Our students will have the opportunity to build many different activities while learning how simple machines work and robots work.  Lots of new programs will be introduced:

- The new and exciting coding project called **Monster CodeSchule**
- Our newest robot, **Boost!**
- Stop Motion Video Production!

## ROBOTICS

**Boost Robot**

We are so pleased to be able to bring Lego ® Boost ® 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 an App called Boost by Lego.  The Hub of the robot can connect to the tablet using Bluetooth. Once they are comfortable moving their bots they will add a sensor that detects Color and Distance.  It can also double as a light!
 Next, we will expand their experience by building a Car. Adding an exterior motor and a sensor, it's up to our students to see what the car is capable of.  At first, the platform will show the kids how to program specific moves, but as they build the bot students can use what they have learned and program on their own.  We are so excited to get building and programing with Boost and your students.  Come and join the fun!

**WeDo Robot**

Lego ® WeDo Robots allow kids to have the fun of building exciting robots and then program them to move, make sounds and create background scenes that go with the robot, like the Sailboat Storm activity. The sailboat rocks back and forth, mounted on a fulcrum or pivot point (axle). A lever arm moves the boat, by a gear that is connected to another gear and so on. Students will program the motor to move the gears that move the lever to simulate a boat on the ocean during a storm.  Students can also program the screen to show roiling waves that look just like a storm.  How cool!

We will introduce the story of the Giant Escape: Two kids are walking in the forest and happen upon a giant snoring loudly. Will they be able to get away without waking the giant? If he wakes up, will he be friendly or mean? While the students wonder about the giant they are building, once again they will be using a 3$^{rd}$ class lever. Again, a gear will control the lever arm attached to a motor. This motor is controled by the student and the program that they create. The difference here is the pulley that lifts the giant from the ground to a standing position. These activities will reinforce the concepts learned throughout this session.

Rescue Airplane is a fun activity that is hand maneuvered by the students. A tilt sensor, when programmed by the student, tells the motor to speed up or slow it down depending on whether the airplane is going up or down. This of course is accomplished with the programming. Students will come away with a solid understanding of programming their robots and have great fun doing it!

## CODING WITH TABLETS:

**Monster CodeSchule**



This 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, and 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.

With everything they learned in CodeSchule your child will move on to actual coding languages with Logo using MSW Logo. 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?

## STOP MOTION VIDEO PRODUCTION

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!

## TECHNOLOGY
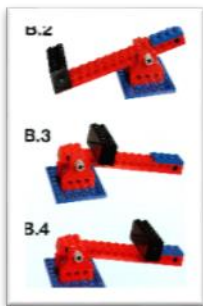
The concepts behind Levers will be built using the Lego ® Education Simple Machines set.  What is a lever and how does it work? A lever is a machine that makes it easy to lift load using a pivot point or fulcrum and effort.  The Load is the object to be moved.  The pivot point is sometimes an axle and it supports the lever itself.  The effort is the force used to move the load.  There are 3 different classes of levers that students will build to understand the idea of levers.

 A Drumming machine will make a 3rd class lever.  Can we make the drumming machine tap louder?  This will be one challenge that the students attempt.  Windshield wipers are a lever that works in a side to side movement. To look at the wipers they seem to be very simple, but it is in fact more complicated than the drumming machine. The levers must be attached to one another to accomplish the back and forth movement. Ask your student what they thought about both building activities!

## MORE TO MATH

Note:  This will be done in longer sessions only.

While building with bricks is fun, kids don't know that they are learning math too! With Lego's new **More to Math** Builder program, students will build activities in a digital platform to solve math problems! Robo Rangers will investigate 3 different activities centered around a Pond, Flowers and a Train.  Their goal will be to build successfully according to the information given. Rangers will need to use Reason, abstractly and quantitatively, give a viable argument for their ideas, create a model using mathematics and

visually see and make use of structure!  Sit back and watch Imagine That! Robo Rangers STEAM ahead!