Oxford International Primary

3

# Computing

## Student Book

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# Introduction

## Delivering computing to young learners

*Oxford International Primary and Lower Secondary Computing* is a complete syllabus for computing education for ages 5–14 (Years 1–9). By following the program of learning set out in this series, teachers can feel reassured that their students have access to the computing skills and understanding that they need for their future education.

Find out more at:
**www.oxfordprimary.com/computing**.

## Structure of the book

This book is divided into six chapters, for Year 3 (ages 7–8).

1. **The nature of technology:** Learning how digital devices can help
2. **Digital literacy:** Using technology to communicate
3. **Computational thinking:** Making a program with inputs and outputs
4. **Programming:** Setting and changing values to produce different outputs
5. **Multimedia:** Improving a slide show with text and images
6. **Numbers and data:** Using software to make calculations

## What you will find in each unit

- Introduction: An offline activity and a class discussion help students to start thinking about the topic.
- Lessons: Six lessons guide students through activity-based learning.
- Check what you know: A test and activities allow you to measure students' progress.

## What you will find in the lessons

Although each lesson is unique, they have common features: learning outcomes for each lesson are set out at the start; learning content delivers skills and develops understanding.

Every lesson involves a learning activity for the students.

Activities to extend students who are able to do more.

Questions check students' understanding of the lesson.

## Additional features

You will also find these features throughout the book:

The word cloud builds vocabulary by identifying key terms from the unit.

Suggestions for creative and artistic work.

Extra tasks that can be taken outside the classroom and into the home.

Advice on using computers responsibly in life.

Glossary Key terms are identified in the text and defined in the glossary at the end.

## Assessing student achievement

The final pages in each unit give an opportunity to assess student achievement.

- Developing: This acknowledges the achievement of students who find the content challenging but have made progress.
- Secure: Students have reached the level set out in the programme for their age group. Most should reach this level.
- Extended: This recognises the achievement of students who have developed above-average skills and understanding.

Questions and activities are colour-coded according to achievement level. Self-evaluation advice helps students to check their own progress.

## Software to use

We recommend Scratch for writing programs at this age. For other lessons, teachers can use any suitable software, for example: Microsoft Office; Google Drive software; LibreOffice; any web browser.

## Source files

You will see this symbol on some of the pages.

This means that there are extra files you can access to help with the learning activities. For example, Scratch programming files and downloadable images.

To access the files, click 'Download resources' at:
**www.oxfordprimary.com/computing**.

## Teacher's Guides

For more on these topics, look at the Teacher's Guide that accompanies this book.

# 1 The nature of technology: Digital devices

## You will learn

- what a digital device is
- the digital devices you can use
- how computers can help you
- things computers cannot do.

In this unit you will learn about digital devices. Devices are things people make to help them. Digital devices have got a computer inside them. The computer makes the devices even more useful.

## Did you know?

A computer can check your heartbeat.
The computer uses safe electrical sensors.
A doctor looks at the computer screen.
The doctor can tell if your heart is healthy.

## Talk about...

What job would you like to do when you grow up? Will you use computers in the job? How will computers help you?

**Learning outcomes:** Describe a range of familiar digital devices; Describe tasks where computers can be helpful

## Class activity

Some people have jobs that help you. For example, a doctor helps people get better if they are ill.

What other jobs can you think of that help people? Make a class list of these jobs. Next to each job say one way the person might use a computer.

digital device
processor input device
output device touchscreen
hand-held mobile device
tablet computer smartphone

# 1.1 Digital devices

## In this lesson

You will learn:

- what digital means
- what devices are digital.

### Spiral back

Last year you learned that the computer uses electricity. In this lesson you will find out more about how a computer uses electricity. You will also learn why a computer is called a digital device.

## Switches

A computer works by electricity. Inside the computer there are millions of electrical switches. They are not switches like the light switch. You cannot see them or touch them. They are tiny switches that work by electricity.

The switches inside the computer can be on or off.

- You show an off switch as the number 0.
- You show an on switch as the number 1.

The switches are always changing. Electricity goes through the computer. The flow of electricity turns the switches on and off.

## Digital

Computers use the on-off switches to make electronic numbers. That is all there is inside a computer. There are millions and millions of electronic numbers.

Everything inside a computer is made out of those numbers.

**Digital** means made out of numbers. Everything inside a computer is digital.

## Digital device

A device is anything that people make that is useful and helpful.
A **digital device** is any device that has a computer in it.

There are many types of digital device. Which ones do you know?

Smartphone | Desktop computer | Tablet | Laptop computer

### Activity

Match the devices to the names. Write down the names and numbers.
Or draw the devices and write the names next to the drawing.

### Extra challenge

Another type of digital device is called a wearable device. Have you heard of that before? Find out more. Draw or write to show what you found.

**Think again**

Say something that is not a digital device. Explain your answer.

# 1.2 The parts of a computer

## In this lesson

You will learn:

→ about the parts of a typical computer.

**Spiral back**

Last year you learned about input and output devices. In this lesson you will learn how they make a computer system.

## Processor

Inside every computer is a **processor**. A processor is an electronic device. The processor controls all the other parts of the computer.

## Input and output

Other devices are attached to the processor:

- **Input devices** send signals to the processor. Examples of input devices are the mouse and keyboard.
- **Output devices** get signals from the processor. Examples of output devices are the screen and speaker.

The input and output devices let you use the computer.

## Desktop computer

In a desktop computer all the devices are quite big. For example, the screen is big. There might be more than one screen.

The devices are separate from each other. They might be joined by wires. They might be wireless.

A desktop computer is big and heavy. It is difficult to carry.

## Laptop computer

A laptop computer has smaller parts. The screen and the keyboard are small. All the parts are held in the same case. They are fixed in place.

A laptop is small and light. It is easy to carry.

The touchpad is used instead of a mouse. Some people take a mouse with them and plug it into the laptop.