Please refer to the online lesson plan on the DT Hub to access all website links and additional resources.

## Learning hook

1. Place a computer in the middle of the group. Tell students:

* 'Peripherals are devices (or tools) that send or receive information from a computer or device. Peripherals that send information are inputs and peripherals that receive information are outputs.'
* 'If you think about a computer – a mouse, keyboard, webcam or games controller is an input peripheral. It sends information to the computer to explain what it should do.'
* 'Output peripherals are a screen, printer, speakers or headphones, which send information out of the computer.'
* 'There are also storage peripherals, like a USB where the computer stores data. They are all peripherals but they have different purposes when connected to a device.'

**Alternative for Engagement and Expression:** You could use an online quiz program like Quizlet or Kahoot! and show students objects and they can guess if they are an input or output peripheral.

2. Ask students what they know about the different ways we can input, output or store data on a computer. They use their prior knowledge to draw conclusions about how data is transferred between the computer and other devices. Tell them:

* 'Information that is sent and received between the peripheral and the computer is called data. This can be as simple as a letter on a keyboard that is sent to the computer as information. We often send and receive numbers, letters, commands, text, files and folders. But we can also send and receive music, video and images.'
* 'Some peripherals can also transfer data between devices wirelessly – such as printers or an Apple TV.'

**Additional Scaffolding/Limited Abstract Thinking Skills:**

The concept of wireless communication may not be well understood by some students. A video or discussion may help students understand a bit more about how sound waves can transmit information. Many students have a dog at home, you can describe how dogs can hear different frequencies than humans, which is how dog whistles work, as a way to introduce wireless technology.

## Learning map and outcomes

1. Explain to students that they will be learning about different types of peripherals. Tell them:
	* We will be going a treasure hunt to locate different types of peripherals we use in our daily lives. We will investigate if they are sending information, receiving information or storing information.'
2. Explain to students that by the end of the lesson they will be able to:
	* identify a peripheral
	* distinguish between an input, output or storage peripheral
	* give examples of outputs and inputs
	* give examples of data transferred by a peripheral.

## Learning input

1. Give the students some context as to how peripherals can be important in daily life. Tell them: 'We use peripherals to make our daily lives easier. Inputting information into a computer using a keyboard makes it easier. Sending data to a printer is easier than copying what is on a screen.'

One of the most important jobs of a peripheral can be how it helps people with visual impairments and other additional needs to access computers. Tell students about some of these aids:

* Screen magnifiers – allow the screen to zoom in for people with visual impairments.
* Screen readers – allow what’s on the screen to be read aloud.
* Foot controlled mouse – allows users to control the computer with their foot.
* Touch screen -– can assist people to use a head wand to touch the screen.
* Different types of keyboards – such as Braille keyboards or keyboards for one-hand typing.

3. Ask students to turn and talk to a partner. Pose some questions for discussion:

* What would the problem be if there were no peripherals?
* How would it change the way computers or digital devices worked if they did not have peripherals?
* What peripherals do you use each day?

4. Give students 2 minutes to discuss and then ask different pairs to share to the whole group.
Discuss the importance of the peripherals and how they help to send and receive information from a computer.

5. Explain to students that you have set up around the room different peripherals that have been gathered from around the classroom or school. Name the peripherals, for example:

* printer
* microscope
* screen
* power
* mouse
* keyboard
* speakers
* game control
* microphone
* 3D printer
* camera
* video
* iPod
* tablet.

**Alternative or Extension activity**

**As another means of engagement:**

If students have access to tablets or portable cameras, you could have them to walk around the room and take pictures of every peripheral they can find. When finished, each student can show the class the pictures they took and name/describe the peripheral in each picture.

6. Ask them to consider how many of these they use every day at school.

7. Take one peripheral to model how to complete the treasure hunt recording and explain the different inputs, outputs and the data transferred.
Explain that as they look through the different peripherals, they will be able to test them and see how they work. They should look carefully to see whether each sends information to the computer or receives it. Tell them:

* 'I am going to show you how to record information on our table using the printer as an example. First I am going to test how it works. I know how to make my document print. I tell the computer to print using the mouse, but remember that is not the peripheral I am exploring just yet.'
* 'When the computer has the instructions to print it sends the information to the printer. This makes it an output because it is sending the information to the printer. (For some printers it might even state this information on the printer eg receiving data).'
* On my recording table I will write the name of the peripheral, 'printer', followed by a description of how it works. In this case the printer is sent information from the computer and it turns it into ink on paper so it can be read.'
* 'Under the output/input/storage heading I will record ‘Output’ because I know the computer is sending the information to the printer.'
* 'Finally, the data transferred is information about a text or image, which is transferred onto paper.'

**Provide multiple means of expression:**

You could also or instead of the above, have students use a digital camera or iPad to take pictures of common peripherals that they can put in a digital document as part of their documentation process.

Students could also research other peripherals on the Internet and add pictures and descriptions of each to their list.

## Learning construction

1. Tell the students:
	* 'You will now have time to explore the different peripherals in the classroom. There will be a chance to test them to see if they are an input or output. I encourage you to use the device with this new understanding of peripherals in mind. How does this change the way use or think about the peripheral?'
	* 'You will then need to *complete your recording* (pdf) of the peripherals you investigate.'
2. During this time you will be able to observe and talk to students, taking anecdotal notes. Encourage students to have a discussion about the peripheral as you rove, asking questions about how they might use them. If you Have fewer peripherals than students, it may provide more opportunity for discussion by students.

## Learning Demo

1. Line the different types of peripherals at the front of the classroom. Explain that you will finish the lesson with a game of 'What am I?'
2. Give a series of descriptions and choose students to guess which peripheral you are talking about.
	* I am an input peripheral which transmits photos and videos. I can transmit data wirelessly or through a USB.
	(camera)
	* I am a storage device which stores many files, photos and videos.
	(hard drive)
	* I am an input device which allows a user to transit letters and symbols.
	(keyboard)
	* I am an input device which allows the user to select and hover over information.
	(mouse)
	* I am an output device that allows a user to have a paper copy of what is on the screen.
	(printer)
3. Students can then ask their own ‘Who am I?’ questions to the rest of the group.

**Deaf or hard of hearing:**

**Provide multiple means of representation:**

You could also or instead of the above, create videos or slideshows with images and text (students could also do this as well) or use an online quiz program as an alternative way of playing the ‘Who am I’? game.

## Learning reflection

Finish with a few minutes to reflect on how students' learning changed as they explored the different peripherals. Ask them:

* What were the clues to help you decide on the input/output?
(Thinking about whether it told the computer what to do or if I got something from the computer)
* Why was it challenging to know what the data transferred was?
(Because there is often more than data that is sent.)
* How does this change your thinking about how peripherals work?
(I never used to think about how they worked but now I will.)

## Curriculum links

| Links with Digital Technologies Curriculum Area |
| --- |
| **Strand** | **Content Description** |
| **Knowledge and Understanding** | Explore and describe a range of digital systems and their peripherals for a variety of purposes (AC9TDI4K01) |

| Links with other Learning Areas |
| --- |
| **Learning Area** | **Strand and Content Description** |
| **English** | Language / Language for expressing and developing ideas Expand vocabulary by exploring a range of synonyms and antonyms, and using words encountered in a range of sources (AC9E4LA11) |

## Assessment

Students should be able to describe the different purposes a computer’s peripheral device is used for and the type of data transferred.
Using the recording sheet as evidence complete the following checklist.
The student can:

* name common peripherals
* give an example of how the peripheral is used.
* explain if data is sent or received by the computer or the peripheral
* list types of data/information transferred by a peripheral.