

# *Star Wars: Where Science Meets Imagination*

## Information for educators, NSW Science Syllabus Stage 4

Guide your students on a journey to ‘a galaxy far, far away’. This is a galaxy where sophisticated machines abound: powerful spacecraft travel through space, land transporters hover above the ground, and droids perform numerous tasks — with attitude! These are technologies born of fertile imaginations but could they exist in the real world?

*Star Wars: Where Science Meets Imagination* engages students with the technologies of this far flung galaxy and shows how they could be part of a future not so far away. Not only will students see original artefacts from the *Star Wars* films, they will also explore the real world technologies that are making the *Star Wars* fantasy a reality. Students will learn about cutting-edge research through hands-on experiences, models and video interviews with scientists and engineers.

This resource material is designed for teachers to use before and after their visit to the exhibition. It focuses on tasks that will draw on and enhance students’ understanding of technology: its inspiration, use and design.

### ■ ■ Syllabus outcomes

The exhibition supports the following NSW Syllabus outcomes:

**4.3** A student identifies areas of everyday life that have been affected by scientific developments. Students learn about the applications and uses of science, and learn to 4.3 c) identify and describe examples where technological developments have impacted on science.

**4.12** A student identifies, using examples, common simple devices and explains why they are used. Students learn about technology and learn to 4.12 a) identify that technologies make tasks easier or more convenient.

**4.21** A student uses creativity and imagination to suggest plausible solutions to familiar problems. Students learn about the use of creativity and imagination and learn to 4.21 c) produce creative solutions for problems.

**4.22** A student undertakes a variety of individual and team tasks with guidance.

**4.25** A student recognises the importance of lifelong learning and acknowledges the continued impact of science in many aspects of everyday life.

### ■ ■ Extension material

Outcomes 4.6 and 4.9 could also be addressed in the context of *Star Wars: Where Science Meets Imagination*, even though these outcomes are not the focus of the exhibit.

### ■ ■ Suggested teaching/learning context

In preparation for their immersion in the fantasy world of *Star Wars*, students will themselves take on an imaginary role. They have been made judges on the panel of the international body ‘What A Rockin’ Technology’ (WART). In order to do this, they will need to travel through time and space to look at technology through the ages.

They have two tasks:

- To recommend two technologies for induction into the WART Hall of Fame, in the categories of ‘Best Real World Technology’ and ‘Best Fantasy Technology’.
- To design a new human transporter for entry in the WART category of ‘Best New Technology’.

The teacher takes the role of head of WART, assisting students in achieving these tasks within the timeframe of the unit of study.

## Outline of activities

### ■ ■ Before the Museum visit

(suggested time: 1 to 3 lessons)

#### Introduce students to their new role as a WART panellist.

Explain to students that they have the technology to travel through time and space to find outstanding technologies, and that as part of their search they will be travelling to the *Star Wars* galaxy to investigate advanced robotics and transportation. Explain that they will also be designing a technology of their own.

- **Possible activity:** make a 'WART' ID badge.

#### Question: What is technology?

- **Possible activities:** brainstorming; drawing pictures of 'technology'; listing examples of technology in the classroom; providing examples of humorous inventions.

#### Into the time machine!

(Is there time to make one?)

Take the students on a journey back through time. They will (a) see some examples of milestones in technology throughout history; and (b) see how a simple task in the 21st century becomes more difficult as we move back in time when the technology has not yet been invented.

- **Possible activities:** 'Stop' the time machine at certain years in history when milestone advances in technology were achieved (eg the Internet, the lightbulb, the telephone, the printing press, weaving, the wheel). Show students pictures of the new technologies. Ask students to identify/explain the impact of each technology on society.
- **Concept map:** Students choose one of the technologies and create a concept map showing the areas of human life that have been affected by the invention of the technology.

- **Technology throughout time demonstration:** Each time the time machine stops, explain that time travel makes you very hungry. Call a student to the front of the class to look at some food/food-preparation materials. Ask them how they would go about preparing a meal at that time in the past. If the items they choose to use haven't been invented, take them away and ask the student to come up with another idea.

Suggested materials:

can opener	sharp stone
can of soup	blender
vegetables	picture of stove
knife, fork, spoon	coals
wood	picture of microwave
knife	pottery
matches	picture of goat
saucepan	

#### Introduce the students to robotics (optional)

Ask students to think about what is needed when designing a robot: mobility, sensing, programming, artificial intelligence ...

- **Possible activities:** 'Robot Programming', 'Mystery Boxes', 'Back-to-Back Game'.



AIBO, the robotic toy dog, Sony Corporation.

## Star Wars: Where Science Meets Imagination

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### ■ ■ Immediately before the visit

Tell your students what will be required of them during the Museum visit, and remind them of the tasks they must complete after the Museum visit.

### ■ ■ During the visit

Students will not be carrying worksheets around the exhibition but can take any notes they wish to. Encourage your students to discuss ideas with each other and with the adult helpers in the exhibition.

Students could carry a small card with some questions to think about, such as:

- What is this designed to do?
- Does this exist in the real world, or does something like it exist?
- If this technology were to exist in the real world, how would it improve people's lives?
- How might the idea for this technology have come about?
- Are there any changes or improvements I would make to this?

### ■ ■ After the visit

Students have two tasks to complete that draw on their experience of fantasy and real world technologies. They can research some of the themes in the exhibition by searching the Powerhouse Museum online database at [www.powerhousemuseum.com/collection/database/](http://www.powerhousemuseum.com/collection/database/)

#### Part 1:

Students should first select their candidate for 'Best Real World Technology' and complete one of the activities based upon their choice. They must address the following points but can pick any of the activities. Their finished product should be designed to convince the head of WART that this technology is worthy to enter the Hall of Fame.

Points to cover:

- A description of the technology and its use
- An explanation of the science behind the technology
- Evaluation of its impact upon people's lives

Students then select their candidate for 'Best Fantasy Technology' and complete one of the activities based upon their choice. They must address the following points and must choose a different activity to the one they completed in part 1.

Points to cover:

- A description of the technology and its use in the fantasy world
- An explanation of the science behind the technology. Has current scientific understanding enabled realisation of this technology in the real world?
- If this technology were to exist, how would it impact upon people's lives?

Activities — students can choose to:

- Design a poster about their chosen technology (visual)
- Prepare a board game based upon their chosen technology (visual)
- Prepare a ballad, set to a popular tune, about their chosen technology (musical/verbal linguistic)
- Prepare a series of clues for the guessing game 'What am I?', with the answer being their chosen technology (logical)
- Imagine the technology is being inducted into the WART Hall of Fame and write a script for the part of the award ceremony where their technology accepts the award (verbal/linguistic)
- Prepare a storyboard of photographs and captions based upon their chosen technology (visual/kinaesthetic)
- Write a letter to the head of WART explaining why this technology should be inducted into the WART Hall of Fame (verbal).

Students then prepare a short oral presentation to explain to the class why their selected 'Best Real World Technology' should be inducted into the WART Hall of Fame.

#### Part 2: Design task (in small groups):

##### Introduction

The *Star Wars* films include many examples of transport technologies that do not exist in the real world. However, these fantasy technologies have played a role in inspiring engineers and designers working on similar real world technologies.

# Star Wars: Where Science Meets Imagination

## Brief

Students are to design their own futuristic transport device for use on Earth, inspired by what they observed in *Star Wars: Where Science Meets Imagination*.

## Specifications

The design of the transporter is limited only by the collective imagination of the group members!

## Presentation

Students are to prepare a drawing of their design, including a description of materials, a description of what scientific challenges have to be overcome before this design could become a reality, and the proposed use of the transporter.

Students are to make a model of their design out of any suitable materials.

## Powerhouse collection online

Search the Museum's collection online for information on innovative technologies, past and present. Here are some examples:

- **Solar Resource:** <http://www.powerhousemuseum.com/collection/database/?irn=109983&search=space&images=&c=&s=>
- **Hargrave box kite:** <http://www.powerhousemuseum.com/collection/database/?irn=103253&search=hargrave+box+kite&image s=&c=&s=>
- **AIBO:** <http://www.powerhousemuseum.com/collection/database/?irn=8421&search=robot&images=&c=&s=>
- **Heart pump (VentrAssist left ventricular assist device):** <http://www.powerhousemuseum.com/collection/database/?irn=383167&search=implant&images=&c=&s=>

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*Star Wars: Where Science Meets Imagination*,  
visit the Powerhouse Museum's website  
<http://www.powerhousemuseum.com>

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