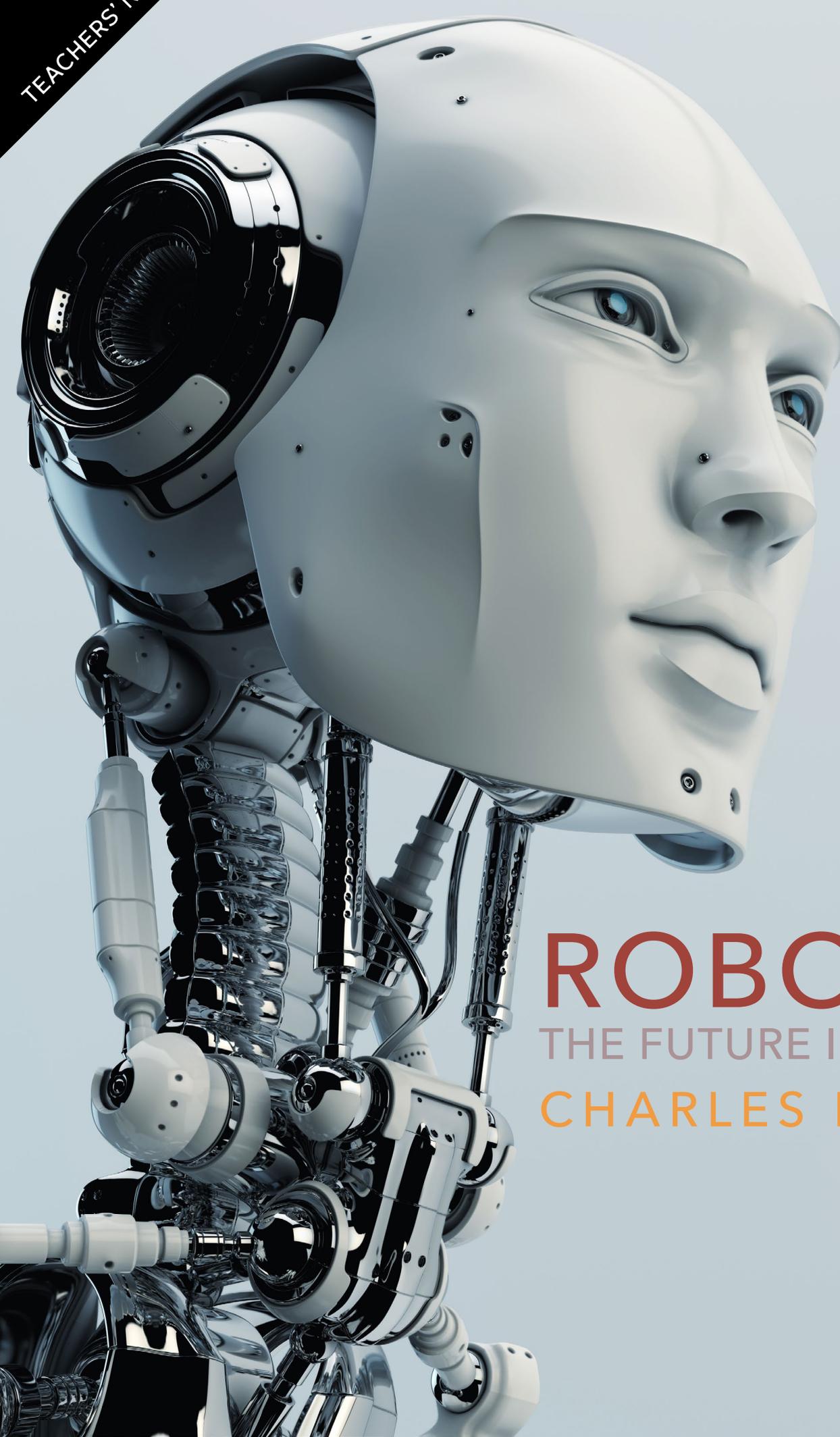


TEACHERS' NOTES



# ROBOTS

THE FUTURE IS NOW

CHARLES HOPE



wild dog

# ROBOTS

## THE FUTURE IS NOW

### Synopsis

Robots. They are all around us. They vacuum our floors, process our food, make our cars. But what is a robot? How do they work? **Robots: The future is now.**

### Writing style

*Robots: The Future is Now* has been designed with the needs of early and moderate readers in mind. The amount of text on each page is kept to a minimum, and in some cases combines primary text with smaller-sized captions or enlarged pull quotes for enhanced engagement. Given the subject matter, special care is taken to reduce complex concepts to their bare essence. The information conveyed by the text has a natural and understandable flow, and the variously-sized images relate directly to the text, so young readers have multiple entry points to engaging with the information.

### Photographic style

*The Future is Now* combines photographs and illustrations from a variety of sources. These include historical and pop-culture references, as well as the latest in scientific imagery. The images vary in size and are artfully set on white backdrops, allowing the text room to breathe. These images have the advantage of being static, giving the reader the opportunity to explore the image and look at the subject matter and its features in detail. The photographs are also strongly composed and clearly printed with bright strong colours to increase the appeal to visual readers. Readers can explore how images are used to convey messages.

### Specifications

**Author** Charles Hope      **Binding** Hardback  
**ISBN** 9781742034799      **Reading level** 7+  
**Format** 260mm x 250mm      **Interest level** 7+  
**Extent** 24pp + ends/cover      **Category** Non-Fiction

**ROBOTS IN MYTH & POPULAR CULTURE**

PEOPLE HAVE TOLD STORIES OF ROBOTS and unusual 'human' creations for thousands of years. In Greek mythology, the goddess Hephaestus brought a statue to life for the sculptor Pygmalion, while the god Hephaestus built a bronze giant named Talos.

Jewish folklore tells of golems. These creatures were made from mud and clay or mud, bathed in a kosher bath and given life by a powerful rabbi. *Frankenstein*, written by Mary Shelley in 1818, is the story of a monstrous scientist who built a giant man using parts from dead bodies.

Let's take a look at the robot world in *Robots: The Future is Now*. From the ancient world to the present day, we'll explore the history of robots and how they've become a part of our lives.

**AUTOMATONS**

THE EARLIEST AUTOMATONS used only as recorded in ancient manuscripts and drawings. The oldest surviving automaton was made in the 15th century. These self-operating mechanical devices were the ancestors of today's robots. They were popular as toys or entertainment and often made in the shape of humans or animals. Once set in motion, they performed according to the 'instructions' they had been given.

Early automatons were powered by steam, water or wind, and used the mechanical clockwork. Famous examples include cuckoo and jasperinet clocks, dolls that could draw and write, and singing mechanical birds.

David Byrne and automaton that played chess and wrote by hand of Deshayes, circa 18th century AD.

**RECENT HISTORY**

ROBOTS AS WE KNOW THEM TODAY developed in the 20th century. The term 'robot' was first used by the author Karel Capek in his 1920 play *R.U.R.* (Rossum's Universal Robots). The first few robots were important developments in particular fields and robotics, but it wasn't until the 1960s that modern robots first appeared.

Unimate (1961) was the first industrial robot, and was a robotic arm used to lift and stack hot metal car parts. Shakey (1969) was a robot experiment that used a camera and 'cat whisker' 'tactile' sensors to understand its surroundings. This information was processed by a computer that then told Shakey's circuits what to do. Friends pioneered robotic legs in the 1980s with the E-Series, which ultimately led to the creation of ASIMO (2000). This robot was designed to help humans and can walk on its own and travel up stairs.

Today robots have more capabilities than ever. There are an estimated three million industrial robots in the workforce.

**NANOBOTS**

THE NANOBOT MAY ONE DAY REVOLUTIONISE the world of robotics. While the technology for these tiny versions of robots - about one billionth of a metre in size - does not yet exist, scientists have been able to create objects just as small out of biological material. It is hoped this will soon be possible with the materials we use to make robots.

Scientists believe nanobots could be injected into the human body and used to diagnose and treat health problems, perform surgery and attack cancer cells without harming healthy cells.

... about one billionth of a metre in size ...

**COBOTS**

A LIMITATION OF SOME ROBOTS is their potential to accidentally hurt humans. To minimise this, some industrial robots are set up in cages or enclosures where humans are not allowed to go. Unlike industrial robots are designed with reduced strength and other capabilities. In all cases, the end result is a robot not living up to its full potential.

Enter cobots, which is short for collaborative robot. These are robots that are designed to work in the same space as humans, and are safer because humans control the robot's power while being able to make use of the robot's abilities.

... because humans control the power ...





# ROBOTS

## THE FUTURE IS NOW

### Study notes: Themes

- Descriptive words
- Modern technology
- General history
- Automaton
- How do they work?
- How are they used?
- Robots and AI
- Robots versus cyborgs and androids
- Uncanny valley
- Why use them?
- Robots and fear
- The future of robots

### Curriculum link: Literacy

#### *Before reading:*

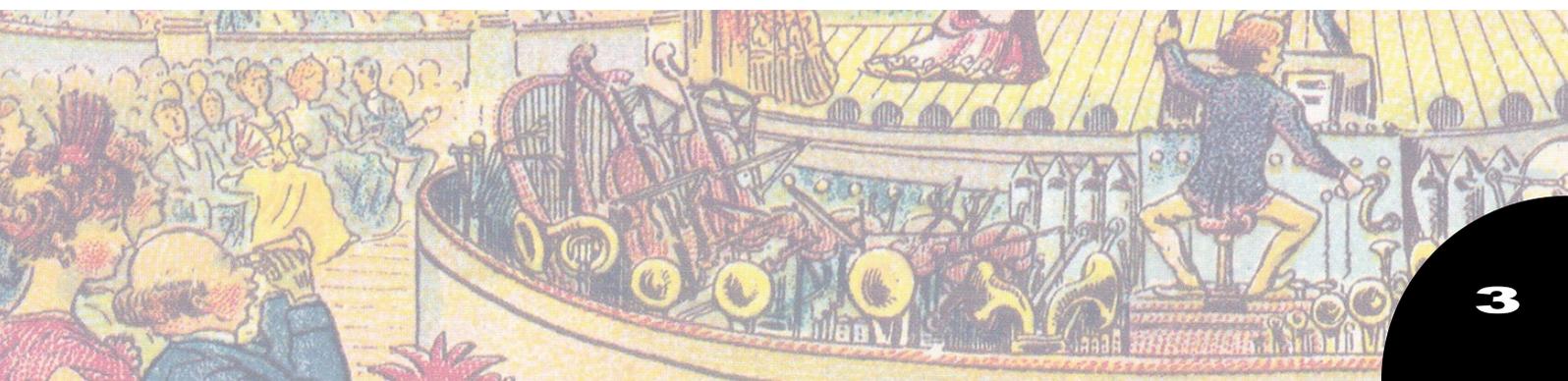
- Before looking at the cover, ask students to draw a robot.
- Brainstorm what students know about robots.
- What is their first response when they look at the cover of the book?
- Read the blurb and ask students if they can think of any other examples of how robots are being used.
- Create a list that the class comes up with of their ideas and any questions that arise. After reading the book, recheck the list.

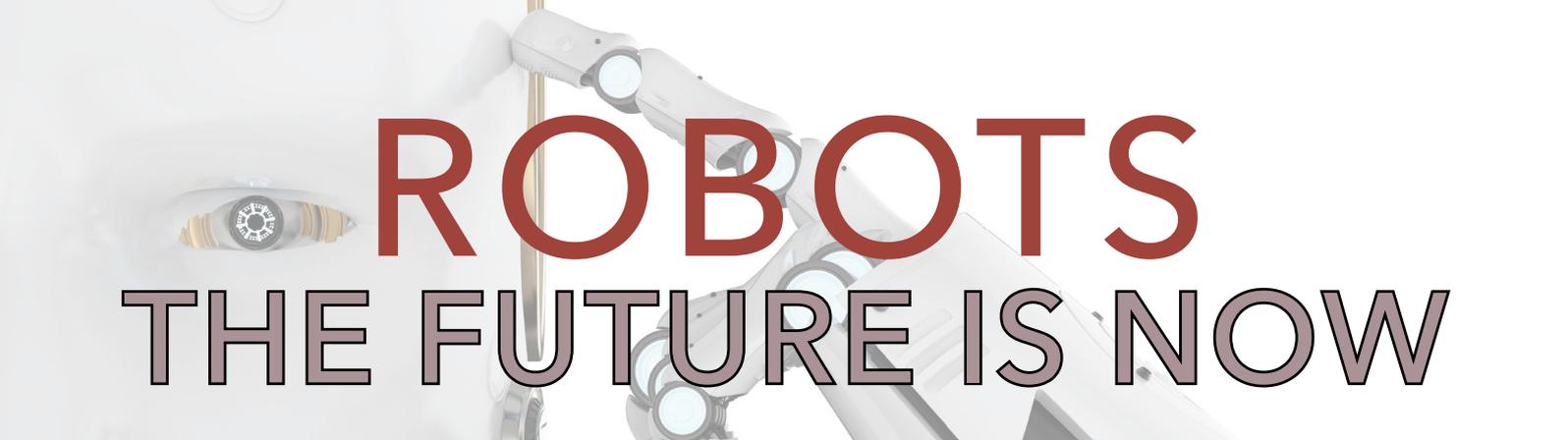
#### *While reading:*

- Before reading, give each student a few sticky notes. Ask students to note any words, questions or wonderings they hear or have that they'd like to share or ask. These can be collated and displayed on a noticeboard or poster. Their questions, lists and wonderings are an opportunity to assess current knowledge and will provide direction for discussions, investigations or presentations.
- Ask the students to take turns reading a paragraph aloud to the rest of the class. Where appropriate, ask the students what they think certain words may mean.

#### *After reading:*

- Ask the students to reflect on the words they would use to describe robots and the words that were used in the book. Ask them to draw up a list of words that can be used to describe robots.





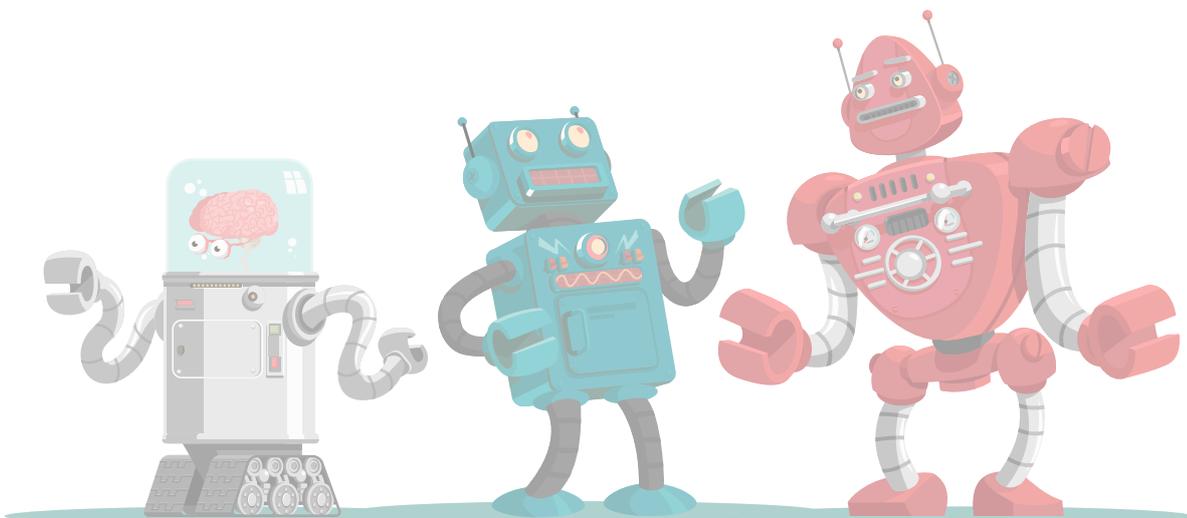
# ROBOTS

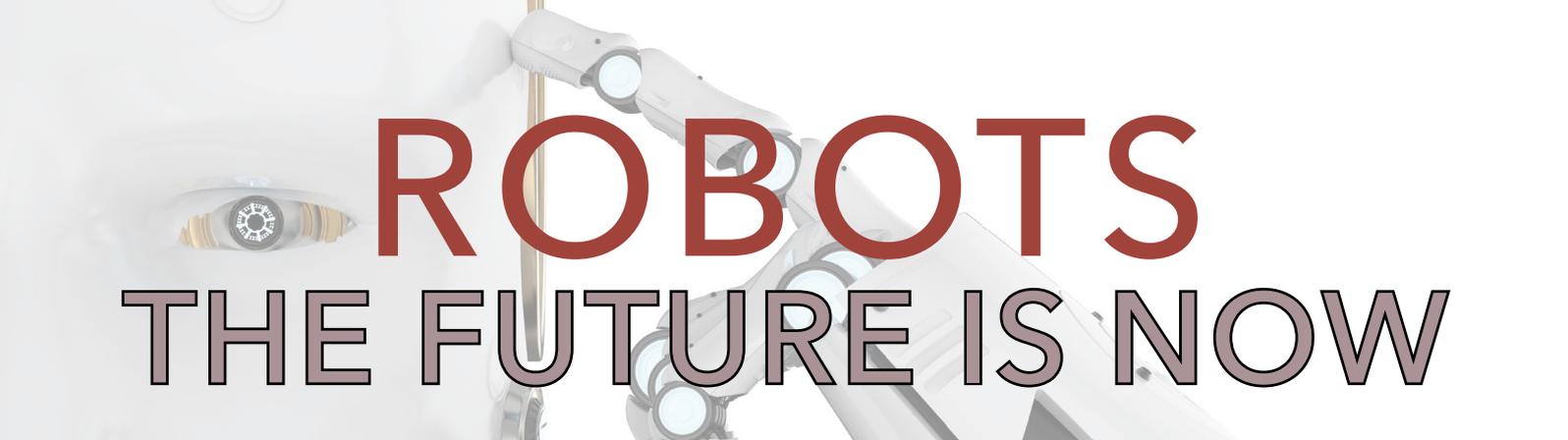
## THE FUTURE IS NOW

### Curriculum Theme: Critical and Creative Thinking

After reading, ask the students the following questions:

- What are robots?
- Why are they important?
- How long have they been around?
- Give an example/s of older technology that led to the discovery of robots.
- What are some examples of how robots are being used today?
- How might robots be used in the future?
- How are robots limited when compared to humans? How are they better?
- How might robots change and influence our lives?
- Will robots have a positive or negative impact on our lives?
- Would they like a robot of their own? What would they like it to do?
- Are robots likely to replace humans in the workforce?
- Will robots ever be able to think exactly like humans?
- Will there be robots in the future that look and act exactly like humans i.e. we won't be able to tell the difference between them and us?





# ROBOTS

## THE FUTURE IS NOW

### Curriculum link: ICT Capability

*After reading:*

#### ACTIVITY: *Nothing to fear?*

- Organise the class into groups of three or four. Assign each group a fictional robot taken from the book in the list below. (NB: please exclude those you consider age-inappropriate, and add other examples if/as required.)

B-9	Data	R2-D2
BB-8	Iron Giant	Tik-Tok
Bender	Johnny 5	Wall-E
C-3PO	Megatron	
Calculon	Optimus Prime	

- Have students research their fictional robot online and find out whether their robot was considered to be good or bad in their book, film or television show.
- People of the past were both afraid and excited about the potential of robots. Examine the images on pages 6 and 7. What clues do they provide about their fears and expectations? How close were they to guessing what robots would eventually become?

#### ACTIVITY: *Famous robots*

- Divide your class into groups of three or four. Allocate each group one of the real-world robots mentioned in the book.

ASIMO	Opportunity	Unimate
BUDDY	Shakey	Valkyrie
Curiosity	Sojourner	Voyager 1
E0	Sophia	Voyager 2
NAO	Spirit	

- Students are to create a mini biography. These can take on whatever form the students choose – a poster, media or digital presentation, or booklet.

Projects to include: information about the robot's life (including significant dates, achievements and discoveries), any problems they had to overcome, how the world remembers them, and their unique role in the history of robot technology.

# ROBOTS

## THE FUTURE IS NOW

### Curriculum Theme: ICT Capability (continued)

After reading:

#### ACTIVITY: Creative activities

- Ask the students to write a creative story about a future in which robots have become incredibly advanced and widespread in society. How are their lives affected? Are there more or less humans? How has technology changed? What does the world look like? Is it a good or bad place to live?
- Imagine your best friend is a robot. Write a narrative about your day-to-day experiences.
- Imagine you are an astronaut on a mission to another galaxy that will take years to complete. Your only company is a robot. Write a narrative about your experience.
- Imagine you are an inventor tasked with building a robot that will save the planet. What will it be capable of doing? What are its key features? Write a narrative about your experience, and draw a design of your robot.

#### Additional video resources

- [Automaton 1](#), [Automaton 2](#), [Automaton 3](#)
- [Boston Dynamics youtube channel](#)
- [Humans being mean to robots](#)
- [Trailer for \*The Iron Giant\* movie](#) (rated PG)
- [Elektro the robot](#)
- [Unimate](#)
- [Shakey](#)
- [History of Honda robots](#)
- [Tesla robots](#)
- [How robots work](#)
- [Valkyrie](#)
- [Robots on Jimmy Kimmel](#)
- [Mars rover](#)
- [Uncanny Valley](#)
- [Nanobots in \*Big Hero 6\*](#) (rated PG)

#### Marketing and promotion

*Robots: The Future is Now* is the latest title in a new series looking at the modern technologies shaping our world. Planned titles include *Phones* and *Virtual Reality*, among others.

