National Centre for Computing Education

Raspberry Pi

Lesson 1: Comparing tools

Introduction

During this lesson learners will become accustomed to the ScratchJr programming environment. They will discover that they can move characters on-screen using commands, and compare ScratchJr to the Bee-Bots used in the previous unit.

Learning objectives

To choose a command for a given purpose
- I can find the commands to move a sprite
- I can use commands to move a sprite
- I can compare different programming tools

Key vocabulary

ScratchJr, Bee-Bot, command, sprite, compare, programming, programming area

Preparation

Subject knowledge:
It would benefit teachers to have an understanding of the ScratchJr application and how this compares to the Bee-Bot floor robots used in the previous unit. An ability to use commands to move sprites in ScratchJr would be helpful. These skills are all supported in the slides for the lesson.

You will need:
- L1 Slides
- Bee-Bots (optional)
- ScratchJr (https://jfo8000.github.io/ScratchJr-Desktop/)
- Download ScratchJr App for tablets (iPad or Android) or install ScratchJr for computers before the lesson

Note: This lesson uses the ScratchJr app on tablet devices for screenshots and videos. All activities will still work on the computer version, but occasionally things might look slightly different.

Assessment opportunities

Introduction: Assess the learners' current knowledge of ScratchJr.
Activity 1: Assess the learners' ability to make sprites move in ScratchJr.
Activity 2: Assess the learners' ability to predict which blocks will make something happen on screen in ScratchJr.
Plenary: Assess the learners' ability to make comparisons between Bee-Bots and ScratchJr.

Outline plan

Please note that the activities are labelled in the top right-hand corner of the slide deck to help you navigate the lesson.

Timings are rough guides

Introduction (Slides 2–6) 5 mins	ScratchJr
	Show slide 2. Explain to the learners the objectives for this lesson.
	Explain to the learners that during this unit they will be programming. Remind them of the activities in the previous unit that used Bee-Bot floor robots, but tell them during this unit they will be using an application called ScratchJr.
	Show slide 3. Tell the learners that when they open ScratchJr on their tablets they will need to look for the app with the **cat icon**. Ask the learners 'have you seen or used ScratchJr before?' Allow time for learners to think, pair, share, and discuss their experiences with the group.
	Note: Some learners will not have had prior experience of the app. Others, possibly those with older siblings, may have had some experience.
	Show slide 4. Tell the learners that when they click to open the app for the first time, it will open on the welcome page.
	Note: If ScratchJr has been used on the tablet previously, it may not open on the welcome page, and will start on the home page as seen on slide 5. If it is the very first time the app has been used since installation, it might ask where you are using the app: home, school or other. Select **School**. Make the learners aware that other learners' projects may appear on this page if tablets are shared.
	Tell the learners that if they reach this page, they should click on the **house**.
	Show slide 5. Tell the learners that this is the home page. Inform them that if they ever need to get back to the home page, they can click on the **house** at the top of the page.

	Show slide 6. Tell the learners that to start a new project they should click on the **blue circle** with the **+** button inside. **Note:** Depending on the ability of your learners, you might decide to ask all the learners to start a new project at this point. Recap slides 3–6 with the learners, then ask them to close/turn over their tablets.
Activity 1 (Slides 7–15) 20 mins	**Using ScratchJr** Tell the learners there are some important things they need to know about ScratchJr before they start to use the app. Show slide 7. Show the learners the programming blocks. Explain that the programming blocks are used to tell the computer what you want it to do, just as the buttons are used to give instructions to a Bee-Bot. Show slide 8. Show the learners that the white space at the bottom of the page is the programming area. This is where they can drag the blocks of code. Show slide 9. Tell the learners that they can choose a blue block, drag it into the programming area, and tap it to make the cat move. Show slide 10. Ask the learners 'Can you make the cat move to the right?' Allow time for the learners to practise making the cat move on screen. Show slide 11. Tell the learners that they have just programmed the cat. In ScratchJr the cat is called a sprite. Sprites are objects that can be programmed to do different things. There are lots of different sprites that can be used in ScratchJr, and they will look at these in more detail in future lessons. Show slide 12. Ask the learners 'Can you make your sprite move to the left?' Allow the learners a short amount of time to have a look at the different movement blocks and try to make the cat move left. Ask the learners how they achieved this. Allow the learners to describe what they did e.g. I dragged the **Move left** block down into the programming area and tapped on it to make the cat go left. Encourage appropriate vocabulary covered so far. Show slide 13. Ask the learners 'Can you make the cat move up?' Again, allow the learners a short amount of time to try and make their cat move up using the **Move up** block. Ask the learners how they achieved this. Allow the learners to describe what they did. Show slide 14. Ask the learners 'Can you make the cat move down?' Again, allow the learners a short amount of time to try and make their cat move down using the **Move down** block. Ask the learners how they achieved this.

	Allow the learners to describe what they did. Show slide 15. Ask the learners 'What has happened to my cat?' Discuss that the cat is now on its side as if it is going to sleep. Click to play the animation and ask the learners 'Which block do you think was used to do this?' Allow the learners time to think, pair, share with a partner, and then try to make the same happen on their screens using the **Turn right** block.
Activity 2 (Slides 16–19) 10 mins	**Which block was used?** Tell the learners you are going to show them a number of animations. Explain that after you have watched the animations you want the learners to guess which **Move** block was used, and show the corresponding number on their fingers. Show each slide. Allow the learners time to share their answers by holding up their fingers. Click on the slide to reveal the answer. Discuss how the learners know that this is the correct block. Slide 16 answer: 1 — **Move right** Slide 17 answer: 5 — **Turn right** Slide 18 answer: 2 — **Move left** Slide 19 answer: 3 — **Move up**
Plenary (Slides 20–22) 5 mins	**Comparing tools** Show slide 20. Remind the learners that they have now used both ScratchJr and Bee-Bots. Show slide 21. Ask the learners 'Can you find things that are the same about Bee-Bots and ScratchJr?' Allow the learners to think, pair, and share their ideas with the class. **Note:** It may be helpful to give the learners access to ScratchJr and Bee-Bots at this point, so that they can make comparisons. Discuss the answers with the learners. The main three things you want the learners to understand during this discussion are: • Both Bee-Bots and ScratchJr can be programmed • They can give instructions to both Bee-Bots and ScratchJr • Both Bee-Bots and ScratchJr will follow the instructions as they are told to Bring the learners back together and discuss some of the similarities between Bee-Bots and ScratchJr. Show slide 22. Ask the learners 'What are the differences between

	ScratchJr and Bee-Bots?' Allow them to think, pair, and share their answers with the class. Answers could include differences, or things that appear different, as the learners do not have extensive experience of using the app. These could include: • ScratchJr works on-screen • The Bee-Bot moves physically on the floor/table • You press **Go** to run a program on the Bee-Bot • The Bee-Bot makes a noise (ScratchJr can make noises, but learners may not be aware of this yet)
Next time (Slides 23–24) 5 mins	Review the 'Assessment' and 'Summary' slides.

Resources are updated regularly — the latest version is available at: ncce.io/tcc.