

Tracking the Living Conditions of a Pet Hamster

SUBJECT: Life Science

GRADES: Elementary, 5-6

EQUIPMENT: Temperature and RH HOB0 (HO8-004-02 or HO8-007-02)

Introduction: If you've ever had a pet hamster or something similar, you probably had a number of responsibilities. You had to feed it everyday, change the water in its water bottle every so often, and take it out of its cage to let it run around a bit. You also had to clean out the cage from time to time. In this activity, you will keep track of the temperature and humidity in an animal's cage as time progresses since the last cleaning.

Materials: 2 temperature and relative humidity data loggers (HO8-004-02 or HO8-007-02)

A classroom pet that lives in a cage (hamster, gerbil, mouse, hedgehog)

Hypothesis: What do you think the temperature and humidity are like in the cage? Are they the same as the conditions outside the cage? Do they depend on the time since the last cleaning? If you think they do, then how?

Theory: One of the things you have to do when you clean out a cage is to put down some fresh bedding (wood shavings for example). Over time, this bedding will become littered with droppings and will grow damp from urine and perhaps water dripping from the bottle. Hopefully you'll change the bedding again before this becomes really nasty. One of the questions to be answered through this experiment is whether or not this soiling of the cage affects the temperature and humidity within the cage. One would hope that vents in the top and/or sides of the cage would provide enough air circulation to keep temperature and humidity in the cage approximately the same as outside the cage, regardless of when the cage was last cleaned. This may or may not be the case. If this isn't the case, then perhaps this activity will persuade the class to clean out the cage a little more often.

Procedure: In an ideal world, the temperature outside the cage would stay constant for the duration of this activity. Realistically, this is unlikely to be the case. Even if the school has some sort of heating system that keeps the temperature somewhat level, there will still be significant fluctuations. The purpose of one of the two HOB0s is to measure these changes in conditions outside of the cage. This logger can be launched for a week (96-second intervals) or two (144-second intervals), depending on how often you change the bedding, and placed outside the cage, but close to wherever the vents are located. The other HOB0 should be launched for the same length of time and placed inside the cage near the bottom. You may want to build a small cage for the HOB0 to prevent the animal from tampering with it.

You should start this experiment right after cleaning the cage and continue taking measurements until a day after the next time you clean it (this will give you two days worth of clean cage data). After the allotted time has passed, take a look at the results.

Analysis: What are the temperature and humidity conditions like in the cage? Are they the same as the conditions in the rest of the classroom? Can you explain why or why not? Are temperature and humidity related to the length of time since the bedding was last changed? Compare your readings from the HOBO inside the cage with those from the HOBO outside the cage to make sure that the differences don't just reflect changes in the ambient air temperature and humidity. What could you do to improve the living conditions for the hamster?

Perhaps the best way to eliminate the error that results from fluctuations in the classroom temperature and humidity is to have a control cage. Set up a second cage just like the other one, except leave out the hamster. Then compare these two sets of data. Any differences must somehow be related to the presence of the hamster in the first cage. The only problem with this approach is that you probably don't have an extra cage lying around. But if you do, then go ahead and use this method.

Something Extra:

If you have an aquarium or fish tank, you can do a similar experiment with the water in the aquarium. What is the temperature at the bottom of the tank? The light intensity? Does the temperature in the tank change over time? Along these lines, the experiment entitled **Does the Presence of Brine Shrimp Increase Water Temperature?** attempts to answer it's own question. What do you think?

Copyright © 2000-2002 Onset Computer Corporation.

Permission to use, copy and distribute Classroom Lab documents and related graphics is granted, provided that: (1) the copyright notice appearing on the Classroom Lab documents and related graphics published on this Site remains and is legible on all copies, (2) Classroom Lab documents and related graphics available from this Site are used for educational and non-commercial purposes only, (3) Classroom Lab documents are used with Onset products exclusively, (4) Classroom Lab documents and related graphics available from this Server are not modified in any way, and (5) graphics available from this Server are not used, copied or distributed separate from the accompanying text. For full Copyright notice please see Copyright Notice at http://www.iscienceproject.com/5605_CopyrightTrademarks.html. For full legal notice please see Legal Notice at http://www.iscienceproject.com/legal/5632_legalnotice.html