EARTH SCIENCES WITH PLYMOUTH UNIVERSITY

Adaptation game:

How life forms adapt to changes in the environment

During the Jurassic, in the Sundance Seaway, there is a profound change in the environment, both in the sea and on land, with a shift from a warm and arid climate to a humid and temperate one. This caused a change in the structure and composition of ecosystems. Some species adapted to the change, others went extinct, and new ones migrated into the Seaway to fill the ecological niches that were left empty.

Objectives: This game gives students an opportunity to consider why and how life forms adapt.

Background: Adaptations are physical characteristics that help an organism to survive. Over time, natural selection and evolution enhance adaptations. When change occurs in the environment, different characteristics may help or hinder the individual animals in a population. If those animals are helped, they survive the changing situation and pass on the genes which give those characteristics to their offspring. If the animals are hindered, then the species may go extinct. It is important that the students remember that none of the changes or adaptations happen quickly in nature. Some of the environmental changes take place within one lifetime while others may take thousands or millions of years. Some adaptations, like insects' immunity to a pesticide, occur over a few generations, while most others take millions of years to develop.

Procedure:

1. Photocopy pages of "Possible Adaptations" (see below) and cut out each adaptation so it is separate.

2. Divide students into two teams and have each group number off so that each student has a number.

3. Have the teams line up about 10 meters apart facing the other team.

4. Place the adaptation cards in the centre between the two teams.

5. Have a copy of the “Changing Situations” (see below) list in hand.

Now you are ready to play the game. Call out a “Changing Situation” and a number. The students whose numbers have been called run to the centre and pick up one or more cards until they have adaptations that will help their team cope with the change. They return to their team with the cards they picked up. When the players return to their teams with the cards have them read out loud the solutions they chose and explain why they are helpful. All cards that offer a reasonable solution to the problem count as a point for that team. Return all cards to the centre after the adaptations have been discussed. The team with the most points wins.

Changing Situations

Your Predators become camouflaged	Your prey becomes camouflaged
Disease and insects kill almost all of the trees you depend on	The plants you eat become extinct
The animals you eat start to only come out at night	The animals you eat develop armor
Your predators begin to swim/run faster	Other animals find and eat your eggs
The area you live in turns to desert	The ocean you live in dries up
The plants you eat develop spines	Your food supply becomes seasonal
The climate becomes very cold	The climate becomes very warm

Adaptations

Become camouflaged	Develop better night vision
Hibernate	Learn to store food
Build an underground home	Develop muscles and claws for digging
Shed more fur to keep cooler	Become warm-blooded
Develop longer legs	Develop lungs for breathing
Sleep in the day and hunt at night	Migrate
Develop armor	Incubate eggs within your body (mammals)
Lay camouflaged eggs	Grow quills
Shed less fur	Grow fangs
Develop claws for climbing trees	Develop a better sense of smell
Develop a better sense of hearing	Develop a way to store water in your body
Develop new teeth and digestive system so you can eat different plants	Live with others of your kind and take turns keeping watch for predators