






Structural adaptation 3: Structure and function

Components

	NAME	DESCRIPTION	AUDIENCE
	<i>Structure and function</i> teachers guide	This guide suggests how to use the video, worksheets and game to explain structural adaptations.	teachers
	<i>Adaptations in action</i> video	This video explains how structural adaptations assist an organism to function within its environment.	students
	<i>Rakali</i> worksheet	This worksheet provides detailed information about structural adaptations of rakali. Each adaptation is followed by a question.	students
	<i>Water-holding frog</i> worksheet	This worksheet provides detailed information about structural adaptations of water-holding frogs. Each adaptation is followed by a question.	students
	<i>Seagrass</i> worksheet	This worksheet provides detailed information about structural adaptations of seagrass. Each adaptation is followed by a question.	students

Purpose

To **Explain** why organisms have specific structural adaptations that allow them to function successfully within their environment.

Outcomes

Students:

- explain that structural adaptations improve an organism's ability to survive in a particular environment;
- understand that each structure has key functions within a particular environment; and
- describe the relationship between structure and function.

Activity summary

ACTIVITY	POSSIBLE STRATEGY
Students watch the video, <i>Adaptations in action</i> .	whole class, or individually if resources available
Students play <i>Bingo: adaptations in action</i> .	individually First student with line of correct answers wins.
Students complete worksheets: <i>Rakali</i> , <i>Water-holding frog</i> and <i>Seagrass</i> .	Distribute one or all of the worksheets. This activity may be carried out in a number of ways: as a class discussion, individually or as homework.

Technical requirements

QuickTime version 7 or later is required to view the video. This is a free download from www.apple.com/quicktime. A high quality MP4 version of the video is available through the SPICE website. The teachers guide and worksheets require Adobe Reader version 5 or later, which is a free download from www.adobe.com. The worksheets are also available in Microsoft Word format.

Using the video

Play the video, *Adaptations in action*. The video shows a number of different plants and animals living within different environments, with specific detail given to the organisms rakali, water-holding frog and seagrass. Students should be encouraged to distinguish between different types of adaptations, and take note of how environmental conditions determine organisms that live in any given area and their structural adaptations.

Bingo: adaptations in action

This is a short, follow-up exercise that draws on information delivered in the video.

To play, photocopy then hand out the bingo card to each student. The bingo card contains both correct and incorrect answers. Students must identify the correct answers on the card and mark them with an 'X'. The first student to mark off a full line of correct answers shouts 'Bingo!' and is the winner. Remaining students continue checking off answers until all have completed the exercise.

Only a single row on the card contains a series of correct answers. Students may be encouraged to discuss or debate answers if necessary.

Associated SPICE resources

Structural adaptation 3: Structure and function may be used with related SPICE resources to address the broader topic of structural adaptation.

DESCRIPTION	LEARNING PURPOSE
<p><i>Structural adaptation (sequence overview)</i></p> <p>This learning pathway shows how a number of SPICE resources may be combined to teach the topic of structural adaptation.</p>	
<p><i>Structural adaptation 1: Teeth, tails and talons</i></p> <p>A card game engages student interest in structural features of Australian animals.</p>	Engage
<p><i>Structural adaptation 2: Featured creatures</i></p> <p>A presentation encourages students to explore environmental conditions of three habitats, and characteristics a plant or animal would need to survive there.</p>	Explore
<p><i>Structural adaptation 3: Structure and function</i></p> <p>A video explains adaptations in three organisms: rakali, water-holding frog and seagrass.</p>	Explain
<p><i>Structural adaptation 4: Researching adaptations</i></p> <p>In a series of podcasts, three scientists at The University of Western Australia explain their research into Australian animals and plants.</p>	Elaborate

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Credits for video, *Adaptations in action*

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Adaptations BINGO!

50 IN ACTION!

<p>Aerial roots of mangroves are a behavioural adaptation.</p> 	<p>Rakali catch most food underwater.</p>	<p>Animal behaviour is not an adaptation.</p>	<p>Plants do not have structural adaptations.</p>	<p>Lacunae have two functions: buoyancy and gas transport.</p>
<p>There are three main types of adaptation.</p>	<p>Seagrass does not produce oxygen.</p>	<p>Producing venom is a structural adaptation.</p>	<p>Adaptations increase the chance of an organism's survival.</p>	<p>The water-holding frog digs burrows with its head.</p>
<p>Nocturnal animals have poor vision.</p>	<p>The water-holding frog burrows during the wet season.</p>	<p>Rakali's webbed feet help it to swim.</p> 	<p>Rakali is a marsupial.</p>	<p>Rambo is a special species of boxing frog.</p>
<p>Seagrass photosynthesis occurs in the roots.</p>	<p>Cocooning helps prevent evaporative water loss.</p>	<p>Structural adaptations are only external.</p>	<p>Avoiding the heat of the day is a behavioural adaptation.</p>	<p>Rakali do not have waterproof fur.</p>
<p>Structural adaptations have a key function.</p> 	<p>Tolerating salinity is a physiological adaptation.</p>	<p>Rakali is mostly nocturnal.</p>	<p>An adaptation can have more than one function.</p>	<p>The water rat is a marine mammal.</p> 

BINGO RULES

1. Check off each square that is correct with an 'X'.
2. Yell "Bingo!" once you have formed a straight line anywhere on the card.
3. First person to yell "Bingo!" with the correct answer line is the winner.