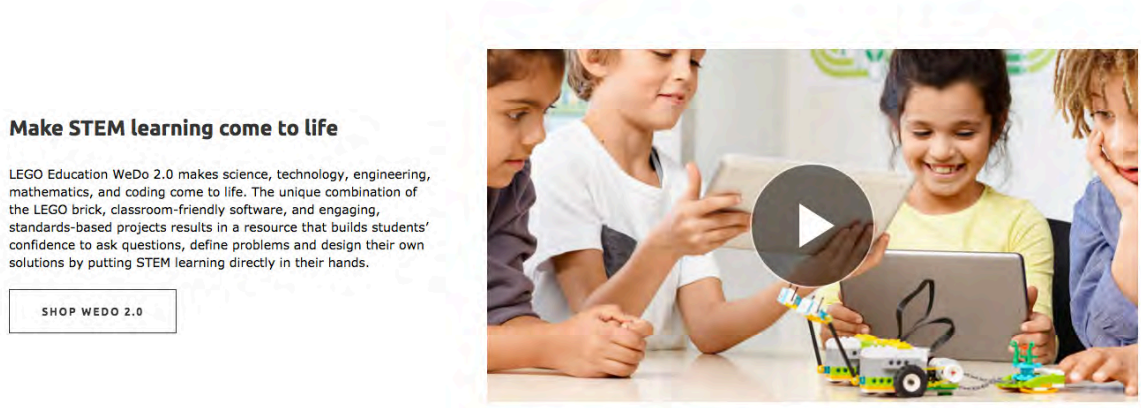
WeDo 2.0



I'm certain that all readers of this Blog have introduced their children to Duplo and LEGO building blocks. What you may not be aware of are the excellent LEGO Educational Kits and teacher resources.

https://education.lego.com/en-us

The coding resources are divided into elementary education age 7+ (WeDo 2.0 kit) and middle school age 10+ (Mindstorms EV3 kit). This review is on WeDo 2.0. You will find the software download button for your favorite device toward the bottom of this link.

https://education.lego.com/en-us/elementary/intro/c/computational-thinking

WeDo 2.0 combines coding with robotics. Rheannon (1st grade) attended a 1 week robotics class last summer. She was teamed with a 3rd grade girl. This class was to be a learning environment but as typical, turned into a race between teams to see who could finish the project first. Both girls brought unique skills that enabled them to compete against the other teams. The construction of the LEGO robot, in this case a race car, required fine motor skills for assembly. The gears and pulleys had to be pushed onto shafts with the right amount of tolerance left between hubs to allow rotation while maintaining drive belt alignment. Reading skills were necessary to read on screen step-by-step instructions. The 3rd grade girl could do the assembly while Rheannon followed the on screen schematics and laid out the required bricks. The next step was writing code to direct the robot to perform a task. They quickly accomplished this. The 3rd grade girl read the instructions and Rheannon, with her previous code writing experience with OSMO and KODABLE, could write the code. Code is written using drag-and-drop icons, just like KODABLE.

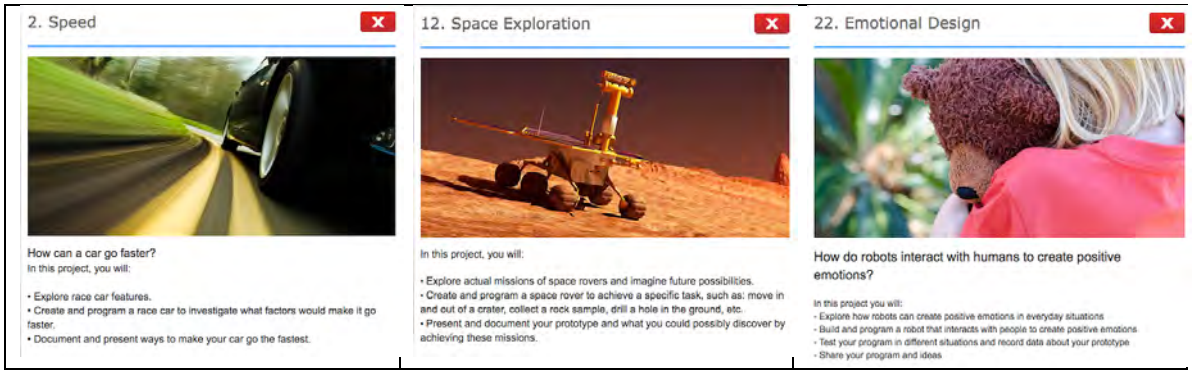
This link provides information on the WeDo 2.0 Core Kit.

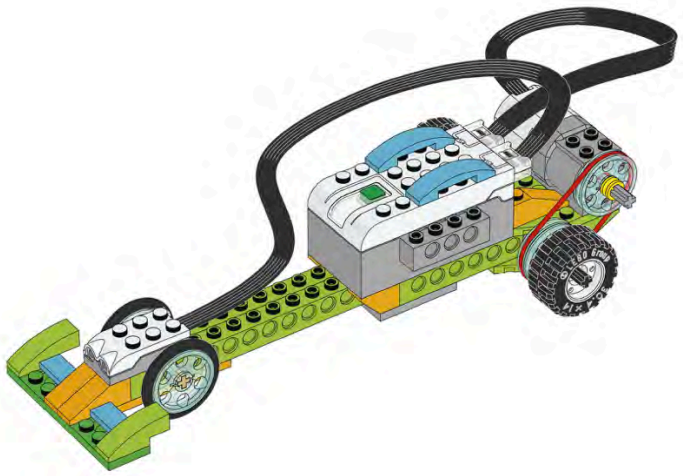
https://education.lego.com/en-us/products/lego-education-wedo-2-0-core-set/45300

Note that you can download the software and proceed through the lessons and code writing without building a robot. This isn't much fun, but you may want to try this first to see if you like WeDo before buying this $190 kit. In addition to LEGO building elements, the primary robotic elements in this kit are:

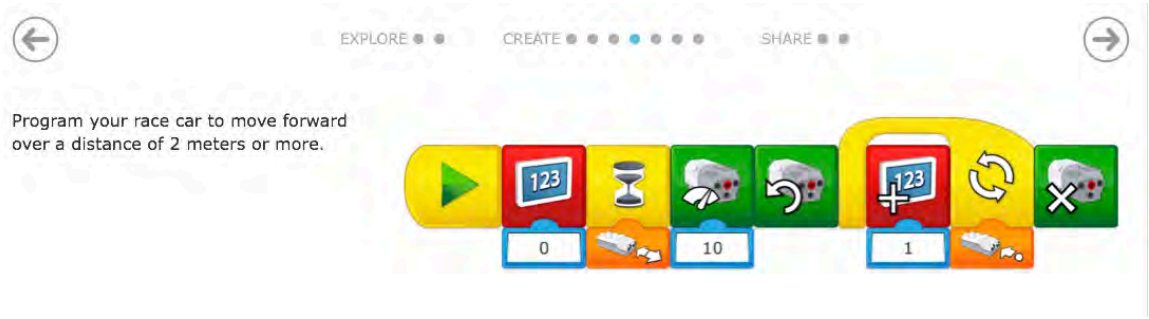
- Smarthub → this is a building brick that via Bluetooth connects the sensor elements with the control code on your device (e.g., iPad).
- Motor → a variable speed, variable direction software controlled motor.
- Motion Sensor → detects objects within a range of 15cm.
- Tilt Sensor → reports the direction it is tilted.

Here is a sampling of projects





Lesson 2 on Speed involves building a race car using the Smarthub, the speed and directionally controlled motor, and the motion sensor. The dragster control code is:



The control code written on your device (e.g., iPad) consists of these coding blocks from left to right.

1. Start button
2. Initiate timer
3. Wait until motion detector sees movement (e.g., your hand passing in front of the sensor)
4. Turn motor on at power level 10
5. Rotate motor counter clockwise so car moves forward
6. Loop
   - Increment timer
   - Continue loop until sensor detects object (e.g., stop sign)
7. exit loop and turn motor off

There are several class experiments to perform, such as