FUSE Teacher Resources](#) page. To access the interactive learning object below, teachers must login to FUSE and search by Learning Resource ID:

- **Garden detective: explore an Australian garden** – Students are encouraged to recognise that the environment contains many living and non-living things too small to be seen clearly without magnification and to appreciate the diversity of plants and animals.  
Learning Resource ID: LN96GD
- **Create a creature** – Have a close look at body parts of small creatures such as a wolf spider, a beetle or a bull ant. Explore descriptions of each body part and its uses. For example, examine a scorpion's long tail to see how it is adapted to stinging prey. Build your own creature. Choose body parts to suit your animal's feeding behaviour, type of movement and habitat. This learning object is one in a series of three objects.  
Learning Resource ID: FSBC3R