SCIENCE
YEAR 5-6
Cycle B – Unit 7

Heart and Pulse

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RANGE

Interdependence of organisms

1. the names, positions, functions and relative sizes of a human's main organs
2. the need for a variety of food and exercise for human good health

KEY VOCABULARY

organs
pulse
beat
rate
pump
flow
artery
vein
capillaries
variables
line graph
bar chart
prediction
reliability

Developing thinking
(Plan-Develop-Reflect integrated into activities)

LNF - Main Numeracy Strands covered*

Strand:
Developing numerical reasoning.
Element:
Represent and communicate
Review.

Strand:
Using measuring skills.
Element:
Length, weight/mass, capacity
Time.

Strand:
Using data skills.
Element:
Collect and record data
Present and analyse data
Interpret results.

**Refer to LNF Numeracy framework for details of specific skills within each element.*

LNF – Literacy (writing) opportunities

Element: Organising information and ideas
Writing accurately

Writing to inform, instruct and evaluate

Developing ICT

School to identify and provide opportunities for developing this skill within the scope of the unit.

Curriculum Cymreig

School to identify and provide opportunities for developing this skill within the scope of the unit.

Personal and social education

School to identify and provide opportunities for developing this skill within the scope of the unit.

Science – Medium Term Planning (half term)

Year Group	**5-6**	Term	**Cycle B – Unit 7**	Unit Title	**Heart and pulse**

Range: ***Interdependence of organisms***

1. the names, positions, functions and relative sizes of a human's main organs

2. the need for a variety of food and exercise for human good health

Cross Curricular Links:

Skills (Principal skills in bold italics)	**Suggested activities**	**Resources and web links**	**Assessment Opportunities**
PLAN ***Identify gaps in prior knowledge*** Ask relevant questions	**1. Big Question: What do you know about exercise and healthy lifestyles?** Introduce topic and elicit pupils' ideas about the main organs of the human body. Consider using either: • True-false game, odd-one-out activity or online interactive activities • Use a Concept Cartoon and/or video clip to elicit ideas. • Challenge pupils to draw and locate the positions of the main organs in a large A3 human body. Pupils self assess how confident they are with their positioning of each of the main organs (e.g. traffic light colour coding next to each organ to indicate pupil confidence with location). • Begin to create a graffiti board in order to list pupils' questions. Begin to create a KWL grid and/or question wall of ideas linked to topic. Challenge pupils to say *how* they intend to find things out. List sources of information that are available.	http://resources.hwb.wales.gov.uk/VTC/2008-09/science/cripsat/human_body/eng/index.html http://www.echalk.co.uk/ http://www.bbc.co.uk/education/subjects/z2pfb9q	Use preferred diagnostic strategy/tool

COMMUNICATE ***Communicate clearly using speech and writing, using relevant scientific vocabulary*** **PLAN** ***Plan the process/method to be used*** **REFLECT** Decide whether the method was successful	**2. Big Question: Do we all exercise enough?** Canvas pupils' opinions on exercise and gather quick class data about how many pupils exercise regularly and in what sports/activities. Ask pupils to devise a more systematic plan for gathering class data. **Introduce the skill – Plan the process/method to use. NGfL KS2 science: Healthy lifestyle** • Discuss using questionnaires as a means for gathering opinions and/or data. • What questions do we need in our healthy lifestyle questionnaire? What makes a 'good' questionnaire? • Do the questions need to be 'open' or closed? • Show examples of questionnaires – discuss features. What makes a 'good' questionnaire? **Practise the skill – Plan the process/method to use** • Discuss using questionnaires as a means for gathering opinions and/or data. • What questions do we need in our healthy lifestyle questionnaire? • Pupils plan and create an exercise/lifestyle questionnaire. **To write to inform** **Text type: Questionnaire**	http://resources.hwb.wales.gov.uk/VTC/2008-09/science/cripsat/healthy_lifestyles/eng/index.html	***Do pupils use scientific language to communicate ideas? (Level 4)*** ***Can pupils plan their method systematically? (Level 5)*** Can pupils say how to improve their work? (Level 4)

PLAN ***Plan the process/method to be used*** **DEVELOP** Make comparisons and identify and describe trends **REFLECT** Describe how they have learned	**3. Big Question: Can you set some personal targets?** **OSAMS unit: 'Let's get fit' p. 78** **Introduce the skill – Plan the process/method to be used** • What do pupils know about keeping fit? • Discuss what constitutes a healthy lifestyle. How can they increase the amount of exercise/activity they undertake each week? • Show pupils examples of weekly exercise plans for children and/or adults. Discuss how the plan is constructed, including its layout. **Practise the skill – Plan the process/method to be used** • Ask pupils to create a personal health and fitness plan to follow. • How will they record progress against the plan? Is it possible to 'measure' any aspects that may have improved? **To write to inform and explain** **Text type: Fact file**	http://resources.hwb.wales.gov.uk/VTC/2008-09/science/cripsat/healthy_lifestyles/eng/index.html Optional Skills Assessment Materials (OSAMS)	***Can pupils plan their method using scientific ideas? (Level 4)*** ***Can pupils plan their method systematically? (Level 5)***
PLAN Know the observations that need to be made **DEVELOP** ***Make careful observations and accurate measurements*** ***Use equipment correctly*** **REFLECT** Link learning to similar situations within and outside school.	**4. Big Question: How do we measure our heart rate?** Review knowledge on heart and body from Year 3/4. What do pupils understand by the term pulse? How do we measure the pulse? **Introduce the skill – make careful observations and accurate measurements. Human body: NGfL KS2 science** • Allow pupils to explore and discuss ideas about measuring pulse. • Show pupils a range of equipment and methods for recording the pulse rate, including pulse meters for the datalogger, heart rate monitors on watches, stethoscopes and/or manually counting the pulse on the wrist. **Practise the skill – make careful observations and accurate measurements** • Allow pupils to explore methods and review the effectiveness of each. • Consider asking pupils to records thoughts/opinions on ideas sheets. • Ask pupils to tabulate findings. • Who had the highest/lowest pulse within their group? What was the range of values recorded? • What was the median, mode and range for the whole class's findings?	http://resources.hwb.wales.gov.uk/VTC/2008-09/science/cripsat/human_body/eng/index.html http://www.bbc.co.uk/education/subjects/z2pfb9q	***Can pupils make qualitative observations and use standard equipment to measure using SI units? (Level 4)*** ***Can pupils select the measuring instruments that allow them to make accurate measurements? (Level 5)***

PLAN ***Plan the process/method to be used*** **DEVELOP** Use equipment correctly and safely Make careful observations and accurate measurements **REFLECT** Suggest how the method could have been improved	**5. Big Question: How do our pulse rates change when we exercise?** Show pupils NGfL video clip of hearts beating – match the heart rate to the activity. Show pupils a Concept Cartoon of pupils' misconceptions about pulse and activity, e.g. *- taller children always have higher pulse rates than shorter children* *- older children always have higher pulse rates than younger children* *- your pulse rate always goes up during a maths test.* **Introduce the skill – Outline the planned method. Human body: NGfL KS2 science** • Model an example of a Level 4 and 5 planning template. In particular, focus on the detail and sequencing of the method. What makes a 'good' method? Pupils may wish to annotate the 'good' features on a planning sheet example provided. **Practise the skill – Outline the planned method** • Pupils plan a method to investigate how pulse rate changes with exercise. • Groups swap plans to peer assess ideas. • Groups carry out investigation and gather findings. **To write to inform and explain** **Text type: science write-up/report**	http://resources.hwb.wales.gov.uk/VTC/2008-09/science/cripsat/human_body/eng/index.html	***Can pupils plan their method using scientific ideas? (Level 4)*** ***Can pupils plan their method systematically? (Level 5)*** Can pupils make qualitative observations and use standard equipment to measure using SI units? (Level 4) Can pupils select the measuring instruments that allow them to make accurate measurements? (Level 5)
COMMUNICATION ***Communicate using tables bar and line graphs*** **DEVELOP** Use science ideas to explain cause and effect Describe trends and patterns in data **REFLECT** Suggest how the method could have been improved	**6. Big Question: Can you explain your findings using scientific ideas?** **Practise the skill – Using bar charts and/or line graphs to communicate findings** • Review knowledge of graph types – explain nature of categoric and continuous data. • Introduce/review the pupil graphing help sheet. **Practise the skill – Using bar charts and/or line graphs to communicate findings** • Less able pupils produce bar chart with support. • More able pupils: select correct graph type in order to display findings. • What patterns can pupils describe from their findings? • Can pupils explain why the pulse changes with exercise? Can pupils use science vocabulary in their explanations? **To write to explain** **Text type: non-chronological report** **Note: Depending on the method adopted and the equipment used, data from this investigation may be plotted either as a bar chart or line graph. If pupils plot 'type of activity' against pulse, this gives a bar chart. If pupils recorded pulse at regular intervals during an activity using a pulse meter, then this gives a line graph (two sets of continuous data).**	http://www.mrnussbaum.com/coolgraphing.htm http://www.amblesideprimary.com/ambleweb//mentalmaths/grapher.html 'Which graph?' template	***Can pupils select the appropriate type of graph to use? (Level 5)*** ***Can pupils use line graphs to describe the relationship between two continuous variables? (Level 5)***

PLAN ***Find relevant information and ideas*** **DEVELOP** Make comparisons in data and information **REFLECT** Describe how they have learned	**7. Big Question: Can you find out more information about the heart?** Introduce the question and ask groups to list questions that they may wish to research. Suggestions may include: *- do all animals have hearts (e.g. insects, jellyfish, worms, snails etc)?* *- do all animals have the same number of hearts?* *- do pulse rates differ according to the size of an animal?* *- do animals in colder/hotter habitats have differing pulse rates?* **Introduce the skill – Search for and access relevant scientific information** • Review any previous research work undertaken by pupils. Can they suggest any improvements? Show examples of posters and presentations. What features do they notice? • How would they like to present their findings? What will be their success criteria for their chosen genre of presentation? (Fact-file, report or oral presentation.) • Challenge pupils to find information and ideas that are directly relevant to their chosen questions(s). **Practise the skill – Search for and access relevant scientific information** • Allow pupils to research a variety of books and websites in order to gather information. **To write to inform** **Text type: Fact file/non-chronological report**	http://www.bbc.co.uk/science/humanbody/body/index.shtml	***Can pupils find and use a variety of evidence, information and ideas? (Level 4)*** ***Can pupils find and use relevant evidence, information and ideas? (Level 5)***
COMMUNICATION ***Communicate using writing, charts, tables and graphs*** **REFLECT** Suggest how the method could have been improved	**8. Big Question: Can you find out more information about the heart? …cont.** Continue research from previous task. **Practise the skill – Search for and access relevant scientific information** • Allow pupils to research a variety of books and websites in order to gather information. • Complete research and communicate findings via chosen method. • Peer- and/or self-assess outcomes. Have pupils answered the initial question? Is all the information relevant? • How can the method be improved? How do they relate to pupils' initial success criteria? **To write to inform** **Text type: Fact file/non-chronological report**		***Can pupils organise and communicate their findings using relevant scientific language, including tables and graphs? (Level 4)*** ***Can pupils organise and communicate their findings, integrating text and images in various presentations? (Level 5)***

REFLECT ***Describe how they have learned, and identify the ways that worked the best.*** Link the learning to similar situations, within and outside school.	Revisit initial diagnostic assessment. Can pupils demonstrate understanding at end of topic and discuss new skills learned and/or practised?	Use preferred AfL strategy	***Can pupils describe how they have learned and identify the ways that worked the best? (Level 4)*** ***Can pupils identify the thinking/learning strategy they used? (Level 5)***
Evaluation			