"Why do animals huddle?"

Subject: Biology

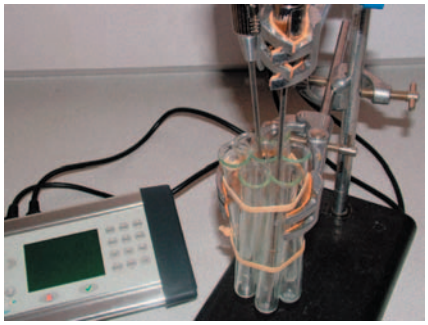
Sensor: Temperature

Overview:
Often when you see pictures of penguins they are standing close together, huddling. The same behaviour can be found in other animals especially small animals such as mice and woodlice. The question is why?
This experiment is designed to investigate the possible reasons why animals , including humans, huddle together.

Equipment required: LogIT Datalogger
2 Temperature sensors (HiTemps or ProTemps with extension cables)
7 small test tubes
1 elastic band (To hold the tubes together)
1 clamp stand or similar method to hold tubes
Hot water (Not greater then 55°C)

Hazards:
Make sure the water is not too hot for the ability of the pupils. Water temperature above 55° C will scold children.
Care must be taken if using kettles to heat the water. Allow the temperature to cool before use.
Place the tubes over a tray to catch any spilt water.
BE CAREFUL NOT TO HAVE REALLY HOT WATER AS THIS CAN CAUSE SERIOUS BURNS AND WILL ALSO SOFTEN THE PLASTIC OF THE BOTTLES BEING USED.

Setup:



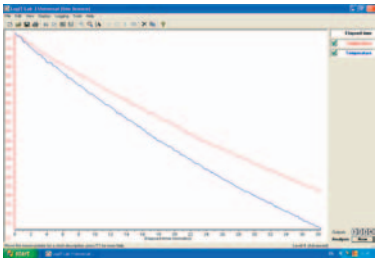
1. Connect the Temperature sensors to the datalogger.
2. You can use a clamp stand to hold the sensors if required.
3. Decide where you are going to place your temperature probes in the tubes. (We used the centre and one on the outside.)

Method:
1. Switch on your datalogger or setup your software ready to start taking readings.
2. Carefully pour hot water (not hotter than 55°C) into the test tubes and place your sensors into the test tubes you have chosen.
3. Record the change in temperature over 15 to 20 minutes.

Whilst this is happening think about the results you expect to obtain. What improvements could you suggest or is there an additional piece of equipment that could be used?

Results:
- Can you see any differences in the temperature of the animals after 15 minutes?
- Does the investigation show why animals huddle? If so how?
- Where is the best place to be in a huddle?

Going further:
- What happens if the animals stand further apart?
- What happens if the middle animal wears a coat?
- What if the outside animals have a coat and the middle doesn't?
- Try different size animals.
- What happens if there is wind (use an electric fan to simulate this)?
- Does it affect where the best position in the huddle might be?



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