

Framework Biology 2

An Inquiry Based Science Teaching and Learning Framework

Discover
SENSORS

Topic/Learning Activity

Investigating the effects of exercise. OB16

Student Cohort

Student Level

First Years

Prior Knowledge

Heart pumps blood carrying oxygen and digested food to all parts of the body.
Food is chemical energy needed for all body's activities.

Stimulus to Engage

Model of a heart/animation of heart rate <http://www.youtube.com/watch?v=AOiyjNFBOas>

Science Questions

- What does your heart do?
- Why does your heart beat?
- What does blood bring to all the parts of your body?
- Why do all parts of our body need oxygen?
- Why do all parts of our bodies need food?
- Does your heart rate stay the same all the time?
- Does exercise affect your heart rate?

Learning Outcomes

Content Knowledge

- Students will understand the effect of exercise on heart rate
- Students will recall that the average pulse for an adult at rest is 70 b.p.m
- Students will understand why exercise affects heart rate

Process

- Students will learn how to do a fair test
- Students will become familiar with using a heart rate sensor (or if no sensors available students will become familiar with measuring pulse rate)
- Students will associate increase in heart rate with the graph going up

Skills

- Information processing- recording, presenting information
- Critical and creative thinking – examining evidence and reaching conclusions
- Communicating
- Working with others



Questions during Activity

Questions to drive student learning (directing them to the learning outcomes):

- How does exercise affect heart rate?
- How does rest affect heart rate?
- Is your pulse the same as your heart rate?
- What is an adult's average pulse rate at rest?

Questions to probe understanding:

- Why does your heart beat faster when you exercise?
- Is exercise the only thing that affects heart rate?

Questions to get students thinking about their own learning (metacognition):

- What did you learn about heart rate?

Developing the Activity

How do you stimulate students to ask even more questions/think further?

- Are there any other things we could investigate which might affect heart rate?
- Does exercise affect breathing? How?
- Does exercise affect the amount of carbon dioxide we exhale?

Possible supporting activities:

- Investigate effect of exercise on breathing rate
- Investigate the effect of exercise on amount of carbon dioxide exhaled

Questions for supporting activities:

- Why does exercise affect breathing rate?
- Why does exercise affect amount of carbon dioxide exhaled?
- Does fitness affect breathing rate during exercise? Why?

Reflecting back to Learning Outcomes

- How many of your intended outcomes were achieved?
A worksheet would help assess if outcomes were achieved
- Do any of your intended outcomes need to be revised?

Additional Resources

Stimulus materials, websites, etc.:

Model of Heart.

Animation of heart rate <http://www.youtube.com/watch?v=AOiyjNFB0as>

How has the use of ICT enhanced the learning?

Evidence of enhancement:

Use of heart rate sensors. Printer for graph.

Additional Comments

