Adult Guidance

Types of Skeletons

Asking children to identify what they associate with the word skeleton should enable assessment for this part of the unit and what they have remembered from Years 1 and 2. Also it will enable you to identify any misconceptions based on non-scientific ideas about skeletons.

It is important that children understand the difference between vertebrates and invertebrates before the different skeletal systems as it is a broader classification of skeletons. All vertebrate animals have an endoskeleton whereas invertebrates can be classified as either having an exoskeleton or a hydrostatic skeleton.

Animals have three types of skeletons:

Exoskeletons

Animals with exoskeletons have skeletons on the outside of their bodies. These skeletons provide a hard, protective layer against predators and the environment. They also prevent the animal from drying out. Exoskeletons contain a compound called chitin which hardens the bones. The disadvatanges of having an exoskeleton is that they do not grow with the animal and therefore a molting process must take place which leaves the animal vulnerable to attack. In addition, an exoskeleton restricts the size that an animal can grow to as the weight of an exoskeleton is greater relative to body weight compared to an endoskeleton. A large exoskeleton would restrict movement greatly.

Endoskeletons

Animals with endoskeletons have skeletons on the inside of their bodies. Endoskeletons are lighter, grow with the animal and have stong weight bearing properties. These enable animals to grow to larger sizes. Endoskeletons allow for faster movement than exoskeletons but the muscles are less flexible than an animal with a hydrostatic skeleton. Also the endoskeleton does not provide the same level of protection to the body as an exoskeleton does.

Hydrostatic Skeletons

Animals with hydrostatic skeletons have no bones at all. Instead their organs are contained within a fluid filled sack called a coelum. This fluid is made up of water and can heal more easily than bones do. This skeleton structure provides no protection for the animal against predators. However, the lack of bones means that these animals have highly flexible bodies that can squeeze and expand easily. Hydrostatic skeletons enable faster movement compared to animals with either an endo or exoskeleton as they do not carry the extra weight of a bone structure.

Pros and Cons Of Different Skeleton Types: (Answers)

Type of skeleton	pro	con
endoskeleton	grows with the body	muscles are less flexible
exoskeleton	more protection for the body	does not grow with the body
hydrostatic skeleton	body is more flexible	can not lift objects