Robot Rally LiFT-OFF

Thanks for allowing your child to participate in this 4-H robotics program. Our primary goal at this point is to create opportunities for directed, educational fun that inspire your child to have a positive attitude toward STEM. We want to encourage them to go further with STEM-related activities.

If **robots, robots, robots** are all your child can talk about, this is a great time to introduce other educational fun to keep those minds working in high gear!

We used the Dash robot available from https://www.makewonder.com/. You can find further ideas for using Dash on the MakeWonder website https://www.makewonder.com/play/ideas/. Dash is controlled using natural language programming. Natural language programming uses a sentence-like structure to create a computer program.

5-6 year olds

Another type of programming is object-oriented program. Typically, we suggest introducing 5-6 year olds to object oriented programming. Object oriented programming is a fun way to learn the logic behind programming while youth are still learning to read. Object-oriented programming resources include these:

Scratch Jr. from http://www.scratchjr.org/

Cost: Free

Scratch is an educational app that is available for both the iPad and the Android tablets. Your child can drag and drop programming blocks to create an animated story. Some of the key concepts learned are logic, loops, and debugging.

LEGO® WeDo from
https://education.lego.com/en-us/lesi/elementary/lego-education-wedo

Cost: $226.95

The LEGO® WeDo robotics kits also use object-oriented programming language. These kits allow youth to create robots and then program them to perform a specific task. Programming is done on a computer, and the robot must be tethered to the computer in order for it to work.

*Depending on availability, your Extension Agent can check out a WeDo kit from the Center for Technology Outreach.

Code.org from http://code.org/educate/k5
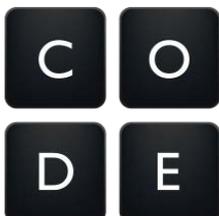
Cost: Free

Code.org has put together over 20 hours of coding lessons for youth to explore the foundations of coding in creative, hands-on activities.

We encourage 7 year olds to move into natural language programming. Natural language programming starts youth on the path of text-based coding which will help them as the learn more advanced programming languages like RobotC, Java, or Python.

Scratch from https://scratch.mit.edu/

Cost: Free

Scratch is the next step up from Scratch Jr. This online program allows youth to learn the fundamentals of coding in a fun, storytelling manner. Youth create stories that spark their interest while developing their digital literacy.

Scratch with LEGO® WeDo
http://wiki.scratch.mit.edu/wiki/LEGO%C2%AE_WeDo%E2%84%A2_Construction_Set

Use your existing LEGO® WeDo kit to make Scratch come alive. Use the More Blocks option in Scratch to add a LEGO® WeDo extension.

If you are looking to unplug from the computer, try these free activities and lessons created by Computer Science Unplugged (http://csunplugged.org/) and Computer Science-in-a-Box (https://www.ncwit.org/)by the National Center for Women in Information Technology.

Computer Science Unplugged Activity Book:
http://csunplugged.org/wp-content/uploads/2015/01/unplugged-book-v1.pdf

Computer Science-in-a-Box:
https://www.ncwit.org/sites/default/files/resources/computerscience-in-a-box.pdf

Hopscotch from https://www.gethopscotch.com/

Hopscotch is a free iPad app that is very similar to Scratch. Youth program in a "sandbox" where they use their imaginations to create stories from drag and drop blocks.

Tynker from https://www.tynker.com/hour-of-code/

Cost: Free (but other curriculum is available for purchase)

Tynker offers free coding activities for youth on their Tynker Hour of Code website. Youth can choose which level to begin at, beginner or intermediate. They then have a series of challenges that build on each other. Once the child has completed each activity successfully a certificate is awarded. Additional lessons cost $75 and are available at https://www.tynker.com/parent/