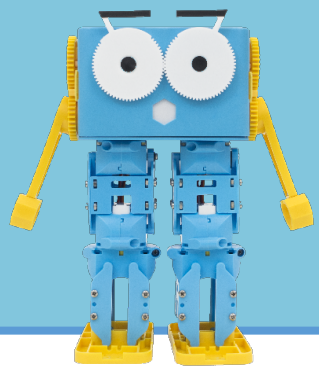
Going Fishing with Marty

Education Level: Ages 7-15
Lesson Duration: 45 minutes

Prerequisite Knowledge: Lessons 1.2, 1.9, 1.11
Device Compatibility: Laptop, PC or Tablet



Lesson Overview
In this summer themed lesson, students will be going fishing with Marty where they will need to help Marty decide when to catch the fish. Students will be creating an interactive game on Scratch where fish will randomly appear and, using the sensors built into the arms, students can control when Marty should try to catch the fish on the screen!

Learning Objectives
- Incrementally develop an interactive fishing game for Marty
- Test the game thoroughly after a new feature has been added
- Evaluate how the game could be made easier/more difficult

Key Vocabulary
- Scratch
- Variables
- Broadcast
- Functions
- Sensors
- Force & Motion

Resources & Equipment
- Marty the Robot
- Laptops/Computers/Tablets
- Access to Scratch (X or 3)
- Materials to create a fishing rod (paper/cardboard)
- String
- Paper for creating a paper fish
- Blue-tac or cello-tape
- Activity tutorial for the *Going Fishing with Marty* game
- Screwdriver

Additional Reading
- Educator's Guide
- Introduction to Programming with Marty using Scratch
- Activity tutorial for the *Going Fishing with Marty* game

Learning Plan & Activities
1. First of all, in our small groups, we need to set the scene by getting Marty ready to go fishing by preparing and attaching a fishing rod to one of Marty's hands with some string and a paper fish at the end of the string to complete our fishing rod
2. Now that Marty is ready, we need to create and develop our game. Students should be encouraged to build their games incrementally (one step at a time) through building one feature and then thoroughly testing it before moving onto the next feature. Full instructions with images can be found on our activity tutorial.
    a. Unscrew one of Marty's arms and remove the gear that the arm was attached to. You'll notice that the arm gear had two lines as gaps that were vertical, turn them to be horizontal and reattach onto the side of the body. Then screw the arm back on – this will allow for some bigger arm movements so that we can drop and raise our fishing rod!

b. We need to get Marty ready for fishing – make a paper fish attached to some string and attach that to Marty's arm (the one that we have just moved the gear for!)

c. Open up Scratch and locate the stage on the screen. We will be using this area along with our Marty to play the game. Right now, it has a blank background and Scratch cat. Remove Scratch cat, add an underwater themed background and add a fish sprite to the stage.

d. The stage is now set for our game but ideally, we want the fish to randomly appear on the screen. Using the coding blocks, set the fish to be hidden, wait a random amount of time and then re-appear on the screen. Students should also program the fish sprite to be swimming around on the stage (they will need to use the motion blocks to do this!)

e. Add the Marty extension and connect to your robot. Program Marty to initially place the arm downwards as if our fishing rod is currently in the water.

f. We now need to program Marty to respond to some pressure on the force sensor on the arm that is holding our paper fish. Using a combination of if statements and the Marty block that measures the current from a specific motor, check how much pressure is needed for the arm to register a value! Using this, program Marty to pull the arm upwards when there is force detected on that arm!

g. Students will need to check if the fish was on screen when Marty went to pull the arm upwards to catch the fish.

h. Add some emotions to the program so that Marty is upset/angry when the fish doesn't get caught and excited when the fish does get caught.

3. Get students to continue to test their game and encourage them to test another group's game to check for any well-hidden problems!

Additional Challenges

- Create a time limit for how long our fish appears on the screen so that the player only has a limited amount of time to catch the fish once it enters the screen
- Add some extra animals into the game that players shouldn't be trying to catch, like a shark. If they do, try and catch it reduce their score or end the game
- Add a score counter to the game to count the number of fishes caught by Marty
- Only give players a certain number of rounds of the game and see how many fish they can catch in that time!

Curriculum Benchmarks

Curriculum for Excellence – Technologies Benchmark Guide

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Going Fishing with Marty
Digital Literacy	TCH 0-01a	●
Craft, Design, Engineering and Graphics	TCH 0-09a	●
	TCH 1-09a	○
	TCH 2-09a	○
	TCH 0-11a	●
	TCH 1-11a	●
	TCH 2-11a	○
	TCH 0-12a	●
	TCH 1-12a	●
Computing Science	TCH 0-13a	●
	TCH 1-13a	○
	TCH 2-13a	●
	TCH 3-13a	○

	TCH 0-14a	●
	TCH 0-14b	●
	TCH 1-14a	○
	TCH 1-14b	●
	TCH 2-14a	●
	TCH 3-14a	○
	TCH 3-14b	○
	TCH 0-15a	●
	TCH 1-15a	○
	TCH 2-15a	○
	TCH 3-15a	○

National Curriculum – Computing, Design & Technology

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Going Fishing with Marty
Computing	1-a	●
	1-b	●
	1-c	●
	1-e	●
	2-a	●
	2-b	○
	2-c	●
	3-a	●
	3-b	●
	3-e	●
	3-g	○
	4-a	○
	4-b	○
Design & Technology	1.1-a	●
	1.1-b	●
	1.2-a	●
	1.3-b	●
	2.1-b	○
	2.2-a	○
	2.3-b	●
	3.1-b	●
	3.1-e	○
	3.3-c	●

Australian F-10 Curriculum – Digital Technologies, Design & Technologies

● = Fully Addresses Benchmark ○ = Partially Addresses Benchmark

Curriculum Organiser	Benchmark Covered	Going Fishing with Marty
Digital Technologies	ACTDIK001	●
	ACTDIK002	●

	ACTDIP003	●
	ACTDIP004	●
	ACTDIP009	●
	ACTDIP010	●
	ACTDIP011	●
	ACTDIP012	○
	ACTDIP013	●
	ACTDIP016	○
	ACTDIP017	●
	ACTDIP018	●
	ACTDIP019	○
	ACTDIP020	○
	ACTDIP027	○
	ACTDIP028	●
	ACTDIP029	●
	ACTDIP030	○
	ACTDIP039	○
Design & Technologies	ACTDEK004	○
	ACTDEP005	●
	ACTDEP006	●
	ACTDEP007	●
	ACTDEP008	○
	ACTDEP009	●
	ACTDEP015	○
	ACTDEP018	○