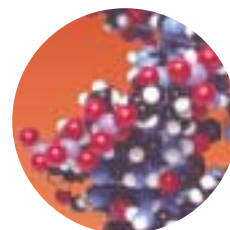


## TeachAssist Resource Worksheets

Series 2 of 16



### "Using a data logger to monitor environmental conditions"



## **TeachAssist Resources**

TeachAssist resources are written with the practical needs of science teachers in mind. Each resource covers a practical activity that is integral to the QCA schemes of work to provide quick and easy preparation for practical classes.

Please feel free to photocopy the sheets to suit your needs.

### **Each TeachAssist resource contains:**

- Student worksheet with practical instructions and activities.
- Technicians' equipment list for a class of 30 students.
- Reference to allow trouble-free ordering of materials and resources.

A summary table links each resource to the National Curriculum programme of study which allows TeachAssist practical activities to be quickly included into lesson plans and schemes of work.

If you require other booklets in the series, please telephone the Griffin Education Sales team or send your request to the following address:-

Griffin Education  
Bishop Meadow Road  
Loughborough  
Leicestershire LE11 5RG

## STUDENT WORKSHEET



### Important information:

Follow all the safety instructions that your teacher gives you.  
Careful: scalpels, knives, glass slides and cover slips have sharp edges.  
Wear safety glasses when handling iodine solution. Quickly wash off any that gets onto your skin. It will stain yellow-brown.

## Monitoring the environment

You will compare how temperature and light change over a 24 hour period in a water environment (like a pond) compared to on land.

### Temperature on land

1. Turn on the data logger.
2. Place the data logger onto a surface that is near a window.
3. Start recording both temperature and light intensity.

### Temperature in water

You will use a bucket of water to imitate a pond environment. It has been left for a few hours so that the water is at room temperature.

1. Attach the temperature probe to the data logger.
2. Dip the probe (**not the logger**) into the water.
3. Put the data logger and bucket next to the other data logger on the bench top.

Attach temperature probe to measure a "pond" environment



Activate internal temperature and light probes

Download data to analyse on a computer

After the recording has been completed, download the data to a computer. Use the software to plot graphs that show the change in temperature and light over the 24 hour period for each environment.

### Compare the graphs

- Is there a link between the light intensity and temperature? Explain why?
- Does the water heat up and cool down as quickly as the land? How would this effect the organisms living in water or on land.
- What other things in the laboratory could influence the temperature?

### TECHNICIAN'S EQUIPMENT LIST

**QCA Unit 7C: Environments and feeding relationships**

|              |             |                     |
|--------------|-------------|---------------------|
| <b>Date:</b> | <b>Room</b> | <b>Time/Period:</b> |
|--------------|-------------|---------------------|

| <b>Equipment</b><br><small>Class of 30 pupils, working in pairs.</small> | <b>Quantity</b> | <b>Check</b> | <b>Out</b> | <b>Back</b> |
|--|-----------------|--------------|------------|-------------|
| LogIT Explorer   | 10              |              |            |             |
| LogIT Explorer temperature probe   | 5               |              |            |             |
| Bucket of water (leave for several hours to each room temperature)       | 5               |              |            |             |



**Important information:**

The activity contains procedures that can be hazardous. It should not be performed unless an appropriate risk assessment has been made. Water should lag behind the surface as it warms and cools over the 24 hour period. Tap water may be at a different temperature to the laboratory. Leave buckets for several hours to equilibriate. The same procedure could be used with a pond or fish tank.

## ORDER REQUISITION

| Equipment                                      | Griffin Catalogue No. | Page | Unit cost (£) | No. Required | Cost (£) |
|--|-----------------------|------|---------------|--------------|----------|
| LogIT Explorer (starter pack, Windows™, USB)   | CRD-600-030N          | 324  | 179.99        |              |          |
| LogIT Explorer temperature probe               | CRD-650-010H          | 325  | 19.99         |              |          |
| Bucket (25 litre)                              | YRW-255-090X          | 373  | 9.65          |              |          |
| Data Logging activity masters (7-16 years old) | CRD-130-6689          | 338  | 14.95         |              |          |
| Total cost                                     |                       |      |               |              |          |
| VAT  |                       |      |               |              |          |
| Order total                                    |                       |      |               |              |          |

Complete the order form above and place your order with Griffin Education in your usual way. Prices are correct at time of print, please contact the Griffin Sales Office or check on the Griffin Education website for the latest prices.

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## SUMMARY TABLE

| QCA unit  | KS3 NC programme         | Y7 TeachAssist | Activity  | Relevant experience from Key stage 2   |
|---|--------------------------|----------------|---|--|
| <b>7A:<br/>Cells</b>                                  | Sc1.2f<br>Sc2.1a         | 1              | How to use a microscope and prepare an onion epidermis slide                                | Use of hand lenses and basic microscopes.<br>Plants and animals, including internal body organs and plant structures                     |
| <b>7C:<br/>Environments and feeding relationships</b> | Sc1.2g                   | 2              | Using a data logger to monitor environmental conditions                                     | Some use of data loggers<br>How organisms are suited to their environment  |
|   | Sc1.1a,c,d<br>Sc1.2h,k,o | 3              | Wood lice in choice chambers  | Asking questions and designing a fair test<br>How organisms are suited to their environment  |
|   | Sc2.5b,e                 | 4              | Organisms and food chains in leaf litter  | How organisms are suited to their environment<br>Food chains as a feeding relationship   |
| <b>7E:<br/>Acids and alkalis</b>                      | Sc3.3d                   | 5              | Finding the pH using universal indicator solution   | Little or no previous coverage of pH   |
|   | Sc1.2g<br>Sc3.3e         | 6              | Using a data logger to monitor changes in pH when an acid is added to an alkali             | Some use of data loggers<br>Identification of patterns and trends  |
|   | Sc3.3e                   | 7              | Investigating the neutralisation of acids with antacid tablets                              | Use of tables and line graphs to represent data<br>Mixing materials can lead to a change   |
| <b>7F: Simple chemical reactions</b>                  | Sc3.3a                   | 8              | Reactions of metals with acids  | Describing how materials change when mixed or heated and how irreversible changes produce new materials                                  |
| <b>7H:<br/>Solutions</b>                              | Sc1.2a<br>Sc3.1h         | 9              | Purifying salt from rock salt   | Use of dissolving, filtering and evaporation to separate mixtures  |
|   | Sc3.1h                   | 10             | Simple distillation   | Knowledge of evaporation as a separation technique   |
|   | Sc3.1h                   | 11             | Paper chromatography of ink   | Separation of colours in food colourings such as sugar-coated sweets   |
| <b>7I:<br/>Energy resources</b>                       | Sc1.2f                   | 12             | Using the Bunsen burner   | Possible use of methylated spirit burners or candle-burners  |
|   | Sc4.1c<br>Sc4.5a,e       | 13             | Demonstrating solar energy: solar cells and absorption of heat energy by different surfaces | Little or no previous coverage of energy   |
|   | Sc4.5a                   | 14             | Finding the energy content of foods   | Little or no previous coverage of energy   |
| <b>7J:<br/>Electrical circuits</b>                    | Sc4.1a                   | 15             | Current in series and parallel circuits   | Construction of series circuits from circuit diagrams  |
| <b>7K:<br/>Forces and their effects</b>               | Sc1.2f,g,j,k<br>Sc4.2b   | 16             | Extension of springs and elastic bands  | Push and pull in springs<br>Testing elastic band catapults. Some may have extended bands with masses<br>Measurement of forces and weight |