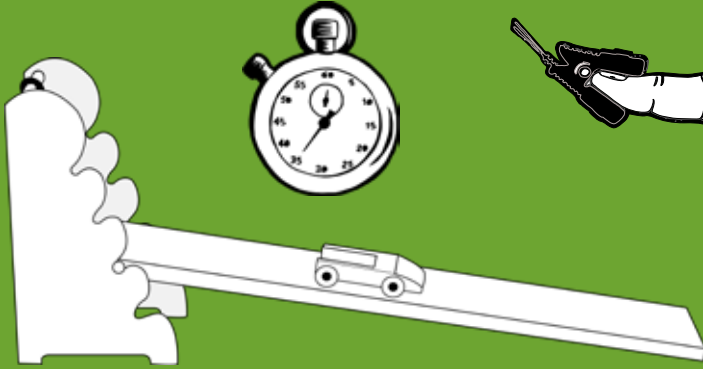


INCLUDES  
SCIENCE  
ACTIVITIES



# PRIMARY SCIENCE



# “Our Aim: Is to enhance the way teachers deliver educational science through technology”



Stephen Allen – Founder

Based in the county of Bedfordshire in the United Kingdom, Data Harvest has been producing high quality educational science data logging products since 1985 and were the first company to bring data capture technology to the main stream UK classroom.

## Importance of Primary Science Data Logging

Young children have an interest and enthusiasm for the world around them and are curious to understand how and why things happen. Using a **data logger** develops their problem-solving skills, encourages them to ‘work scientifically’, and answers their questions as they explore and analyse their findings. **Science** lessons are core in every primary school, along with **literacy and numeracy**. Vu+ brings these skills together enabling children to develop essential tools for future success.

## The Data Harvest Solution

Our award winning Bluetooth Vu+ primary data logger has become the ‘go-to’ **solution** for primary schools who understand the importance to teach children how to ‘**work scientifically**’. It’s easy to use, functional and developed with you as a teacher in mind, so that you can teach without barriers and get the results you need.



Vu+ provides a complete primary science learning solution that combines the Vu+ data logger, specially designed primary science sensors, free software, and teaching guides that meet with the **primary national curriculum**. Furthermore, our free online CPD training course at [www.vuscience.co.uk](http://www.vuscience.co.uk) ensures you get the most from your investment.

We provide a complete **cross curricular** solution for science, numeracy and literacy, allowing teachers to engage with their children through science, providing essential transferable skills.

*“Data logging makes the invisible visible; it brings science alive!”*

# LET US HELP YOU TO GET STARTED WITH DATA LOGGING

Throughout this booklet there are some simple and effective data logging activities created by our trainers to give a quick overview of the Vu+ logger and EasySense software. Data logging doesn't have to be complicated to give your lessons a boost!

Try them out and see how well they engage your pupils in their science investigations.

EasySense Software .....	4
Vu+ Data Logger .....	8
Vu Sensors .....	12
Teaching Materials .....	14
Activities .....	16

## Customer Support

All Data Harvest products are covered by our five year limited warranty and free product support for the lifetime of your product.



## British Quality Assured

We design, develop & manufacture our products in the UK and are members of the British Educational Suppliers Association and The Association of Science (ASE).



## Award Winning Solutions

We are proud of our success, winning many awards for design, development and supply of high quality solutions for the UK and World education markets.



BETT Awards



ERA Awards



World Didac Awards

## Free Lifetime Support

We understand that schools sometimes need a bit of help with their products, which is why we offer free technical support whenever you need it.

**Call: +44 (0) 1525 373666**

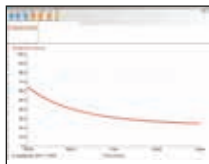
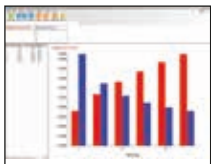
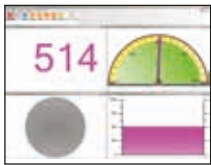
**Email: [support@data-harvest.co.uk](mailto:support@data-harvest.co.uk)**

## Designed for Primary Science! Order No. 4500

The FREE EasySense software brings many features and its versatility transforms the whole data logging experience making it easy & fun.

EasySense is a progressive software that will grow and continue to support your children in a familiar format; no need to re-learn software as they advance through the years.

Start by showing data as pictograms to help with number work and then progress through bar charts to graphing and analysis.



Meters, Pictograms, Lines & Bar charts

## Just Some Of The Features

- ✓ Support counting and numbers
- ✓ Actively use decimals and rounding
- ✓ Graphing with content rich data
- ✓ Teaches measurement
- ✓ Understand accuracy
- ✓ Colourful software design
- ✓ Intuitive and easy to understand
- ✓ Level control to match progress
- ✓ Full site licence PC software included

Software features vary across platforms

## Free EasySense2 for primary is coming soon on all platforms!

The latest version builds on all the features of our tried and tested science software and adds complete cross platform compatibility on all desktop computers, smart phones and tablets; new workflow, smart analysis tools and a redesigned intuitive user interface.





**FREE**

# EASY TO USE SCIENCE SOFTWARE

## Designed for Primary Science!

With built-in USB & Bluetooth connectivity, Vu+ is the low cost award winning primary data logging solution that enhances your primary science lessons; your students will begin to think and work scientifically!

## Data Logging Out Of The Box!



Vu+ comes with 3 built-in sensors, temperature, light and sound and a plug-in temperature sensor. This means that you can take the Vu+ data logger almost anywhere and start data logging right out of the box. Vu+ also allows for 2 external plug-in sensors from the Vu range. See pages 12-13

## Easy Data Logging Menu

The Vu+ provides an intuitive, large graphical display menu system that's easy to use so that you can start recording data in an instant. You can quickly record data without being connected to a computer!



## Free Software Included!

Vu+ can be connected directly to a computer with the EasySense software via bluetooth or USB.

Our EasySense software has features specific to primary education which makes capturing and analysing data from your science experiments a breeze.





# SCIENCE

## TIMING ACTIVITIES

## A Complete Solution! Order No. 2305PK

Vu+ comes in a handy Gratnells storage case with everything you need for teaching and learning science, including a plug-in temperature sensor and all connection and charging leads. As well as this we also supply free cross-platform software, teaching guides and lifetime support.

Furthermore, our free online CPD training course at [www.vuscience.co.uk](http://www.vuscience.co.uk) ensures you get the most from your investment.

### What's In The Vu+ Pack?

- ✓ 1x Vu+ data logger
- ✓ 1x Plug-in Vu Temperature sensor
- ✓ 1x USB connection cable
- ✓ 1x Lanyard with safety release catch
- ✓ 1x Gratnell SmartCase to store and transport the full pack
- ✓ Access to CPD resources at [www.learnstem.co.uk](http://www.learnstem.co.uk)
- ✓ eBook containing over 40 activities (free download)
- ✓ Full EasySense software, site licence (free download)
- ✓ Free lifetime product support



eBook of Activities

### Awards & Certifications

Vu+ recently won the prestigious BETT award in the 'Digital Device' category and has been tested & certified by The Association for Science Education (ASE).

Vu+ is truly the best solution for primary science and working scientifically, highlighting the importance of teaching practical science in primary schools and encouraging young learners to become the scientists of the future.



[bettawards.com/2018-review](http://bettawards.com/2018-review)  
[ase.org.uk/news/green-tick-easysense-vu-pack](http://ase.org.uk/news/green-tick-easysense-vu-pack)





# EXPLORE OUTDOOR ACTIVITIES



## Get The Whole Class Involved! Order No. 2305PK5

Get the most out of your lessons by giving students the chance to work in groups as they discover science together.

Our convenient 5 pack solution also includes our integral USB charging system, and a Gratnells storage tray.

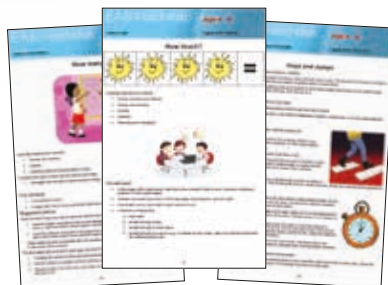
Charging trays can also be purchased separately which includes the charging tray with lid and USB charger.

Charging trays can also be purchased separately which includes the charging tray with lid and USB charger.



## Vu+ 5 Pack Includes:

- ✓ 5x Vu+ data loggers
- ✓ 5x Plug-in Vu Temperature sensors
- ✓ 1x Charging Tray
- ✓ 5x USB connection cables
- ✓ 5x Lanyard with safety release catch
- ✓ Free Download eBook, 40+ activities
- ✓ Free Download EasySense software



eBook of Activities

## Primary Science On Wheels! Order No. 23051PK

The Vu+ class cart is complete primary data logging class set supplied with a gratnells storage cart and trays (supplied flat packed). The set provides 5 Vu+ data loggers and a range of Vu+ sensors and science accessories.

It comes with a useful mobile 3 tray cart with lids, the first tray holds and charges the Vu+ whilst the other two trays are for the Vu Sensors.

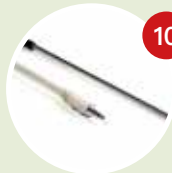
### Vu+ Class Cart Includes:

- ✓ 5x Vu+ loggers
- ✓ 5x Plug-in Heart Rate Sensors
- ✓ 10x Plug-in Temperature Sensors
- ✓ 1x Vu Timing Ramp Set
- ✓ 1x Timing Mats (Pair)
- ✓ 1x Vu+ Charging Tray with lid
- ✓ 2x Gratnells Storage Trays with lids
- ✓ 1x Gratnells Storage Trolley
- ✓ 5x Lanyards
- ✓ 5x USB Cables
- ✓ Free download EasySense Software
- ✓ Free download eBook of Activities



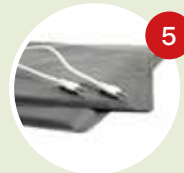
5

Vu+ Data Loggers



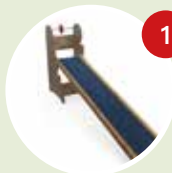
10

Vu Temperature Sensors



5

Timing Mats



1

Vu Timing Ramp Set



5

Vu Heart Rate Sensors

**Please visit our website  
for full product details!**



## Perfect For Primary Science Activities!

Make your science activities go further with additional plug-in sensors designed to fit perfectly with the primary science curriculum and cross-curricular activities such as art and design. Heart rates, voltages and timing are just some of the science extensions possible with Vu Sensors.

### Vu Heart Rate Sensor Order No. 2327

The heart-rate sensor can be clipped onto an ear or a finger to measure heart rate in beats per minute. It can also be used to show heart-waveform as you would see on a hospital display.



### Vu Temperature Sensor Order No. 2320

This general-purpose Temperature sensor is the most commonly used sensor in the range and that's why we include it as part of the Vu+ data logging pack. It can accurately measure the temperature of air, water, soil and weak acidic solutions.



### Vu Voltage Sensor Order No. 2325

This can be used to measure dc voltages up to 3V. It is ideal for checking to see if a battery has any power left and what the voltage is going across a circuit component such as a light-bulb or an LED.



### Vu Light Gates (Pair) Order No. 2330PK

Supplied as a pack of two and can be used for measuring the time of a cart down a runway giving accurate, repeatable results and eliminating the errors caused by using stop-watches. They are so accurate that they will show differences in friction even between similar surfaces.



### Vu Timing Mats (Pair) Order No. 2332PK

How fast do we walk? How fast do we run? How long can we stay in the air when we jump? All these questions and more can be answered using these timing mats which are put on the floor and triggered by pupils' feet going on and off them, giving the time from one to the other.



### Vu Push Button Switches (Pair) Order No. 2331PK

How can we accurately and easily measure reaction times and tabulate counting? The answer lays with using these push-button switches. Reaction-times is a very popular activity with the children, the effect of distractions can also be investigated.



**Please visit our website  
for full product details!**

## Vu Timing Ramp Set Order No. 2340

This exciting addition to the Vu+ data logger gives a low cost complete solution to allow students to study time, speed and the effect of friction. The whole class can be involved in active and engaging practical experiments.



- ✓ Finger friendly ramp
- ✓ Easy height adjustment
- ✓ Different friction surfaces
- ✓ Designed for class activities

### Investigate Friction

The Vu Timing Ramp features changeable surfaces that allow students to investigate the effects of different frictional surfaces.

### Investigate Heights

The height of the slope can be adjusted to investigate the effect of changing the height. Does the car go faster or slower? What happens when you add friction?

### Repeatable Results

With a magnet attached to the underside of the cart passing over two magnetic switches embedded in the ramp the children get accurate, reliable and repeatable results.



## Free Vu+ teaching materials for primary students

This activity guide eBook includes 130 pages of teaching resources designed to meet the primary science curriculum and the principles of working scientifically. The activities have been organised by age suitability and broken down into 3 learning sections.

- 1** Match specific learning objectives or targets.
- 2** Expanded to work over a set of lessons or for a project
- 3** Planning science investigations resources



[store.data-harvest.co.uk/vu-ebook](http://store.data-harvest.co.uk/vu-ebook)

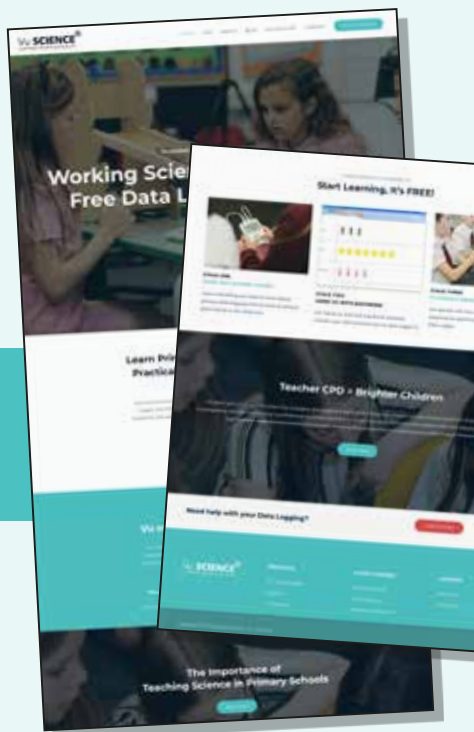
- ✓ Exploring numbers
- ✓ Does light shine through everything?
- ✓ How much?
- ✓ How dark is a shadow?
- ✓ Noise, more or less?
- ✓ Noise, making it quiet
- ✓ Noise or sounds?
- ✓ What changes when we exercise?
- ✓ What's different?
- ✓ How many?
- ✓ Light and dark?
- ✓ Cold or hot?
- ✓ Where is it cold and hot?
- ✓ Speedy cars?
- ✓ What are shadows?
- ✓ Light, dark and somewhere in between
- ✓ Why is it different over here?
- ✓ What happens when I am not there?
- ✓ How does heat move around?
- ✓ Temperature changes as you heat water?
- ✓ Speedy cars, can they go faster?
- ✓ How does exercise change us?
- ✓ Pulses, what is normal?
- ✓ Pulses, who is fit?
- ✓ Reducing noise — distance muffling
- ✓ Conduction of heat
- ✓ Decay
- ✓ Reactions
- ✓ Long wires less light?
- ✓ Light to electricity
- ✓ Hops and jumps
- ✓ What shall I wear today?
- ✓ Are your hands warmer than mine?
- ✓ Making ears
- ✓ Bug alert
- ✓ Goldilocks
- ✓ Keeping warm
- ✓ Fruity electric

# VU SCIENCE

## A free on-line resource

Learn more through core video practicals, gain a CPD certificate and learn new skills for your science lessons.... [www.vuscience.co.uk](http://www.vuscience.co.uk)

Working scientifically – our 1 hour data logging CPD video course!  
Visit [vuscience.co.uk](http://vuscience.co.uk) to get started



This free CPD course introduces the Vu+ Data Logger and EasySense Software so you can quickly learn how to implement data logging within your lesson plans.

Each course includes a short 10 question multiple-choice test taken after watching the training videos.

Certificates are awarded for scores over 85% and can be printed and used as professional development credentials.



## Video Science Activities

A range of science experiments specifically designed for the Vu+ Data Logger

## Introduction

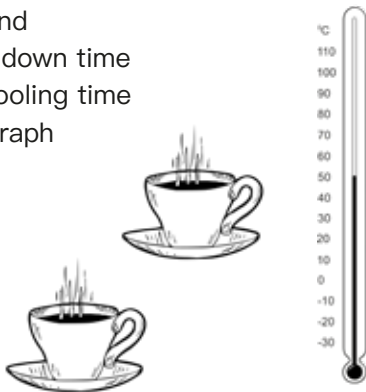
This activity uses graphs in the EasySense software to explore the following learning objectives. The activity requires a Vu+ data logger and external temperature sensors to explore hot drinks and how they cool down.

## Learning Objectives

- ✓ That hot drinks cool down when left to stand
- ✓ That some actions can reduce the cooling down time
- ✓ That different containers can also affect cooling time
- ✓ How to interpret data displayed as a line graph

## Resources

- ✓ Vu+ and 2 plug-in temperature sensors
- ✓ EasySense software/App
- ✓ 2 matching cups or mugs of hot water
- ✓ Paper fan



## Hint

The larger the surface area of the cup or mug is, the greater the cooling effect of the paper fan. Once the effect has been recognised, the recording can be stopped. It takes a long time to cool a mug of hot water to room temperature.

## Classroom Organisation

Group work following whole class introduction, plus feedback session.

## Extension Activities

- ✓ Try using pairs of containers in different materials e.g. pair of china mugs, pair of plastic beakers.
- ✓ Which keeps the hot drink hot for longer?

**SEE PAGES 4-13 FOR  
SUITABLE PRODUCTS**



# PRACTICAL ACTIVITY

## Getting Started

- ✓ Connect 2 temperature sensors to input A and input B.
- ✓ Connect Vu+ to your device
- ✓ Use the Easylog or graph function on your device

“device” means iPad, lap-top, tablet etc



## Activity

- ✓ Pour an equal amount of hot water into 2 cups.
- ✓ Place one temperature sensor in each cup.
- ✓ Select the Start button to start recording data on your device.
- ✓ Fan one of the cups with the paper fan.

## Questions

- ✓ From the graph, find out how hot the water was at the start.
- ✓ Did fanning one of the cups make any difference to the temperature?
- ✓ Can you think of other ways of cooling a hot drink down?



You can download more free activities from our website!

### Introduction

The ideas of Speed and how fast are difficult for many children to understand. It may surprise you how many children end up convinced that red cars are faster than green cars! This activity removes variation (colour of the car, for example) from the work. We use a simple wooden cart to study speed. The Timing option in EasySense lets you measure the time from A to B or the speed from A to B and get instant results to keep the learners engaged.

### Learning Objectives

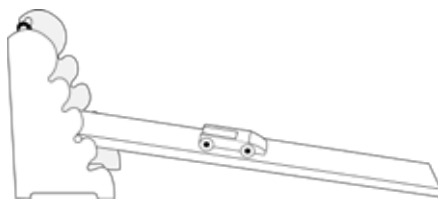
- ✓ That Vu+ can be used as an accurate timer
- ✓ That the switch in A starts the timer and the switch in B stops the timer
- ✓ That if the distance between A and B is measured, then the average speed can be calculated.  $\text{Speed} = \text{distance} \div \text{time}$

### Resources

- ✓ Vu+ data logger
- ✓ Timing Ramp, ruler
- ✓ EasySense software/app

### Hint

- ✓ Check that the car is turning the switches off and on by going into the “meters” function on the Vu+



### Classroom Organisation

Whole class demonstration and discussion followed by group activity.

### Extension Activities

- ✓ Roll the cart down the ramp 3 times.
- ✓ Find out the average of all 3 results.
- ✓ Change the height of the ramp or the surface.
- ✓ Why is it important to repeat each set of readings more than once?

**SEE PAGES 4-13 FOR  
SUITABLE PRODUCTS**

# PRACTICAL ACTIVITY



## Getting Started

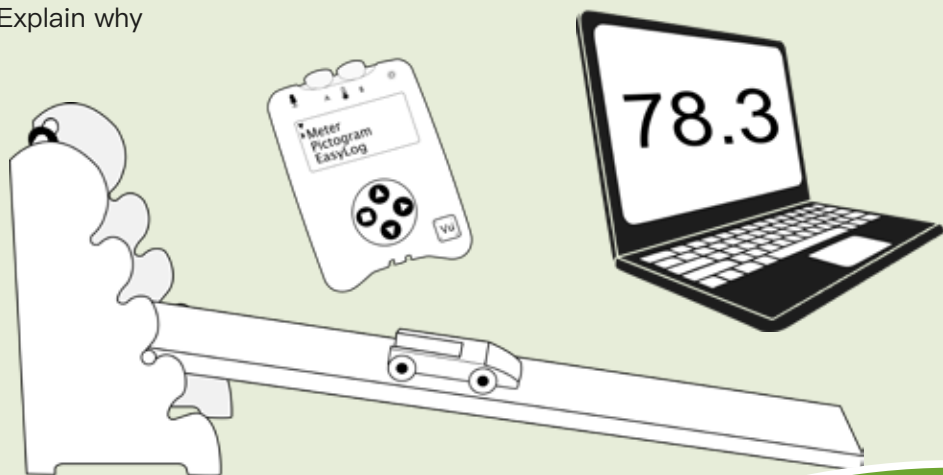
- ✓ Connect the switches to A and B on Vu+
- ✓ Place the switch connected to A at the top of the ramp and the one connected to B at the bottom.
- ✓ Measure the distance between the two switches and write it down.
- ✓ Connect Vu+ to your device (iPad, PC etc.)
- ✓ Choose “timing” on your device and set it to record time from A to B in ms

## Activity

- ✓ Draw a table in which to record your results – height (cm) (you will need to measure these) or surface and time (s), speed (cm/s)
- ✓ Click on the Start button to start recording on your device (not on Vu+).
- ✓ Roll the car down the ramp.
- ✓ Repeat with different heights or surfaces

## Questions

- ✓ Calculate the speed of each result using  $\text{speed} = \text{distance} \div \text{time}$
- ✓ Which set-up was the fastest?
- ✓ Which set-up was the slowest?
- ✓ Explain why



**You can download more free activities from our website!**

## Introduction

This activity introduces the concept of comparing results, and evidence to support an idea. Two children are invited to hold onto their own temperature sensor and watch how their temperature changes. The activity is designed to work with the Vu logger and two temperature sensors only. It is a good icebreaker activity to get the class used to using Vu+.

## Learning Objectives

- ✓ That more than one sensor can be used at a time
- ✓ That using two temperature sensors allows measurements to be compared
- ✓ That rubbing the temperature sensor has an effect

## Resources

- ✓ Vu+ and 2 plug-in Temperature sensors
- ✓ EasySense software/App (Optional)
- ✓ 2 willing volunteers

## Hint

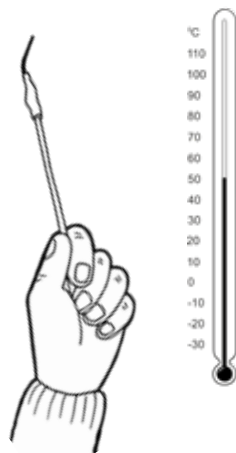
The activity uses the display on the Vu+ to show the temperature, if you wish this to be a guided class activity, connect the Vu+ to the teachers computer and use the Easysense software to show the temperature in meters (number or dial) or as a graph projected to the interactive whiteboard.

## Classroom Organisation

Whole class demonstration and discussion followed by group activity.

## Extension Activities

- ✓ Is it really true that some people are colder than others?
- ✓ Does your temperature change when you are somewhere hot or cold?
- ✓ When you are boiling or freezing, are you?



**SEE PAGES 4-13 FOR  
SUITABLE PRODUCTS**

# PRACTICAL ACTIVITY

## Getting Started

- ✓ Connect the temperature sensors to inputs A and B on Vu+

### To Use Your Device:

- ✓ Connect Vu+ to your device (iPad, Laptop etc)
- ✓ Choose meters in the software or app on your device



### To Use Vu+:

- ✓ Choose meters on Vu+



## Activity

- ✓ 2 pupils each hold a temperature sensor tightly in their hand.
- ✓ Watch the changes in the displays.
- ✓ See what happens if one pupil rubs the tip of the sensor between their fingers.

## Questions

- ✓ From which display is it easier to see the result?
- ✓ Whose hand is the hottest?
- ✓ What happens if you rub the tip of the sensor between 2 fingers?



You can download more free activities from our website!

## Introduction

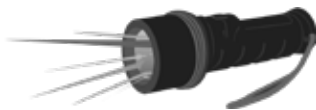
This activity uses the SnapShot feature to record individual measurements in a table. The table is used to store results so that comparisons can be made when investigating the properties of materials.

## Learning Objectives

- ✓ That light can pass through some materials, but is blocked by others
- ✓ That measurements can be stored as a table
- ✓ That results can be displayed as a bar graph for easy comparison
- ✓ That fair testing is important in order to get accurate results

## Resources

- ✓ Vu+ built-in light sensor set to the 0 – 1000 lux range
- ✓ A variety of materials which could be used to make window blinds
- ✓ A variety of fabrics for curtains
- ✓ EasySense software
- ✓ Light source e.g. torch



## Hint

- ✓ Do not rely on sunlight or daylight to provide the light source, you will be surprised at how much variation there is that the sensor can detect. Use a fixed light source for example a desk lamp or torch for consistent light levels.
- ✓ Be prepared to explain transparent, translucent, opaque and colourless to help develop good explanations. It can be confusing at first, but essential for clear understanding and description.

## Classroom Organisation

Group activity including teacher demonstration of the snapshot facility.

## Extension Activity

- ✓ Which combination of fabric blocks out the most light?

**SEE PAGES 4-13 FOR  
SUITABLE PRODUCTS**

# PRACTICAL ACTIVITY

## Getting Started

- ✓ Connect the Vu+ to your device (iPad, PC etc)
- ✓ In the EasySense software/App use the snapshot function



“device” means iPad, lap-top, tablet etc

## Activity

- ✓ Set up a fair test for the fabrics and the other materials.
- ✓ Click Start to begin.
- ✓ Click to take the first measurement.
- ✓ Take a snapshot measurement of each sample.

## Questions

- ✓ Which is the best material for blocking out light?
- ✓ Which fabric blocks out most light?



You can download more free activities from our website!

## Introduction

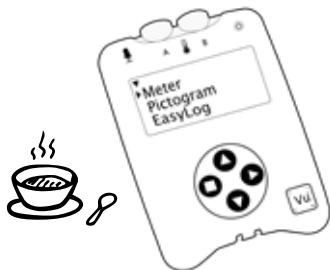
This activity is about testing ideas and modelling. Part one asks the children to test some “porridge” to find the ideal eating temperature, not too hot, not too cold (goldilocks story). Part two asks the children to measure the temperature of cooling porridge and when the “test” is met trying the porridge to see if it matches the goldilocks point!!

## Learning Objectives

- ✓ We can use data to predict a future event
- ✓ That data can be recorded at intervals over a given period of time

## Resources

- ✓ Vu+ and 2 plug-in temperature sensors
- ✓ EasySense software/app
- ✓ 1 cereal bowl or mug
- ✓ Hot water – to represent porridge
- ✓ Spoons



## Selecting Meter mode:

Whilst in this mode Vu+ will continuously display fully calibrated measurements from the sensors on the LCD screen.

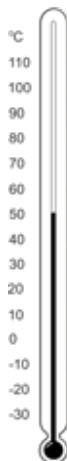
- ✓ Connect the plug-in temperature sensor to Vu+ in to socket A
- ✓ Use the up and down buttons to move the cursor so it is pointing at ‘Meter’.
- ✓ Use the right-hand button to select meter
- ✓ Press the square button when you want to stop and exit meter

## Hint

Tell the goldilocks story to the class before starting the activity.  
Health and Safety: Each ‘tester’ needs to have their own spoon, or wash thoroughly between tests!

## Classroom Organisation

Whole class activity including discussion and pupil participation.





# PRACTICAL ACTIVITY

## Getting Started

- ✓ Connect 2 temperature sensors to A and B on Vu+
- ✓ Select the Vu+ Meter function



## Activity 1

- ✓ Pour a small amount of hot water into a bowl
- ✓ Put a temperature sensor into the bowl
- ✓ The temperature value will be shown on the Vu+ screen
- ✓ Let one person test the “porridge” (water) with a small spoonful
- ✓ Write down the temperature value when the tester says ‘It’s just right’
- ✓ Press the square button on Vu+ to return to the main menu

## Activity 2

- ✓ Connect Vu+ to your device.
- ✓ Use the EasyLog or graph function on your device.
- ✓ Fill the large and the small bowls with hot “porridge” (water), and place a temperature sensor into each bowl
- ✓ Click on Start to start the recording (on your device not on the Vu+)
- ✓ Predict what will happen to the temperature of the two bowls of porridge
- ✓ Stop the recording when Baby Bear’s porridge reaches the tester’s chosen temperature

## Questions

- ✓ How much hotter is Daddy bear’s porridge than Baby bear’s porridge at the end of the recording?
- ✓ Can you tell how long the bears have been out of the house?
- ✓ Why do you think Baby bear’s porridge cooled down faster than Daddy Bear’s porridge?

**SEE PAGES 4-13 FOR  
SUITABLE PRODUCTS**



**You can download more free  
activities from our website!**

## Introduction

Trying to measure your heart rate is quite difficult, a heart rate sensor removes many of the difficulties. The heart rate sensor will let you measure the heart rates of many children quite quickly and with a good degree of accuracy.

## Learning Objectives

- ✓ That a person's pulse rate can be measured
- ✓ That the heart pumps the blood around the body
- ✓ That a person's heart rate alters continuously in response to activity

## Resources

- ✓ Vu+ data logger
- ✓ Heart rate sensor
- ✓ The range of this sensor should be set to beats per minute for this activity.
- ✓ EasySense Software/App



## Hint

- ✓ The heart rate sensor can be sensitive to light and little fingers.
- ✓ Be prepared to try different fingers or the ear lobes.
- ✓ There is no absolute rule about where to place the sensor clip.
- ✓ Try to do the measuring away from patches of bright sunlight entering the room.
- ✓ Sometimes you may need to place a piece of cloth over the hand to shield from bright light.
- ✓ Do use yourself as the demonstration, it shows there is nothing to fear.

## Classroom Organisation

Whole class introduction. If this is the first time you have used the sensor with the class consider calling volunteers forward before moving to group activities.

## Extension Activity

- ✓ Do boys and girls have different pulses?

**SEE PAGES 4-13 FOR  
SUITABLE PRODUCTS**

# PRACTICAL ACTIVITY

## Getting Started

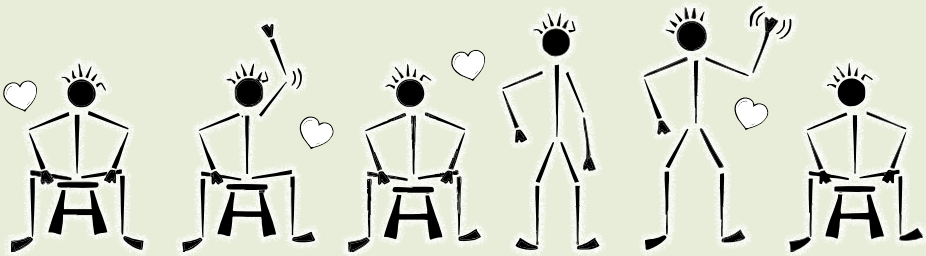
- ✓ Connect Vu+ to your device (iPad, PC etc)
- ✓ Connect the heart rate sensor to Input A
- ✓ Connect the sensor to the index finger of your left hand, or to your ear lobe, and check that the LED on the sensor is flashing on and off steadily.
- ✓ Open EasySense and choose Easylog for PC or graph for iPad



“device” means iPad, lap-top, tablet etc

## Activity 1

- ✓ Sit comfortably. Click on the Start button.
- ✓ Count slowly to 10, and then raise your right hand high.
- ✓ Count to 10, and then lower your right hand.
- ✓ Count to 10, then, without moving your left hand, stand up.
- ✓ Count to 10, then raise your right hand and wave it around.
- ✓ Count to 10, then lower your right hand, and sit down.
- ✓ Count to 10 and stop the recording.
- ✓ When the recording has finished, use the text tool to place these labels on your graph.



## Questions

- ✓ Does your heart always beat at the same rate?
- ✓ How fast was your heart beating when you were sitting down at the start?
- ✓ How fast was your heart beating when you were standing up?
- ✓ How fast was your heart beating when you were waving your hand?
- ✓ Was your heart beating at the same rate at the end of the graph as at the beginning?

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### Introduction

This activity uses the Timing function on Vu+ to collect the data away from the computer or iPad. The data is then downloaded to the device in the EasySense software.

### Learning Objectives

- ✓ That Vu+ can be used as an accurate stopwatch
- ✓ That Timing Mat A can be used to start the timer, and Timing Mat B to stop the timer

### Resources

- ✓ Vu+ data logger
- ✓ 1 pack of Timing Mats (pair)
- ✓ EasySense software/App

### Hint

Make sure that the Timing Mat connected to Input A is stepped on first, and the one connected to B is stepped on second.

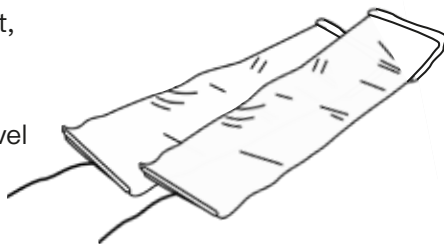
### Classroom Organisation

Whole class introduction. Group activity.

Vu+ is used as a remote timer for this activity. The timing mats can be used indoors or outdoors, and can be stepped on, jumped on, or cycled over.

### Extension Activity

- ✓ Place the mats a measured distance apart, speed is measured in metres per second.
- ✓ How fast is this?
- ✓ Look at car speeds, how far will a car travel in 1 second if travelling at 30 mph.
- ✓ How far does someone like Usain Bolt travel in 1 second?



**SEE PAGES 4-13 FOR  
SUITABLE PRODUCTS**

# PRACTICAL ACTIVITY

## Getting Started

- ✓ Connect the Timing Mats to A and B on Vu+
- ✓ Position the mats on the floor, so that Mat A is the first mat to be stepped on, and Mat B the second.
- ✓ Select Timing on Vu+
- ✓ Choose Time A to B



## Activity 1

- ✓ 1st child – Walk forwards. Step on Mat A, then on Mat B.
- ✓ Look at the time shown on Vu+.
- ✓ 2nd, 3rd, 4th, 5th child walk forwards in turn.

## Activity 2

- ✓ 1st child – Hop forwards. Hop on Mat A, then on Mat B
- ✓ Look at the time shown on the Vu+ data logger.
- ✓ 2nd, 3rd, 4th, 5th child hop forwards in turn.
- ✓ Press the red stop button, and then the green to return to the main menu.

## Activity 3

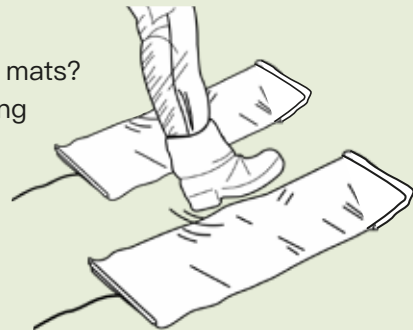
- ✓ Connect Vu+ to your device (iPad, PC etc)
- ✓ If using an iPad choose graph
- ✓ Select Retrieve remote
- ✓ Select your data set from the list and click on Retrieve.



“device” means iPad, lap-top, tablet etc

## Questions

- ✓ Who had the shortest time when walking on the mats?
- ✓ Is there a difference between the shortest walking time and the longest walking time?
- ✓ What is it?
- ✓ How fast do you hop?



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Product	Order Code	Pages
EasySense Software	4500	4–5
Vu+ Data Logger Pack	2305PK	6–9
Vu+ Data Logger 5 Pack	2305PK5	10
Vu+ Data Logger Class Pack	23051PK	11
Vu Heart Rate Sensor	2327	12
Vu Voltage Sensor	2325	12
Vu Temperature Sensor	2320	12
Vu Light Gates (Pair)	2330PK	12
Vu Timing Mats (Pair)	2332PK	12
Vu Push Switches (Pair)	2331PK	12
Vu Timing Ramp	2340	13



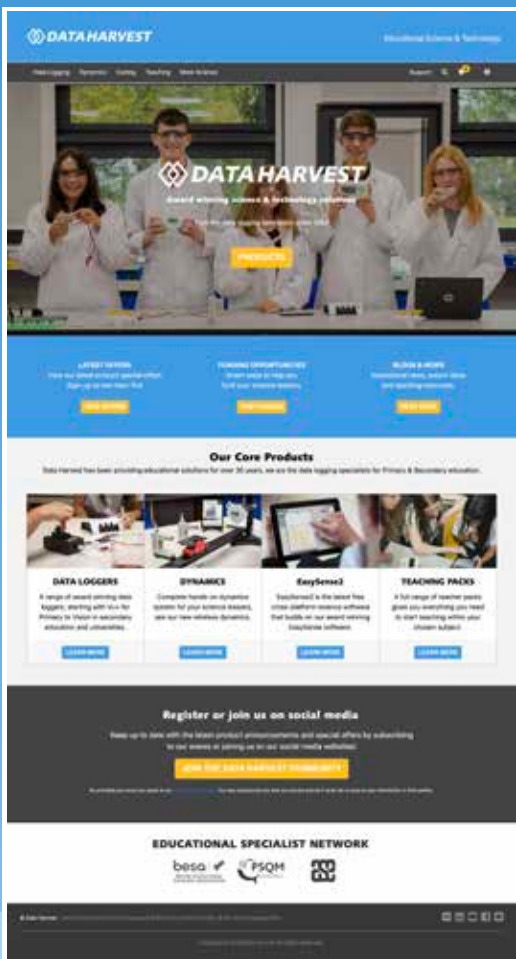
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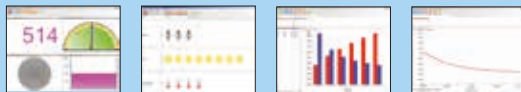
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SEE PAGE 4 FOR MORE INFORMATION





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