

Approach: One to one

Year: 4 & 8

Focus: Animal adaptation

Resources: 3 pictures

### Questions / instructions:

#### Give student pictures.

Humans have their bones on the inside of their bodies but some animals are different.

Here are three sets of pictures.

One set shows animals that have skeletons on the outside of their bodies [point to set].

This set shows animals that have skeletons on the inside of their bodies [point to set].

The last one shows animals that have no skeleton.



#### Point to picture 1: skeletons on the outside of their bodies.

1. Look at this set. Why might it be good for some animals, like these, to have skeletons on the outside of their bodies?

	% responses 2003 ('99)	
	year 4	year 8
protection plus other valid idea	5 (15)	13 (21)
protection only	57 (56)	68 (67)

2. What might be not so good about having skeletons on the outside of their bodies?

	% responses 2003 ('99)	
	year 4	year 8
reduced flexibility, ability to get into places	9 (5)	19 (19)
skeleton more easily broken/crushed	38 (38)	42 (37)

#### Point to picture 2: skeletons on the inside of their bodies.

3. This set has bones on the inside of their bodies. You and I belong to this set. What might be good about having bones on the inside of your body?

	% responses 2003 ('99)	
	year 4	year 8
supports body structure/shape	4 (9)	10 (25)
protects soft structures	7 (8)	9 (18)
bones protected, harder to break	25 (26)	39 (18)
allows more flexibility and easy movement	34 (20)	39 (16)

4. What might be not so good about having bones on the inside of your body?

	% responses 2003 ('99)	
	year 4	year 8
harder to check for or repair bone damage	9 (12)	23 (20)
bones damage other tissues or organs when broken	5 (7)	8 (12)
body less protected from damage/predators (cf. outside skeleton)	21 (23)	34 (27)

#### Point to picture 3: animals with no skeleton.

5. What might be good about having no skeleton?

	% responses 2003 ('99)	
	year 4	year 8
body highly flexible	47 (42)	75 (65)
no bones to break/damage	21 (16)	31 (22)

6. What might be not so good about having no skeleton?

	% responses 2003 ('99)	
	year 4	year 8
more susceptible to tissue damage and predators	33 (28)	46 (43)
constraints on movement	19 (27)	22 (17)
floppy – not well supported	25 (13)	32 (18)
did student at any time take the perspective of a predator or enemy (switching advantages and disadvantages)	19 (28)	26 (23)

Total score:	% responses 2003 ('99)	
	year 4	year 8
10–18	1 (0)	7 (2)
7–9	21 (22)	43 (41)
4–6	44 (43)	41 (41)
0–3	34 (35)	9 (16)

#### Commentary:

About 25 percent more year 8 than year 4 students achieved a total score higher than 6. There was no meaningful change in performance between 1999 and 2003 for year 4 students, but a moderate improvement for year 8 students.