# **Blue-Bot Challenges**

DT + English, Maths and The Arts

#### Use these challenges created by Kylie Docherty, QSITE to provide opportunities for students to learn how to design and follow a series of steps to program Blue-Bot.

## Curriculum

| Links with Digital Technologies Curriculum Area | |
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| **Strand** | **Content Description** |
| **Processes and Production Skills** | Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems [(ACTDIP004)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACTDIP004) |

| Links with English Curriculum Area | |
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| **Strand** | **Content Description** |
| **Interacting with others** | Retell familiar literary texts through performance, use of illustrations and images [(ACELT1580)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACELT1580)  Construct texts using software including word processing programs [(ACELY1654)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACELY1654)  Discuss characters and events in a range of literary texts and share personal responses to these texts, making connections with students' own experiences [(ACELT1582)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACELT1582)  Discuss features of plot, character and setting in different types of literature and explore some features of characters in different texts [(ACELT1584)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACELT1584) |

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| | Links with Mathematics Curriculum Area | | | --- | --- | | **Strand** | **Content Description** | | **Using units of measurement** | Use direct and indirect comparisons to decide which is longer, heavier or holds more, and explain reasoning in everyday language [(ACMMG006)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACMMG006)  Measure and compare the lengths and capacities of pairs of objects using uniform informal units [(ACMMG019)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACMMG019)  Compare and order several shapes and objects based on length, area, volume and capacity using appropriate uniform informal units [(ACMMG037)](https://www.australiancurriculum.edu.au/Search/?q=acmmg037) | | **Location and transformation** | Describe position and movement [(ACMMG010)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACMMG010)  Give and follow directions to familiar locations [(ACMMG023)](http://www.australiancurriculum.edu.au/curriculum/contentdescription/ACMMG023) | |
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| Links with The Arts Curriculum Area | |
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| **Strand** | **Content Description** |
| **Dance** | Explore, improvise and organise ideas to make dance sequences using the elements of dance (ACADAM001) |

## Assessment

#### Peer assessment

Select relevant ideas depending on the challenges presented.

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| Challenge 1: [Getting in shape](http://www.digitaltechnologieshub.edu.au/docs/default-source/DT-/bluebot-challenge-1.pdf) | Teacher observation  Are the shapes written in the correct order to program Blue-bot?  Are the attributes of shapes described correctly? |
| Challenge 2: [Feed the animals](http://www.digitaltechnologieshub.edu.au/docs/default-source/DT-/bluebot-challenge-2.pdf) | Cognitive interview (think Aloud)  Ask students to describe the path taken and their choice of steps. |
| Challenge 3: [How far is it?](http://www.digitaltechnologieshub.edu.au/docs/default-source/DT-/bluebot-challenge-3.pdf) | Teacher observation  Worksheet with prediction of number of steps and turns compared to actual number of steps and turns.  Student reflection on measuring using the Bluebot ruler. |
| Challenge 4: [Alphabet fun](http://www.digitaltechnologieshub.edu.au/docs/default-source/DT-/bluebot-challenge-4.pdf) | Teacher observation  Can the students correctly spell out a word using the alphabet mat? Record using a checklist that includes 2, 3, 4, and 5 letter words. |
| Challenge 5: [Fairytale friendship](http://www.digitaltechnologieshub.edu.au/docs/default-source/DT-/bluebot-challenge-5.pdf) | Peer assessment  Students retell their fairy-tale using their sequence of steps and Bluebot. Class members listen and use a simple checklist to determine the following:  • Are the events arranged in the correct sequence? |
| Challenge 6: [Dance moves](http://www.digitaltechnologieshub.edu.au/docs/default-source/DT-/bluebot-challenge-6.pdf) | Cognitive interview (think Aloud)  Students explore and demonstrate the fundamental movements that they can make the Bluebot perform.  Ask students to describe the dance steps and their choice of dance steps. |

## Suggested steps

Provide opportunities for your students to learn how to design and follow a series of steps to program Bluebot. Select from this a series of challenges that integrate other learning areas.

1. Challenge 1: Getting in shape
2. Challenge 2: Feed the animals
3. Challenge 3: How far is it?
4. Challenge 4: Alphabet fun
5. Challenge 5: Fairytale friendship
6. Challenge 6: Dance moves

Discussion

1. How does the Blue-Bot know where to move?
2. What did you learn about giving Blue-Bot instructions?
3. What happens if you miss out some steps in your program? How do you fix that?

## Why is this relevant?

These challenges are an authentic way to introduce students to simple programming while consolidating concepts such as using positional language, sequencing events and ideas and estimating and measuring. It focuses on developing foundational skills in computational thinking, and on developing an awareness of digital systems through personal experience of them.

F–2 students should be provided with opportunities to explore new concepts such as algorithms through guided play, including hands-on, kinaesthetic and interactive learning experiences. Students begin to develop their design skills by conceptualising algorithms as a sequence of steps/procedures for carrying out instructions to solve simple problems or achieve certain things, such as identifying steps in a process or controlling a Blue-Bot.

At the F–2 level, where learning at the pre-programming stage is the expectation, there is no requirement to learn a particular programming language. However, in years F–2 students do learn some basic programming skills, such as working out steps and decisions required to solve simple problems. For example, they program a robotic toy or sprite to move in a certain direction. The focus at this level is on designing a sequence of steps.