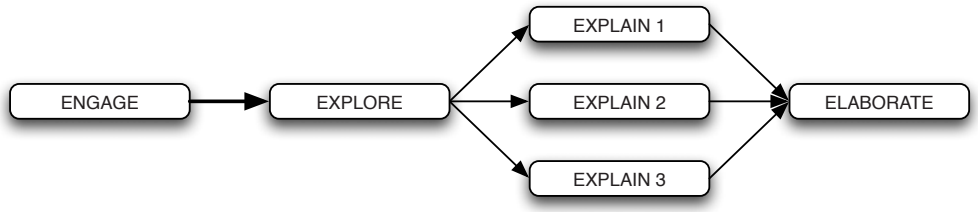
sequence overview



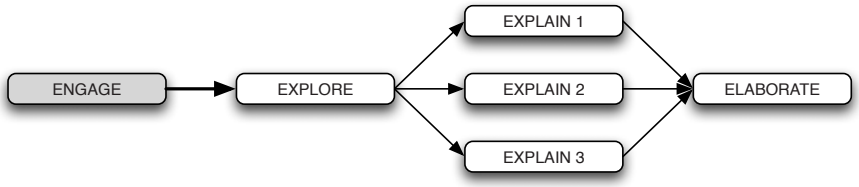
Background

These SPICE resources may be drawn together into a learning pathway to develop students' understanding of adaptations. It extends concepts introduced in the SPICE sequence, Structural adaptations, to introduce physiological and behavioural adaptations. The pathway is structured around a constructivist model based on the 5-Es where teachers may:

- **Engage** students in the study of plant and animal adaptations through an interactive quiz;
- provide opportunities for students to **Explore** adaptations displayed by emperor penguins;
- help students **Explain** roles of adaptations in three contexts: marsupials that live in an arid climate, plants that inhabit a saline environment, and air-breathing animals that dive to depth;
- **Elaborate** on differences between adaptation and acclimatisation; and
- **Evaluate** students' progress through the pathway.

The resource is designed for year 11 biology and human biology students, but, at the discretion of the teacher, may also be used with students in earlier years.

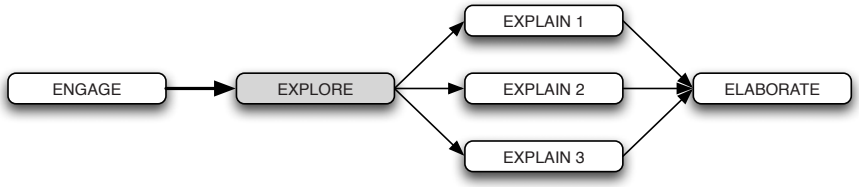
Learning resources



Adaptations 1: Defining adaptations

Defining adaptations comprises a teachers guide and interactive quiz.

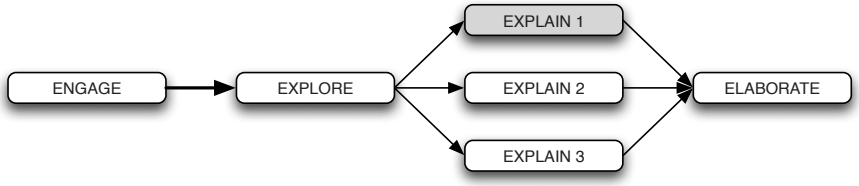
An interactive quiz is used to find out what students know about structural, physiological and behavioural adaptations in plants and animals. See the teachers guide for detailed information on the purpose and use of this resource.



Adaptations 2: Emperor penguins

Emperor penguins comprises a teachers guide, procedure sheet and student worksheet.

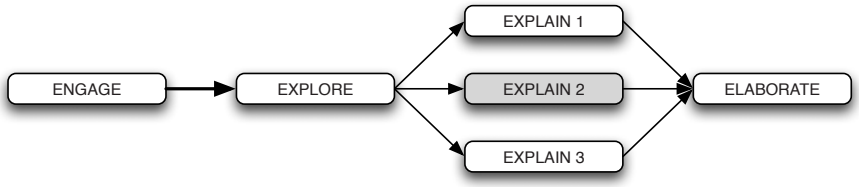
Three practical activities simulate adaptations shown by emperor penguins that allow them to survive a harsh environment. See the teachers guide for detailed information on the purpose and use of this resource.



Adaptations 3: Barrow Island marsupials

Barrow Island marsupials comprises a teachers guide, background sheet, interactive learning object and student worksheet.

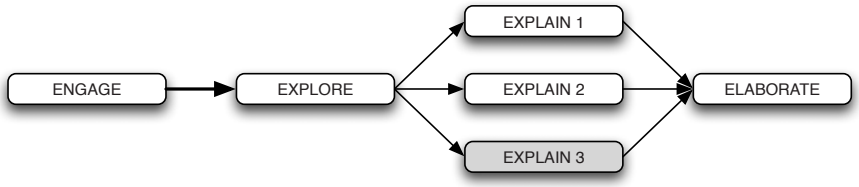
How do four species of marsupial cope with the arid environment of Barrow Island? Using an interactive learning object, students learn about different adaptations used by these marsupials. See the teachers guide for detailed information on the purpose and use of this resource.



Adaptations 4: Samphires

Samphires comprises a teachers guide, two fact sheets and two student worksheets.

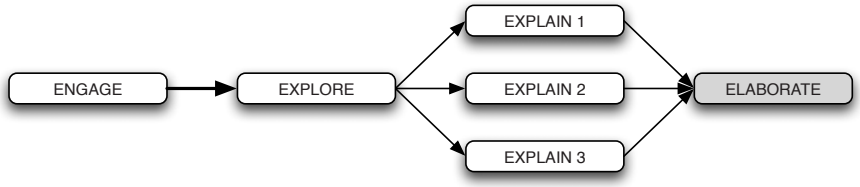
Samphires are plants that show a range of adaptations to saline conditions. In this activity, students match adaptations of particular samphire species to specific locations in a rehabilitation site. Scientists at The University of Western Australia conducting research on samphires, are profiled. See the teachers guide for detailed information on the purpose and use of this resource.



Adaptations 5: Diving adaptations

Diving adaptations comprises a teachers guide, background sheet, interactive learning object and student worksheet.

Air-breathing animals that dive to depth employ a range of adaptations to maximise dive time and depth. A learning object compares adaptations of emperor penguins, Weddell seals, sea otters, elegant sea snakes and humans for diving. See the teachers guide for detailed information on the purpose and use of this resource.



Adaptations 6: Freediving

Freediving comprises a teachers guide, video, background sheet and student worksheet.

Human freediving provides a context for elaborating on differences between adaptation and acclimatisation. See the teachers guide for detailed information on the purpose and use of this resource.

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banner image: 'A flounder blends in with its surroundings' by Moondigger. CC-BY-SA-2.5, commons.wikimedia.org/wiki/File:Flounder_camo_md.jpg

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