ROBOTICAL

MARTY
THE ROBOT V2

Educator's Guide
Elementary School Education

CONTENTS

INTRODUCING MARTY THE ROBOT

Marty is our fully programmable and customizable walking robot designed to bring learning in the classroom to life. Designed by roboticists in Scotland, Marty helps you teach STEAM (Science, Technology, Engineering, Arts & Mathematics) subjects in a fun and interactive way. By promoting problem solving and creative thinking, Marty can give learners an introduction to computer science while being adaptable and keeping them challenged through project-based learning.

Those new to computer science, robots and coding can confidently use Marty in the classroom to engage learners and encourage problem solving. Our classroom solutions come with initial setup support and plenty of online tools and resources to help get you up and running in no time.

Empower learners to become more independent, as they explore how Marty works through a Build-Play-Learn ideology. Marty's lessons are differentiated to allow all learners to engage with objectives and achieve the success criteria; additionally, the versatile resources that are available detail cross-curricular opportunities when planning for learning and assessment.

> *"Marty is the perfect hands-on robot that brings students' code to life. Having the instantaneous feedback of how their code affects a physical robot in front of them, allows for a more authentic learning experience for students to learn how to code and how to troubleshoot their code along the way."*

Brittany Ballou – **Elementary Educator**

Marty has an unique personality that allows for an expressive little robot. Emotion by motion is possible because each "limb" is individually controlled by its specific motor. Marty's friendly face and personality help young people engage with the activity and become more comfortable when learning new technology. From this, learners can then take their first steps into seeing robotics and coding as a part of their future.
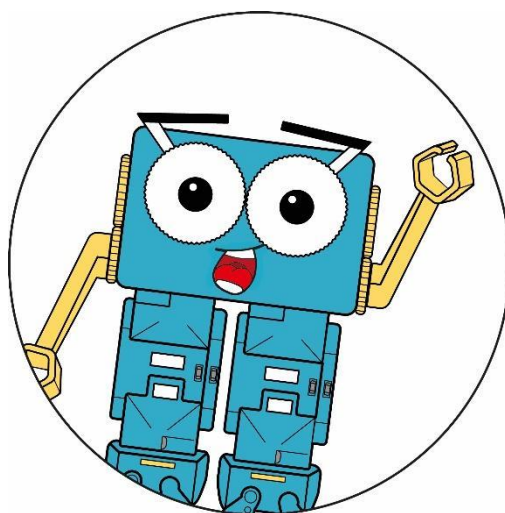
LESSON PLANS & RESOURCES

Built with educators in mind, our freely available resources help you to deliver hands-on learning. Learners can develop their creative thinking and problem-solving skills while learning important concepts across the curriculum: from computational thinking to robotics, mathematics, physics, and more. Our online resources are there to support you with new and exciting technology and cross-curricular ideas on different projects you can undertake with your learners.

Lesson Plans
Learning Plans with Measurable Objectives

Teacher Guides
Support to Enhance Learning Activities

Curriculum Links
Alignment to Regional Standards

Additional Content
All Resources & Solutions Included

Presentation Slides
Content for Learners and Notes to Support

All our online lesson resources target benchmarks and outcomes from regional curricula. We would be more than happy to help map our resources to your state's curriculum.

- ⭐ Computational thinking and programming real languages
- ⭐ Electronics, mechanics and engineering design
- ⭐ Collaboration, leadership and peer interaction
- ⭐ Creativity and inventive thinking
- ⭐ Critical thinking through exploratory analysis
- ⭐ Logical thinking in an engaging and creative environment
- ⭐ Evaluation and problem-solving skills
- ⭐ Opportunities to engage with a global community through ICT

HOW MARTY TRANSFORMS LEARNING

Having a physical tool like Marty allows for abstract concepts to become relatable – you can immediately see the results of running your code through the movements and actions of Marty. Additionally, consolidation is a recurring feature because of the opportunities for regular, engaging practice.

PROGRESSION AS SIMPLE AS 1, 2, 3

Our online resources include activities for all skill levels, allowing educators to focus on facilitating learning experiences and reporting on progress while learners progress at a comfortable speed. Start with Marty's screen free coding mode, using colored tiles to create a sequence for Marty to follow. You can then move on to building your own code sequences in the Marty the Robot app to see the result of basic input, eventually building working code with blocks that snap together in MartyBlocks and MartyBlocks Jr (our free applications based on Scratch and Scratch Jr).

ENCOURAGE AND DEVELOP PROBLEM SOLVING

While exploring with Marty, learners are developing more than just their coding skills: young people are supported to become collaborators, creative thinkers, problem solvers, computational thinkers and digital leaders of the future..

"Marty has been a head turner with students! He works really well across all of the age groups at GoCode.

Rushil Shah - GoCode Academy

MARTY IN THE CLASSROOM

Marty is an adaptable tool that can be used across Elementary and Middle school education. By sparking the excitement of young people and harnessing their infectious enthusiasm, Marty can support the promotion of STEAM learning and engagement. Marty increases excitement, when learning about technology, through hands-on interactive experiences while promoting a learn-through-play ethos.

Marty introduces foundation concepts such as sequencing, storytelling and the relationship between instructions and operations.

Lessons with Marty at Elementary level, support:

- Identifying patterns in everyday tasks.
- Using previous experiences to solve new problems.
- Understanding, predicting, problem solving, sequencing, and looping with block-based programming languages.
- Understanding and communicating using technical languages.
- Developing a sequence of instructions.
- Relating programming concepts to everyday tasks and activities.

LEARNING & PROGRESSION

Marty the Robot was developed to support a learner's progression: beginners can program Marty to carry out simple sequences and react to simple inputs, while more experienced students can begin to plan blocks of code and even move into text-based coding.

SCREEN FREE CODING TO GET STARTED

To start developing computational thinkers, consider beginning with Marty's screen free coding mode "Marty Unplugged". With Marty Unplugged, your students can use colored tiles to create sequences for Marty to follow, without the need for a screen. Once your students have mastered basic commands and sequencing, it's time to download and open the Marty the Robot app. Within the app, you can gain access to the "Remote Control Sequencer". This controller allows your students to remote control Marty or even que up a series of actions and build a custom sequence. With inquiry-based learning at the forefront, learners can begin to explore the different kinds of movement that Marty is capable of.

For cross-curricular learning, make mathematics exciting by challenging learners to estimate how many steps it will take Marty to walk from A to B and use the remote control to count together, this can then be extended into standard lengths. Additionally, learners could explore how many turns need to be made to efficiently complete an obstacle course and then think about the angles for each turn.

GET STARTED WITH SCRATCH

Scratch and Scratch JR are the best place to start for a friendly introduction to programming. It focuses on blocks of code that you can drag, drop and click together to build a program. Combining these blocks, learners can build basic to complex programs to bring their coding to life. Our MartyBlocks & MartyBlocks Jr programs have been built on Scratch & Scratch Jr to help everyone take those first steps into programming by teaching basic sequencing and presenting programming as a list of basic instructions.

Both our MartyBlocks & MartyBlocks Jr programming environments can be found on our Marty the Robot tablet app.

LEARNING THROUGH REFLECTION

Opportunities for reflection have been built into every learning resource. At the end of each lesson, learners are encouraged to reflect on what they did. The following questions might help start a discussion,

- What problems did you encounter and how did you solve them?
- What areas do you want to improve on for next time?

EXTENDING LEARNING OUTSIDE OF THE CLASSROOM

If you or your school would like to learn more about programming, we recommend the following sites to find specialist tutorials. Each of these sites offers open-source learning for whomever requires them – no matter the age or stage.

Scratch
scratch.mit.edu

Raspberry Pi
raspberrypi.org

Python
wiki.python.org/moin
trinket.io

JavaScript
javascript.info
codeacademy.com

ROS
wiki.ros.org

C++
cplusplus.com

CONNECTING EDUCATION TO COMMUNITY

As an open-source education tool, Marty has gathered a strong community following. This community consists of makers and educators who are actively contributing to additional content. The result is a wide network of challenges and activities that can be shaped for the classroom.

If you would like to join our online Facebook Edu Community Group, please use the link below or search for the group name:

Group Name: *Robotical's Edu Community*

Group Link: *www.facebook.com/robotical/groups*

GET IN TOUCH

Education
Finlay@robotical.io

Distribution & Partnerships
Ben@robotical.io

School Sales
Calum@robotical.io

Support
Support@robotical.io

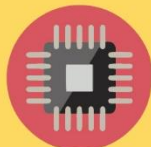**See Marty in action at robotical.io**

| Smart | Educational | Expandable | Programmable | Interactive |