Behavioual Adaptations

Learning activities:

1. Create a concept map of how behavioural adaptations are integreated with structural, physiological adaptations.

Purpose / Aim

The aim of the activity is for students to demonstrate that a variety of adaptations are linked, and that together they operate to aid the survivourship iof all organisms.

**Links to VCE Biology Study Design**

**Key Skills:**

**Concept maps create structure to big ideas. They provide a valuable way in which students interperate the topic of adaptations.of organisms. Concept maps encourage students to think carefully about how a large topic can be divided. Working in groups facilitates cooperative learning through collaboration; a useful skill for integrating into society outside of the classroom.**

**Key Knowledge**

Unit 2: Organisms and their environment

Area of Study 1: Adaptations of organisms

2.

**Purpose / Aim**

**a. Brainstorming activity - collective focus on the specific behavioural adaptations of a chosen number of species. These chosen species are representative of a wide variety of behavioural traits found throughout the animal classes.**

b. After the brainstorming session, the class fractures into groups of four. Within these groups students are allocated a specific class of Animalia. From the allocated class, students are to discuss which specific 'species' they wish to represent to the class in a short two minute oral presentation of the behavioural adaptation of those repective species.

**Links to VCE Biology Study Design**

**Key Skills**

**Students learn the value of communicating ideas with the view of useing each contribution to build wider picture of a large topic. Students will need to collaborate within their respective groups, and in doing so lean to value the efforts of others. refinement of their individual thoughts**

**Key Knowledge**

Unit 2: Organisms and their environment

Area of Study 1: Adaptations of organisms

3.

**Purpose / Aim**

**Activity three marks the start of the four main reasons why behavioural adaptations have evolved (feeding, living space, protection and reproduction).**

The activity focuses on feeding behaviours. As with all these series of activities, the interconectedness of the various adaptation is highlighted.

Students are allocated a specific mode of lifestyle i.e. Diurnal, Nocturnal or Crepuscular. With each mode individual students are to write a list of organisms that live by each of these three lifestyle modes. From the list, students draw a table that displays the types of feeding behaviours for each, and provide a assessment of the benefits to each lifestyle mode.

From the list, students are allocdated three organisms representative of each of the three lifestyle modes:

a. Brown rat

b. Grey wolf

c. Tasmanian devil

**Students are re located to a computer room. Reaserch into the feeding regimes of the three species will form the basic background knowledge for three short essays on the feeding behaviors of the respective organisms. Essays are to include linkages between overall lifestyle and how the differing feeding regimes influence their survivourship.**

Assessment:

1. List of organisms

2. Table of contents

3. Benefits to each lifestyle

4. Research focus

5. Essay - does this express understanding of different feeding behaviours and link these to survivourship?

**Links to VCE Biology Study Design**

**Key Skills**

**Key Knowledge**

Unit 2: Organisms and their environment

Area of Study 1: Adaptations of organisms

4.

**Purpose / Aim**

**Students will gain an understanding of how organisms have individual roles in nature, and that these roles allow for the 'spacing' / distribution of organisms to facilitate the diversity that makes  up a healthy ecosystem.**

Students will discover a number of behavioural adaptations that allow organisms to co exist in different nuches. General headings include: Competition, Territoriality and Sociality. Under these headings students will increasingly learn about the interconectedness of adaptations,not only within a behavioual context, but also relate this the a broader perspective.

a. The introduction to the activity begins with the teacher asking the class to write down all the places they travel to and live within during there normal daily lives. Students are encouraged to comtemplate who they have contact with, and what it means the them as individuals to 'live' within, not only a geographical space, but also haw they effect the space of others with whom they come into contact.

b. Student are to draw a 'Time Line' of where they travel during the day, and who they associate with during that average day. Students are now handed a list of words:

Word List

Competition

Territory

Communication

Hierarchy

Using their daily Time Lines as their primary resourse, students are asked to describle how they 'feel' about each of these words, and relate each to their average day - how do we relate, and subsequentally behave when we experience the following:

1. Feel threatened (either physically, or academically or both)

2. Dislike for another student

3. Feel disgraced by another student

4. Feel betrayed by another student

The rational behind the excersise is to allow students to consider the meaning of these basic 'space' related words are common to many organisms, including themselves. For example; Tracy might aviod sitting next to Amy, because Amy is pretty and this makes Tracy feel uncomfortable. Another example; David thinks he's the 'King Pin' and holds the respect of the other boys who consider him 'touch'. But David is nervous around Carl. Carl is friends with a number of other boys in the same social group as David. David feels threatened that carl will goin his group, and so creates space to avoid this happening - he does this by acting aggressively, speaking in a loud voice, and by occational displays of strength; such as throwing a chair.

Students are asked to form pairs and describe and discuss, some of the reasons why organisms display behavioual adaptations.

Assessment:

1. Time Line: Clearly addressing the relevant topics.

2. Word List: Derive understanding of the commonalities that organisms experience and their responses to them.

 5.

#### Purpose / Aim

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#### Survival of organisms depend partly on how effective defense mechanisms are. Students will learn that behaviours have an important role in the survivourship and the genetic continuation of individual genes. Coupled with structural adaptations, behavioual adaptations allow organisms to defend themselves and their offspring from threats or harm. Students learn that psychological 'bluff', and 'physical ability' are distinguisable.

a. The class is divided into two groups (A and B) of equal numbers. Tables and chairs are rearranged so that each group faces the other in the classroom. One group represent predators (lions) 'A'; the other prey (wilderbeasts) 'B'.

b.  In the respective groups students allocate a secretary. All group members contribute the drawing up a list of adaptive behavioual strategies that allow survivourship. Group A needs to successfully hunt / kill wilderbeast in order to survive; group B needs to aviod being killed in order to survive.

c. Students are encouraged to consider both behavioural, physiological and structural adaptations or both lion and wilderbeast when drawing up their list of survival strategies.

d. When the two groups decide they have completed their lists, they swap positions in the class: Group A alights to sit in the place of group B and visa versa. The roles are switched: Group A are now the 'prey', and group B are now the 'predator'. Each group draws up a list of survival strategies as before.

e. When lists are completed the teacher writes all the behavioual adaptations of survival on the white board. The class are quized as to why they chose the strategies they did, and asked to contemplate that both Lion and wilderbeast have their unique behavioural techniques to survive.

Assessment:

1. Group collaboration.

2. Have groups considered structural and physiological adaptations?

3. Have individuals understood that survivourship depends on effective behavioual adaptations?

Links to VCE Biology Study Design

##### Key Skills

##### Key Knowledge

Unit 2: Organisms and their environment

Area of Study 1: Adaptations of organisms

6.

#### Purpose / Aim

#### Students will gain an understanding of how behavioural adaptations play a key role in mate selection. Students will examine a data sheet with breeding success of ? species based on their successful deployment of behavioual lures to attract the opposite sex.

a.

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#### Links to VCE Biology Study Design

##### Key Skills

##### Key Knowledge

Unit 2: Organisms and their environment

Area of Study 1: Adaptations of organisms

7.

#### Purpose / Aim

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#### ﻿Links to VCE Biology Study Design

##### Key Skills

##### Key Knowledge

﻿﻿Unit 2: Organisms and their environment

Area of Study 1: Adaptations of organisms

8.

#### Purpose / Aim

#### This activity is designed to bring together the ideas that adaptation of organismsm have not evolved independently, but rather in unison with other adaptations for survival. The activity reiterates the main points outlined in previous activities and reinforces the interconectedness of adaptations. The tasks asks students to consider adaptations as a complex and evolving mechanism that is not static, but rather 'adaptive' to the changing environment and circumstances that organisms find themselves in. The definition of 'adaptive' is re visited to bring depth of meaning to the process of evolution as a whole, and indeed to illuminate that adaptations are at the core of survivourship in an ever changing world.

#### a. The class is presented with a 'life history' chart dipicting various life forms that have evolved alongside their evolving environment:

 Say something about 'Behavioual adaptations being the most reapidly evolving and in particular in higher order (more intelligent species). Use example of humans: african villages experienced high miortality rates from predatory big cats...they built fences and employed night guards to protect the village...result was mortality rate improved dramaticdally over a very short space of time.

For resources - http://www.mysciencesite.com/Animals\_and\_Adaptation.pdf



Musk oxen, each weighing 350 to 400 kg, (770-880 lb.) form a defensive wall between the predators and their own young. In the case of an attack, they step backwards to form a defensive circle with the young in the middle as seen in this picture on the left. This provides an effectively safe defense for the young.

http://www.google.com.au/imgres?imgurl=http://www.harunyahya.com/books/science/devotion/images\_devotion/musk\_oxen.jpg&imgrefurl=http://www.harunyahya.com/books/science/devotion/devotion05.php&usg=\_\_Nv6xEdz-yJx5MudG4Fid4h0EUmA=&h=174&w=411&sz=28&hl=en&start=3&zoom=1&itbs=1&tbnid=9h0tDo2Xl1zA2M:&tbnh=53&tbnw=125&prev=/images%3Fq%3Dmusk%2Box%2Bcircle%26hl%3Den%26sa%3DG%26gbv%3D2%26tbs%3Disch:1

Pronking/ stotting

<http://www.youtube.com/watch?v=v5IJBbA6UkA>

Wood pecker V’s snake

<http://www.youtube.com/watch?v=ISAlxB3_d1U>

Lorenz (Imprinting)

<http://www.youtube.com/watch?v=2UIU9XH-mUI>

Wolf hierarchical behaviours

<http://www.youtube.com/watch?v=67dTHb1CVpY>

Vervet monkey (Professor speaks)

<http://www.youtube.com/watch?v=3lsF83rHKFc&feature=related>

Peacock mating display

<http://www.youtube.com/watch?v=JtdvxIfmmyE>

Starlings escape Peregrine falcon attack

<http://www.youtube.com/watch?v=b8eZJnbDHIg>

Fish schooling

<http://www.youtube.com/watch?v=cIgHEhziUxU>

Bat in a wind tunnel (for structural adaptations)

<http://www.youtube.com/watch?v=DzHHJ75WGSI&NR=1>

Wildebeest migration

<http://www.youtube.com/watch?v=HYM6LqDJLiM>

Territorial aggression

<http://www.youtube.com/watch?v=ntztz8ggMwM>

Communication

<http://www.youtube.com/watch?v=MNmh5w6cj78&p=BD61233DDB2DE986&playnext=1&index=7>