Role Play Robots

Right, right, then a left. You know these are directions, however, you need more information to follow them. Explore how a computer programmer has to be precise and direct when coding a device in this fun, role playing robot game!

TEKS:

TECH K-2.1D: The student is expected to create and execute steps to accomplish a task.
TECH K-2.1E: The student is expected to evaluate and modify steps to accomplish a task.
TECH K-2.4A: The student is expected to identify what is known and unknown and what needs to be known regarding a problem and explain the steps to solve the problem.
TECH 3-5.2C: The student is expected to collaborate effectively through personal learning communities and social environments.

Materials:

- Group of friends/family
- Paper
- Pencil

How To:

Programming Role Play Game 1

1. To learn more about programming and how to communicate instructions, you're going to play a programming role play game in a small group.
2. Choose someone from the group to be a "robot." Everyone else is a "programmer."
3. The programmers will give the robot instructions for a specific task, which the robot must follow exactly. When giving tasks, break them down into simple, step-by-step instructions.
   Example: The programmers are going to tell the robot instructions to have her do a jumping jack. The programmers will first tell the robot to stand in place with their arms down (palms touch the side of their thighs) and their feet together. Then, the robot will jump up and simultaneously move their feet out to shoulder width and their arms up above their head as they land.
4. If the robot completes the task correctly, switch with another member of the group.

Programming Role Play Game 2

1. "IF… THEN…" statements are basic statements that tell the computer what to do when a certain condition or situation happens. These are called conditional statements.
2. The conditions are the "IF" part of the statement; the actions are the "THEN" part of the statement. For example, IF you are hungry… THEN make a sandwich.
3. Practice these statements with people in your group.
4. Now try the Game 1 activity using IF, THEN statements. Give the robot instructions only using the conditional statement format. **Example:** IF I clap my hands twice, THEN you will raise both of your hands!
5. To make the game more challenging, try writing a list of program codes on a piece of paper and show the robot the paper. The robot will read the entire "script" (coding instructions) as a complete step-by-step list and follow the instructions. The programmers will then judge the level of success of their instructions.

STEM Explanation:

This is coding! It is as simple as telling something to break down a task into small steps, communicating them in the right order, and adjusting based on conditions. Coding is similar to speaking a language like English or Spanish. It is a computer language that is used to communicate with technology to develop software, games, apps, and more. Just like people from different countries may not understand each others' languages, computers don't understand English, Spanish, or other languages people use. Technology understands codes! The codes tell a computer or device to complete a process, like turning on or off, through different programming languages. When programmers give the device, game, or app commands, like the IF…THEN statements we used, then the technology can understand the code and perform tasks!

Career Connection:

Computer scientists use technology to solve problems. They write software to make computers do new things or accomplish tasks more efficiently. They create applications for mobile devices, develop websites, and program software.

Resource:

https://www.computersciencedegreehub.com/faq/what-is-coding/

