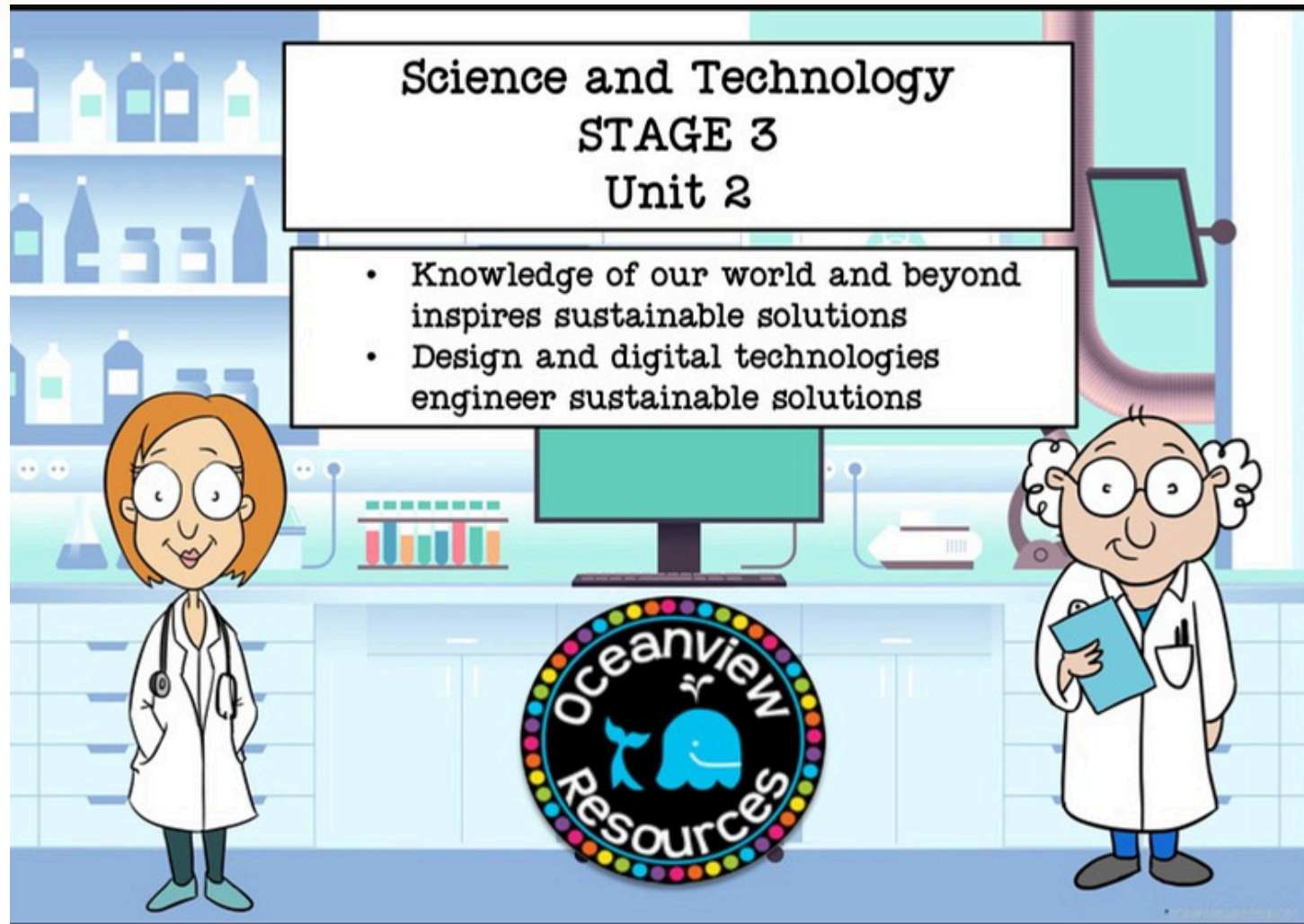


STAGE 3 UNIT 2 SCIENCE

What is included?

- PowerPoint with over 420 slides
- Student workbook and assessment tasks
- PDF for easy printing
- Teaching notes under each slide



STAGE 3 UNIT 2 SCIENCE

What is included?

- Quick links to units.
- Sections for each lesson included in the PowerPoint presentation.
- Self Assessment tasks.

Lesson 3: 9-11

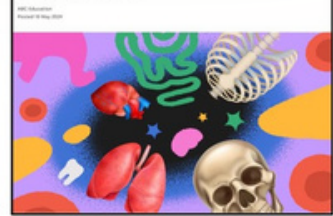
Circulatory System

View [Circulatory system](#) (from 0:00 to 4:26).

Pause at:

- ☐ 0:49 to describe the looped nature of the circulatory system
- ☐ 1:33 to review the functions of the circulatory system
- ☐ 3:56 to review the labelled diagram of the blood vessels and the lungs.

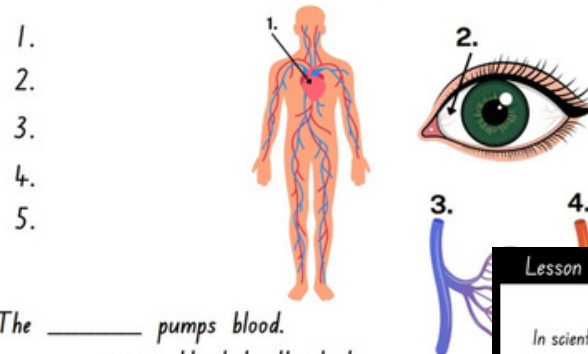
Body Systems



Students with [Resource 10 - blank circulatory system](#). (see next slide).

Label the main parts and complete a short description for each part. **Reminder:** copies of [Resource 10 - blank circulatory system](#) for the optional assessment.

Resource 10 - blank circulatory system



The _____ pumps blood.
_____ carry blood to the body.
_____ carry blood back to the heart.
_____ allow gas exchange and nutrient absorption.

Lesson 5: 3

Identifying Variables in Fair Tests

In scientific investigations, the concept of "Change, Measure, Same" refers to the principles of conducting fair tests. Here's how it works:

- **Change:** Identify an independent variable that you want to manipulate i.e. *'Cows Moo Softly'*
- **Measure:** Measure the dependent variable, which is the outcome you want to observe.
- **Same:** Control other variables to ensure that they do not affect the results.

Cows Moo Softly

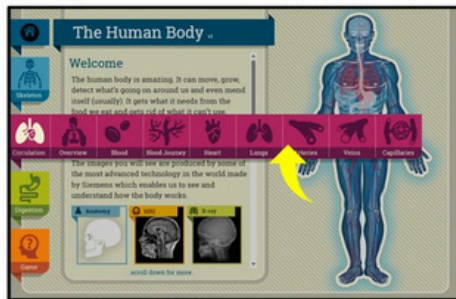


STAGE 3 UNIT 2 SCIENCE

Lesson 3: 5-8

Circulatory System

Notice the link between 'circle' and 'circulatory' - the circulatory system forms a closed loop.



Read the text aloud, select Play and watch the graphic.

Check for understanding by describing the main function of each part of the circulatory system.

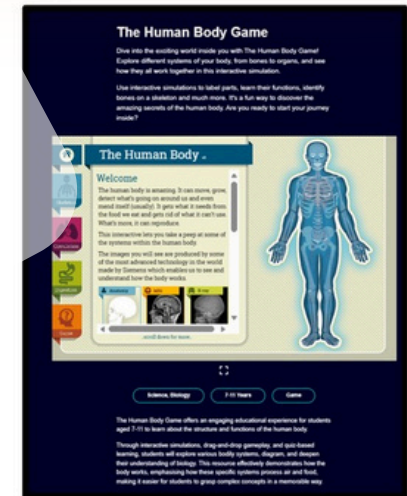
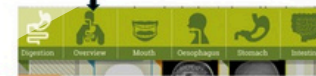
Students name the part with a choral response.

Lesson 1: 10-12

Digestive System

There are other organs such as the liver, gall bladder and pancreas. In Stage 3, the focus is on the main organs and their functions.

Select overview and uncheck the 'Lungs' box. Select Play and follow the red dot as it moves through the digestive system.



Name:

Date:

Self Assessment

I can identify the main organs of the human digestive system.	😊 😐 😞
I can describe the functions of the main organs of the human digestive system.	😊 😐 😞



Lesson 1: 18

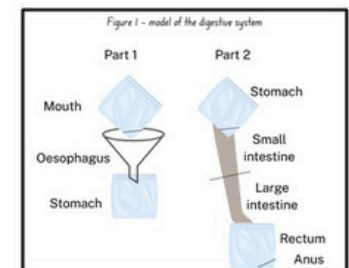
Digestive System: Teaching Notes

Note: this activity is an adaptation of [Exploring Digestion Activity Sheet](#).

For the demonstration of a physical model of the digestive system, ensure hygiene and safety by wearing gloves and lining the workspace with newspaper or bin bags and taping them down. Place a small bowl or container on the newspaper or bin bags.

Select different students to hold the various digestive system labels.

Students provide or present the relevant labels at each step.

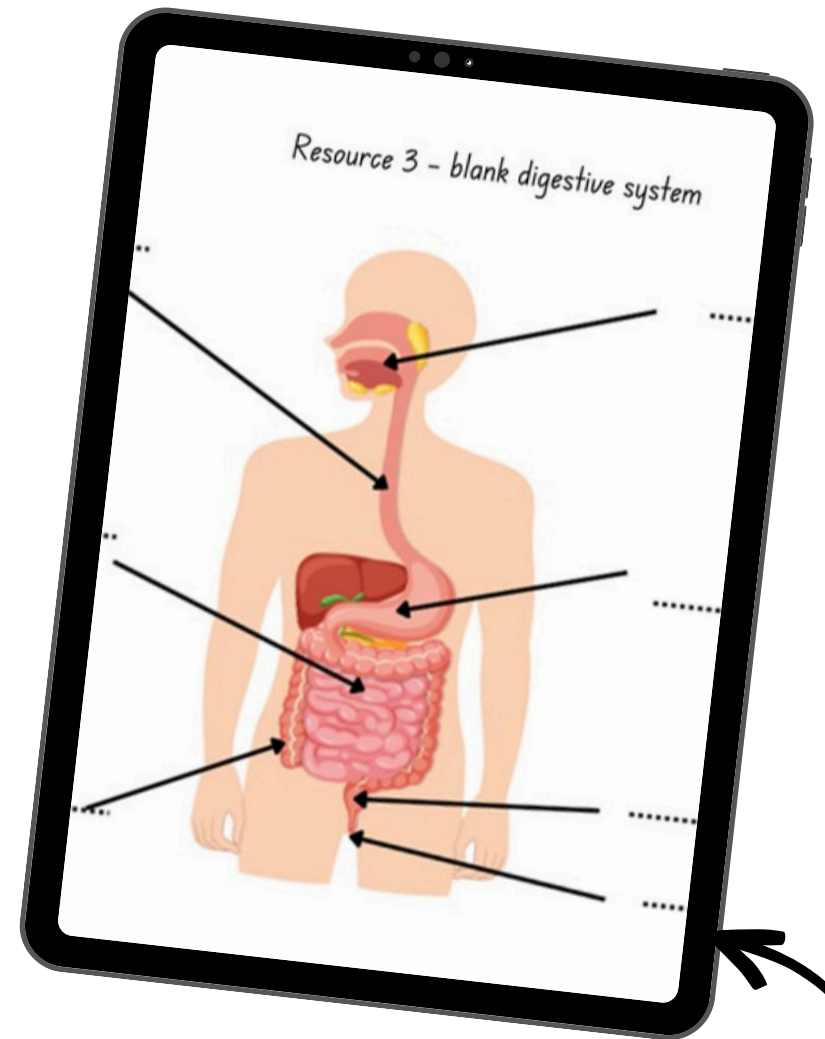


How you can use it:

All lessons are planned to be 60 minutes long.

There are 16 weeks of units plus 4 additional extension units.

20 hours of teaching time



This unit aligns with the new NSW syllabus documents.
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STAGE 3 UNIT 2 SCIENCE

Food's Incredible Journey

tigtag

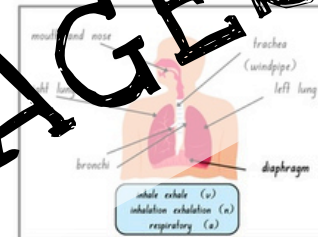
digestive acid



Lesson 2: 13-14

Respiratory System

Make your model and share with the class how the balloon represents the respiratory system.



1. How does this model represent the respiratory system?
2. What organs and features are missing from this model?

Resource 15 - Stage 2 fair test

Fair Test

Pose a question and make a prediction

Change: only one factor

Measure: what happens to one other factor

Same: keep everything else the same



Boat shape 1

Boat shape 2



Name:

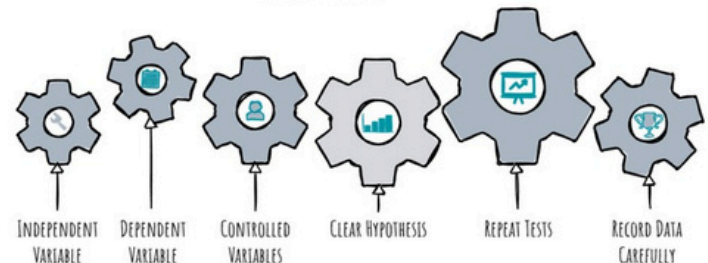
Date:

Self Assessment

I can identify independent, dependent and controlled variables in fair tests,



FAIR TEST VARIABLES



STAGE 3 UNIT 2 SCIENCE

Lesson 6: 2-4

Conducting and Planning Fair Tests

How does doing star jumps for one minute affect heart rate, compared to resting?

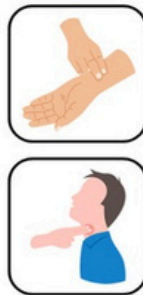
What were 2 ways to measure a pulse?

How do you calculate beats per minute?

Display **Resource 21 – sample circulatory planner.**

Explain the purpose of each section of the planner and its contents.

(see the next 3 slides)



Lesson 9: 6-7

Representing Data with Micro:bits

Digital systems store data in 2 states – on or off, 1 or 0.

This will be further investigated using [MakeCode for micro:bit](#).



[Introduction to the BBC micro:bit \(2:09\)](#) and introduce MakeCode and the micro:bit.

A **micro:bit** is a pocket-sized computer that introduces how software and hardware work together. It has a Light-Emitting Diode (LED) display, buttons, sensors and many input/output features that you can program and physically interact with.

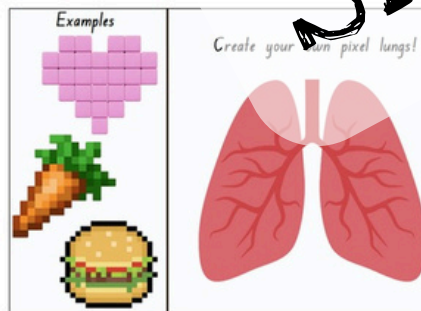
A **code** is a system of symbols for conveying information or instructions to a computer.

An **LED** is a light-emitting diode.

Lesson 8: 8

Binary Code

'On' and 'off' states are used to create digital artwork, where each bit is a small part of a picture.

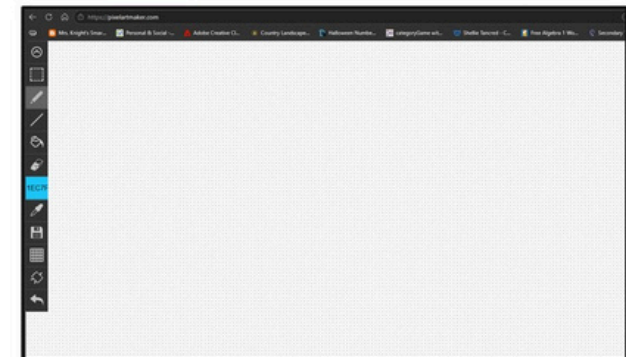


Note: as an option, provide students with digital devices and links to websites such as [Pixel art maker](#) or materials such as graph paper and pencils to make their own pixel artworks.

Lesson 8: 6 -7

Binary Code

Display [Pixel art maker](#) website. Demonstrate on and off states by clicking to squares.



To start all squares are in the 'off' state. Clicking into a square turns it 'on'.

STAGE 3 UNIT 2 SCIENCE

Place hands on heads if the answer is true and hands on shoulders if the answer is false.



- ☐ A person's heart rate can change depending on what activity they are doing.
- ☐ A person's heart rate will slow down when they engage in physical activity such as running or jumping.
- ☐ The flashing micro:bit heart from Lesson 9 could represent your pulse.

Lessons / First lessons with MakeCode and the micro:bit / Name badge

Name badge

Lesson 1 of 6

MakeCode | 7-11 yrs

Students create their first program and transfer them to their micro:bits.

Key learnings:

- Understand the micro:bit as a tiny computer which needs instructions in code to make it work.
- Understand the bits of code that make up a program. These are also called algorithms or programs.
- Use the MakeCode editor to write programs in code that the micro:bit can understand and then transfer them to the micro:bit.
- Use the micro:bit's LED display output which it can use to show words (as well as numbers and images).

Computer systems: Input/output

Programming: Iteration

Download unit of work

Download lesson 1

Next lesson

Lesson 10: 3-4

Heart Rate Monitor



1. What would we need to monitor a heart rate?
2. What are some things that the heart rate monitors have in common?
3. What are some differences you notice between the heart rate monitors?
4. How could a heart rate monitor help people keep their heart healthy?

Task

You will create a representation of a heart rate monitor on a new project.

Lesson 11: 5-6

Modifying Algorithms: Teaching Notes

Resource 32 - activities



A human heart rate changes depending on what activity a person is engaging in.

Which activities above would result in a higher or lower heart rate and order them from lowest heart rate to highest heart rate?

STAGE 3 UNIT 2 SCIENCE

Australian Technologies and Inventions

1. What happens to your body when you get sick with a cold/flu?
2. Turn and talk with a partner, then share your responses. Your responses are called **symptoms**.
3. When we feel these symptoms, what can we do to treat them?
4. Medicine is an important invention that helps meet the need to treat sickness and support human survival.



Lesson 14: 7-9

Human Behavioural Adaptations

1. What was challenging about the task?
2. How did you communicate with each other when you were not allowed to speak?
3. What behaviours helped solve the problem?

The problem-solving behaviours students used are examples of **human behavioural adaptations** – the things humans do to work together and survive.
Communication is a behavioural adaptation of humans.



Lesson 15: 5 Australian Technologies and Inventions

Resource 49 – CPAP machines



The invention: CPAP machine.

The need: used by individuals who have a sleep disorder called sleep apnoea.

The purpose: helps people who struggle to breathe during sleep by providing a steady flow of air, allowing them to breathe normally throughout the night.

Watch Depth Perception Test (from 0:00 to 1:30).

Depth Perception Test



STAGE 3 UNIT 2 SCIENCE

What is included?

- Video links
- Created for use with the IWB.
- Suggested teaching prep for each lesson.
- Outcomes and indicators included for each lesson.

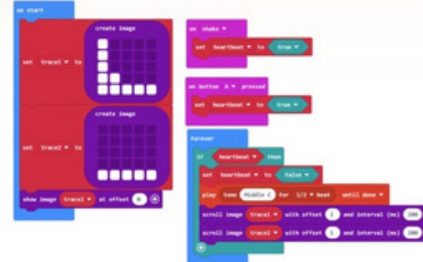
Resource 40 - dashboards



Identify how the first dashboard compares to the second dashboard.

Discuss and summarise the purpose of evaluation and its role in design and function of a product.

Resource 30 - micro:bit heart rate monitor



medical technology is the micro:bit visual program a representation of?

Did the coding sequence display on the micro:bit?

Did we demonstrate branching?

Lesson 8: 17-20

Binary Code

Figure 6 - science in binary code

ASCII - Binary Character Table

Letter	ASCII Code	Binary	Letter	ASCII Code	Binary
a	097	01100001	A	065	01000001
b	098	01100010	B	066	01000010
c	099	01100011	C	067	01000011
d	100	01100100	D	068	01000100
e	101	01100101	E	069	01000101
f	102	01100110	F	070	01000110
g	103	01100111	G	071	01000111
h	104	01101000	H	072	01001000
i	105	01101001	I	073	01001001
j	106	01101010	J	074	01001010
k	107	01101011	K	075	01001011
l	108	01101100	L	076	01001100
m	109	01101101	M	077	01001101
n	110	01101110	N	078	01001110
o	111	01101111	O	079	01001111
p	112	01110000	P	080	01010000
q	113	01110001	Q	081	01010001
r	114	01110010	R	082	01010010
s	115	01110011	S	083	01010011
t	116	01110100	T	084	01010100
u	117	01110101	U	085	01010101
v	118	01110110	V	086	01010110
w	119	01110111	W	087	01010111
x	120	01111000	X	088	01011000
y	121	01111001	Y	089	01011001
z	122	01111010	Z	090	01011010

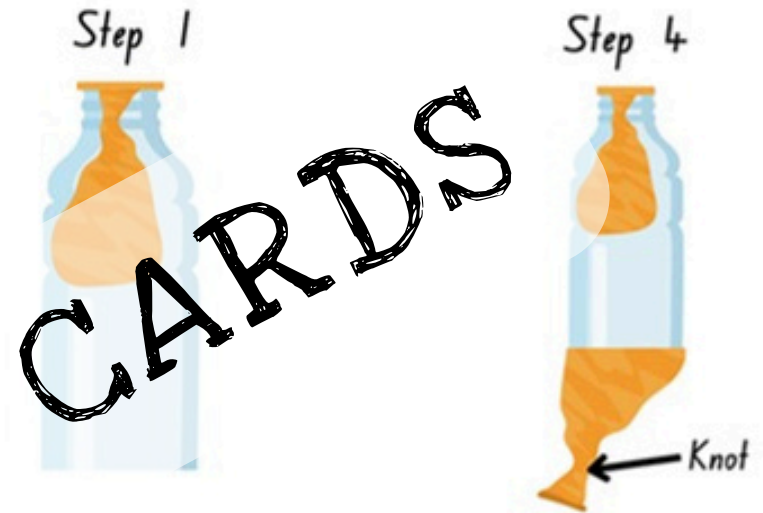
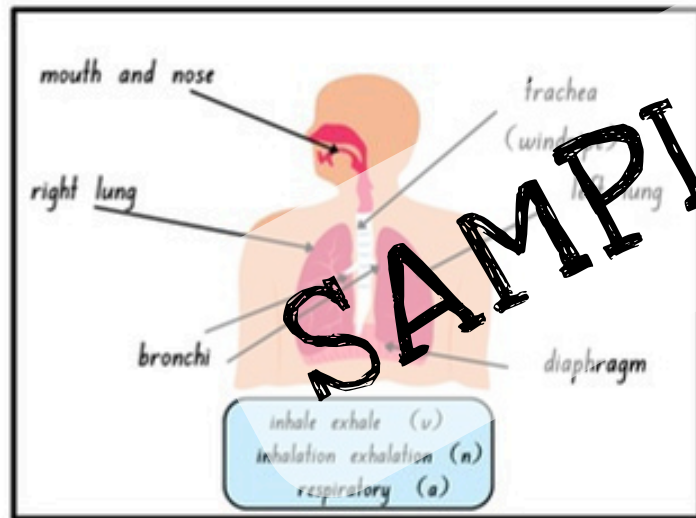
On your whiteboard write your own name in binary code. Use the ASCII Binary Character Table.

Teaching Notes

Lesson 2: 13-14

Respiratory System

Make your model and share with the class how the balloon represents the respiratory system.



1. How does this model represent the respiratory system?
2. What organs and features are missing from this model?

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