

## PARENT LETTER FOR ROBO-RANGERS: TECHNOLOGY, ROBOTICS, STOP MOTION AND PROGRAMMING

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Dear Parents,

We have lots of exciting, fun and educational activities for your child! Please note that the order will be different than listed here. Check with your child or their teacher to see what they are working on!

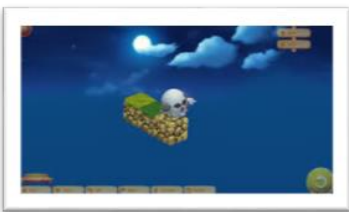
Our students will have the opportunity to build many different activities while learning how machines, programming and coding works. Most of these builds will be attempted during the class time. The total completed will depend on the session length.

### CODING

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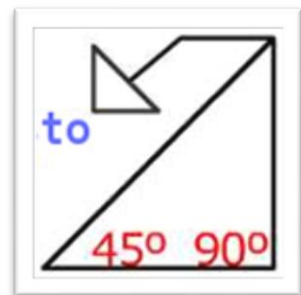
How great would it be if you had been able to start writing code at an early age?



**Monster CodeSchule** is a new coding game that we are happy to offer to our students. Learning sequences, loops and algorithms students will write code that makes Spooky the ghost move from one block to another. Spooky's job is to light lanterns along the dark path, just like the lights in the brain turn on with every correct code sequence! As we progress along the path we meet more characters, they change with every accomplished challenge. This app is slightly different than others that we have used before as it requires the student to be very accurate with commands from the very beginning. We love this new game and are sure your child will too! As with all our programming and coding apps

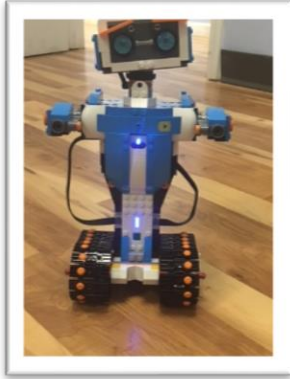
Monster CodeSchule is free in your app store.

**MSWLogo:** With everything they learned in CodeSchule your child will move on to actual coding languages with Logo using MSWLogo. Beginning with basic syntax your child will understand how each step is important and needs to be written correctly through their prior play with Spooky and friends. Don't you wish you were offered coding classes when you were younger?



## BOOST ROBOTICS

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We are so pleased to be able to bring Lego<sup>®</sup> **Boost**<sup>®</sup> to our students at Imagine That! Boost is the newest robotics kit available to our younger robotics kids. Students will build a base robot as they begin to learn the programming process. All instructions and programming are on the Boost app by Lego. The Hub of the robot can connect to the tablet using Bluetooth. These simple bots also use sensors that detect Color and Distance.



Once students get the hang of programming we will offer some simple builds like the Doggy Cart. This activity is driven by the motor turning the connected axle. This axle will turn the gears in the housing that contains the worm and 24 tooth gears that make the puppy's legs move. At first, the app will show the kids how to program specific moves, but as they build the bots, students can use what they have learned and program on their own. We are so excited to get building and

programming with Boost and your students. Come and join the fun!

## WEDO ROBOTICS

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**LEGO<sup>®</sup> WeDo Construction Set** activities are all about adventure this session! The "Bungee Jumper" is wound up and waits for activation. This happens when the motion sensor is triggered. The motor starts to turn the worm and cam gears, which trigger the slinging of the bungee jumper who is then stopped using a ratchet and pawl. This ceases the action lowering the jumper. If we didn't stop the jumper from falling he might hit the floor!

The "Canoe" will ride the rapids when your student programs the robot to turn in a cranking motion using the motor and some gears. The crank will be attached to the underside of the canoe causing it to rock back and forth with the imaginary waves.





Next adventure, skiing behind the “Ski Boat”!! A crown gear at an angle will deliver all the power to turn those wheels. Once your student programs the ski boat the kids will connect the skier behind the boat and off they go. For your students the adventure is *Here!*

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## STOP MOTION

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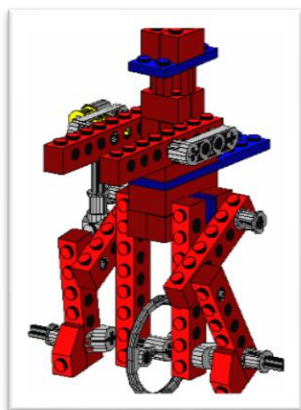


Then we are on to an introduction to Stop Motion Videos where students will create their own stop motion film. Students will need to use their Sequential Reasoning capabilities and thought processes to create their video. First, students need to lay out a plan that starts with a story-line followed by the storyboard. As students begin to set up their stage they will have to check and test all equipment for glitches! Pictures of each movement will be taken of the characters. In stop motion filming, every step must be taken in the correct order, one small movement at a time, just as a robot is programmed to move from point A to point B. These pictures are download to an app that will speed the flow of vision, creating the look of fluid movement. This helps students to gain an understanding of the concepts introduced in coding! Using logic and creativity results in all around great fun!

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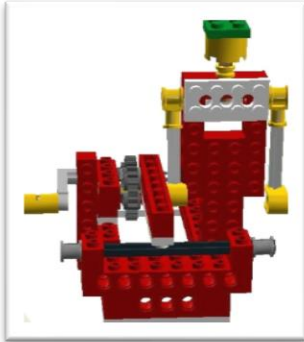
## MACHINES

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Lego Dacta<sup>®</sup> Technic builds feature human figures doing day to day things! Our first attempt in building, the Unicycle Man, will not be motorized. We will focus on how levers (his legs) work to turn the single wheel that he is riding on. What is the pivot point or fulcrum? What about the load and how do you identify it when it just looks like the mans' leg?

Then, we get to build a Saw Man. He will saw all day long without getting tired. As we saw in the Canoe, a crank motion is used to create the back and forth of the saw. A very simple 2 gear system creates the force to bring on the movement. Now, how could we add a motor to the saw man? Ask your student how we made it happen!



If time permits, we will build a Gymnast. They flip and turn, over and over the parallel bar, never wearing out. To accommodate the swing of the Gymnast, vertical and horizontal stability are emphasized. The axle turns using a gear train with right angled gears. This project can also be motorized; modified at the hand crank. We believe your student will have a flipping, fun time!