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***Assignment 1A - CoRe***

Area of Study – Organisms and their environment: Adaptations of organisms

Big idea – Structural Adaptations

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|  | **Big Idea – Structural Adaptations** |
| **What you intend the *students* to learn about this idea?** | * Different examples of structural adaptations in plants and animals in differing environments * How structural adaptations aid in the survival of an organism in their environment * How organisms evolved structural adaptations ie mutation, variation * Homology and Analogy – similar structures with differing functions/different structures that have similar functions |
| **Why is it important for students to know this.** | * Help understand key concepts involved in the process of natural selection * Understand the role variation and mutation play in adaptation * Understand how organisms relate to their environment * Consider how structural adaptations can be used to gauge environmental impact * Consider the possible implications for the future |
| **What else *you* know about this idea (that you do not intend students to know yet)** | * Morphology * Adaptive radiation * Phenotypic plasticity |
| **Difficulties/limitations connected with teaching this idea** | * Teaching the students that adaptations are not a conscious, directed method of survival ie an organism cannot choose to adapt in order to ensure its survival * Students’ understanding of key concepts and terms * Students may not be aware of time frame involved with the evolution of adaptive traits * Students may struggle with the concept that adaptation works for the survival of an individual, not as a species or population |
| **Knowledge about students’ thinking which influences your teaching of this idea** | * Students alternate conceptions tend suggest a Lamarckian view * Students should have a prior understanding of key concepts and terms, but may not be able to apply them accurately * Students belief that survival of a species suggests that adaptation benefits species as a whole, rather than the individual which then goes on to reproduce |
| **Other factors that influence your teaching of this idea** | * Challenge students misconceptions and preconceptions about the evolutionary process leading to structural adaptations * Assist students to develop their observational and analytical skills to be able to apply knowledge and draw conclusions themselves |
| **Teaching procedures (and particular reasons for using these to engage with this idea)** | * Visual representations and examples of animal and plant structural adaptations, including images and specimens. Students are given an example and are then to identify and conclude adaptive traits, and how they aid in survival. Students learn to successfully identify structures through their own learning and continue to draw conclusions by cognitive learning. Images and specimens allow effective those students that learn visually and kinaesthetically. Cognitive learning allows students to see the relevance of the knowledge presented as well as effectively learn the information, opposed to memorising theoretic concepts * Class discussions allows students to be engaged in their own learning and allows the teacher to identify and correct alternate conceptions and key areas students find difficult to understand * Video and animation of the processes involved in natural selection, how structural traits impact and influence survival and how organisms are adapted to their environment. Engaging and concise form of conveying information * Worksheet, activities – questioning various forms of structural traits, identifying what environment they exist in and how it aids in survival. |
| **Specific ways of ascertaining students’ understanding or confusion around this idea (include likely range of responses)** | * Class discussion – while not all students will actively participate, it will allow the class to actively work towards their own learning. Allows the teacher to gauge areas students are struggling with. It is expected that where students fail to respond the area needs further clarification. It is also expected that if one student fails to correctly answer other students are likely to have the same conclusion. * Assessment – set questions and tests – a variation of questions will ascertain where students are failing to understand concepts or apply knowledge. * Group activities – most students will be able to identify or differentiate structural adaptations, but may struggle with the process or how it aids in *individual* survival of an organism |

***References***

Kinnear, J & Martin, M (2006*). Nature of Biology Book 1*, (third edition), Jacaranda Press, Australia

Victorian Curriculum Assessment Authority (VCAA) VCE Biology Study design (2006-2010) <http://www.vcaa.vic.edu.au/vce/studies/biology/biologyindex.html>