

Marty Teacher Guide – Lesson 1.19

Second Level

THE MICRO:BIT

In this lesson pack, we introduce the Micro:Bit as a device that we can program along with Marty the Robot. The Micro:Bit is a micro controller which is like a small computer that has buttons, an LED display, accelerometer, compass and pins along the bottom which allow the device to connect to others through a small circuit. When investigating the device you could get students to think about

- What the different parts are that make up the device and what we normally use them for/what we could use them for here?
- What other devices might we find these different parts on/in?

MARTY MICRO:BIT BINGO

After exploring the device, students will be split up into small groups where they will play a game involving them rolling two dice and creating a small program based on what the dice say. For example, one roll might say, *when I click button A ... then kick right foot*

During each turn other students in the group must evaluate the small program that has been made to make sure it fits what the dice have asked for. Afterwards that student ticks off the actions they have programmed. The game ends when someone has ticked off all the different actions in their workbooks.

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EXPRESSING FEELINGS

Students will explore different feelings and emotions through trying to get Marty to convey these feelings with the help of a Micro:Bit LED display as his mouth. The idea is to think up different emotions, consider how we might spot when someone is feeling like that or how we are when we feel like that and try to recreate that using Marty's different body parts particularly his eyes and Micro:Bit mouth!

- What different emotions/feelings are there?
- How do you know when someone is sad/happy/angry/excited/surprised/...?
- What facial features do we use to show that we are happy/...?

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CREATING A FOOTBALL STRIP

In the Marty football strip worksheet, students can design their own football strip before attaching it to Marty using blu-tack but they must think about where they should attach it so that it doesn't limit Marty's movements

- Where could we place our football strip?
- Have you tested that your Marty can still walk and kick?
- Why did/didn't that work?
- How could it limit his movements?

BREAKING DOWN MOVEMENT IN FOOTBALL

Getting students to think about a sport similar to football, they should think about the different movements their bodies make when they are playing. For example, in football we need to be able to go forwards, backwards, side to side but we also need to be able to kick the ball with our foot

- What movements do you need to do in your sport?
- How would you explain to someone who has never played before what to do? Break down the movements for them? For example, move forward, move backwards...
- Imagine you were programming a friend to play this game, what commands would you give them?

MARTY FOOTBALL

Students should create a program where the Micro:Bit is a remote control for Marty, so tilting it side to side would make Marty do some sidesteps. Maybe clicking button A would get Marty to kick with his left foot. Get students to plan this out before they start programming and then test out with other teams either through a small football game or some penalty shoot outs!

Marty Teacher Guide – Lesson 1.22

Second Level

MEASURING REACTIONS

In this lesson, students will be measuring their reaction speeds in a fun game featuring Marty and the Micro:Bit. Before starting to program our games, we need to first think about how we measure someone's reaction time by getting students to judge each others reaction time games (for example, when you clap your hands students have to raise their hands or do some action)

- How easy was it to decide who was the fastest?
- How did you decide?
- Do you think you made the right decision?
- How accurate do you think you were?
- What would have helped you to make the decision?

OUR REACTION GAME

The game that students will be creating involves displaying a symbol on the Micro:Bit after a random number of seconds. The first person to click their button wins that round which means that Marty takes one step closer to their goal but one step further away from the opponents goal. Students will need to think about the following things,

- How do we decide who has won? How do we check who has clicked their button first?
- How can we thoroughly test our game?
- Can we keep track of who is winning in our game so that when Marty reaches a goal point he does a winning dance?
- What would make this game harder?
- What other rules could we add to the game?

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SNAKES AND LADDERS

Students will be remixing snakes and ladders in this lesson where Marty will be the counter on the board and the Micro:Bit will be our dice. First, we need to understand how snakes and ladders works and the rules behind it,

- What is snakes and ladders? How would you describe it to someone who has never played the game before?
- What do you need to play snakes and ladders?
- How do you set up?
- What are the rules?
- When does the game end?
- Who goes first?
- What happens when you take your turn?

MAKING A DICE

We then have to do a similar thing with the dice. Before we can create our own dice, we need to think about what it is and how it works,

- What is a dice?
- How does it work?
- What numbers can I get?
- Can I get the same numbers every time?
- What device could we use to be our dice? That has a screen and sensors in it to know when we shake it?