

Robotic Students

Adapted from Kodable fuzzyFamily Frenzy
(Audience K-2)

The two most important factors when teaching kids to code are: engaging them with something they love, and teaching them to think logically. Here's a great game for doing just that!

Overview:

Time frame - About 45-60 minutes

Your students have been selected to program a new lifelike Robotic Student. Create a simple obstacle course and your kids must "program" a partner to move from one cone/location to a second cone/location using the 3 codes listed below. They will use the floor tiles as the spaces that the robot can move. Once they have written their code their partner must follow the instructions to complete the course.

How this relates to programming?

Computers are not as smart as we think they are and won't work without someone programming them with very specific instructions. Introduce your students to the basic principles of computer programming by having them work through a real life situation.

Materials:

1. Pencil
2. Worksheet (Form A or From B)
3. Space for arranging obstacles (gym, playground, yard or classroom)
4. Obstacles (These can be very ordinary items: chairs, desks, tables, blankets, or playground equipment.)

Set up:

Set up a short obstacle course. Something that could be completed in 10 minutes or less is best. This allows plenty of time for kids to experiment, test, and refine multiple solutions. Establish a "base" at one end of the room and a "goal" at the other end of the room. Mark floor tiles so students know "base" and "goal."

Background Understanding:

Begin by talking about computer programming. Some things to cover:




- a. What is computer programming?
 - a. Answer: A sequence of instructions so a computer can perform a task
- b. How does computer programming work?
 - a. Answer: Humans type lists of instructions for a computer to read so that it can perform tasks.
- c. Why do computers need to be programmed?
 - a. Answer: Computers cannot think for themselves. They need to be told what to do because they don't have a brain like humans. Humans give computers directions so that they can perform tasks and "think."
- d. Be sure to help them understand a computer will do exactly what it is programmed because it can't think for itself.

How to Play:

Assign groups or have everyone pick a partner.

Give each student a copy of the worksheet.

Practice the commands together so everyone understands what they mean using the floor tiles.

	Forward	Students will move one block in the direction they are facing.
	Turn Right	Students will turn body $\frac{1}{4}$ turn right while staying on same block.
	Turn Left	Students will turn body $\frac{1}{4}$ turn right while staying on same block.

Allow time for students to examine the course and write their code.


Have one partner write the code for getting through the obstacle course and one write the code for getting back to “base”.

When everyone is finished writing their code they can begin “running the program.”

After all the teams have returned to “base”, begin going over their code. Be sure to ask questions about what they learned and discuss how this is similar to programming a computer.

Extension: (Use Form B worksheet) If students finish early or need more of a challenge ask them to come up with their own “code” for an activity.




Example:

	Turn Around	Students will turn body $\frac{1}{2}$ so they face opposite direction while staying on same block.
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Notes for next time:

Robotic Students

Use the codes listed below to program your Robotic Student to move from the one location to another.




	Forward	Students will move one block in the direction they are facing.
	Turn Right	Students will turn body $\frac{1}{4}$ turn right while staying on same block.
	Turn Left	Students will turn body $\frac{1}{4}$ turn right while staying on same block.

Write your "code" below. Place one instruction in each box.

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	16.
17.	18.	19.	20.
21.	22.	23.	24.
25.	26.	27.	28.
29.	30.	31.	32.

Robotic Students

Use the codes listed below to program your Robotic Student to move from the one location to another. Consider creating a new code in the empty box.

	Forward	Students will move one block in the direction they are facing.
	Turn Right	Students will turn body ¼ turn right while staying on same block.
	Turn Left	Students will turn body ¼ turn right while staying on same block.

Write your “code” below. Place one instruction in each box.

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	16.
17.	18.	19.	20.
21.	22.	23.	24.
25.	26.	27.	28.
29.	30.	31.	32.