LEGO Language

Have you ever wondered how a computer always knows how to respond to a command? Every click, backspace, letter, and arrow key means something to the computer – and someone had to teach it what to do in response! Computers don't understand English; they speak their own type of languages. Because computers don't have minds of their own, they can't think for themselves in order to know what you want them to do. Instead, each command is programmed for a specific outcome – for example, when you click on the "x" at the top of your internet browser, the computer knows you want to close that page. The only problem is that since computers can't think for themselves, they need very specific instructions or they might not give the response you were expecting. Just how specific should the instructions be? Test your ability to give clear instructions by giving another person step-by-step directions on how to build a LEGO design of your own creation!

TEKS:

5.27B Follow, restate, and give oral instructions that include multiple action steps.
6.12A Follow multi-tasked instructions to complete a task, solve a problem, or perform procedures.

How To:

1. Brainstorm a LEGO design with a specific function (for example, a doghouse that protects a tiny LEGO dog from the rain) and draw it on your paper.
2. Build your design using all the LEGO pieces in your baggie.
3. Using step-by-step instructions (and without showing your partner your LEGO structure), tell your partner how to build what you just created using their identical LEGO baggie. Compare the two structures – are they the same?
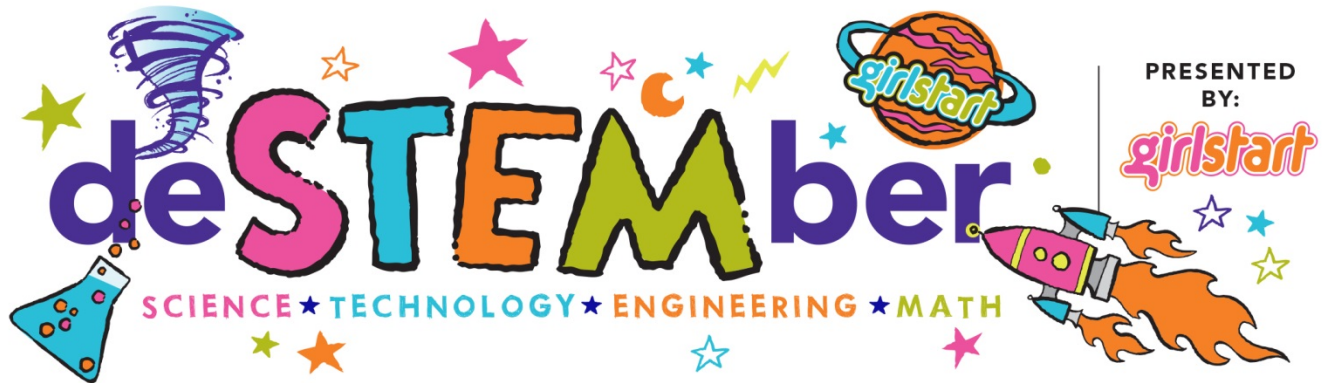4. Switch roles and repeat.

Materials (per pair):

- LEGO baggies (two identical baggies with the exact same number of pieces of each size and color in each bag)
- Paper and pencil

31 Days of STEM Fun!

Questions To Consider:

- Was the design built by your partner the same thing you imagined in your head?
- How could you alter your instructions to help your partner build exactly the same structure as what you created?
- Was it hard to follow your partner's directions?

How Does This Relate To Computer Programming?

The computer can't predict exactly what you want it to do any more than your partner could predict exactly what you created with your LEGOs! A computer programmer writes very specific language, called code, to tell a computer everything from simple commands to complex actions.

Career Connection:

Computer programmers write the instructions for software programs on computers. Once software developers and engineers create design specifications for a particular program, like an app or a game, computer programmers create directions for the program that the computer can understand. They will write code (the computer language), solve problems, debug, test, and rewrite code until the program works effectively and efficiently. Some of the most common computer languages in existence include C++ and Python.