CANADA
LEARNING
CODE

BasketBots

By: Kassandra Lenters
Duration: 30 minutes

LEVEL	SUBJECTS	PROVINCES / TERRITORIES	TOOL
Grades 1-3, 4-6	Mathematics Physical Education	Across Canada	Unplugged

Overview

This is a variation of "Do the Robot," where students learn about algorithms while practicing basketball skills.

Prep Work

- Grades 4-6: Review proper shooting form - see article on How to Properly Shoot a Free Throw.
- Grades 1-3: Review proper form for a bounce pass - see Sport PEI resource: "Bounce Pass" (page 25)
- This activity requires basketballs

Lesson

Introduction:

Ask: Who has heard of James Naismith? What is he known for? (A: He is a fellow Canadian who invented the game of basketball!)
Shooting/passing is a huge part of basketball. We're going to practice this skill - but with a twist.

Grades 4-6:

Key Coding Concepts

✓ Algorithms

✓ Debugging

✓ Sequences

Terminology

Algorithm
A step-by-step set of operations to be performed to help solve a problem

Debugging
Finding problems or 'bugs' in code and solving them

Sequence
Identifying a series of steps for a task. Computers and Scratch read and perform commands

- Ask: How do we shoot a free throw? → Review proper shooting form using the B-E-E-F approach: Bend knees, Eyes on target, Elbow in, Follow through)
- Have a volunteer demonstrate proper form for the group (have them shoot the ball straight up in the air, then catch it).

Grades 1-3:
- Ask: How do we make a bounce pass? → Review proper form from [Active Start resource](#)
- Have a volunteer help you demonstrate a proper pass to the group

Activity:

Ask: Who do you think is more intelligent - a human or a computer? Why? (A; Humans! We program computers and give them instructions in the first place!)

We are going to practice our shooting/passing form as robots and programmers.

Instructions:

- Pair up learners
- Have one partner in each pair raise their hand - they will be the robot.
- Robots have officially forgotten everything (except for blinking, breathing and standing..) - they need to be programmed to pass/shoot a free throw.

- Have the other partner raise their hand - they will be the programmer.
- Programmers: With great power comes…. great responsibility! The programmers will give simple, clear instructions to their partner to help them complete this task - using words only! (no actions)
- Briefly demonstrate how clear the instructions need to be. Show them that "Bend your knees" could mean bending all the way into squatting position. Programmers will need to be very clear! (e.g. "Bend your knees slightly" or "Bend your knees so that your legs are at a 150 degree angle")
- Explain that when we give an instruction that doesn't work, then fix it by

in order from top to bottom

Curricular Connections

Physical literacy, Movement strategies, Interpersonal skills, Critical thinking, Territory activities, Percent, Degrees/angles, Oral communication, Clarity and coherence

References

"Person holding basketball" by Nappy from Pexels under CC0 License
https://www.pexels.com/photo/person-holding-basketball-936037/

Sport PEI: Basketball Lesson Plans
http://www.sportpei.pe.ca/userfiles/files/Basketball%20Lesson%20Plans%20June%205.pdf

trying again, we are debugging. This is very important in programming!
- Have one partner find a spot along the wall for passing, or at a basketball net for shooting (or along a wall if nets aren't available), and the other grab a basketball
- Give them 5 minutes before having partners switch roles
- Put basketballs away for a debrief. Ask: What was it like being the Robot? Programmer? - What extra steps did they need to add to their instructions? What did they need to consider when giving instructions?
- Congratulate them on creating their first algorithm! (step-by-step set of instructions) Just like the robot role, computers require very clear, simple instructions in a specific order - or sequence.

Assessment

Learning Outcomes:

I can create an algorithm.
I can give clear, simple instructions in the correct order - or sequence.
I can problem solve and 'debug' instructions.
I can learn programming concepts without computers.
I can use proper shooting/passing form.

Success Criteria:

I gave my partner clear, simple instructions.
I included the steps that we covered as a class in my instructions.
When my instructions weren't clear enough, I 'debugged' and tried again.
I listened to my partner when I was in the 'robot' role and followed their instructions.

Assessment Ideas:

Have pairs assess each other's quality of instructions using the success criteria above.

Have volunteers demonstrate their process and instructions used to the group.

If using the extension of calculating their own free throw %, have learners record their answers to show their work.

Extensions

Spend time researching the greatest free throw shooter in NBA history (fellow Canadian and hall-of-famer) Steve Nash! Nash had a 0.9043 shooting percentage during his basketball career - even better than Steph Curry! (Stat from 2018. More info [here.](.))

Have pairs come up with a pre-shooting routine and add it into their algorithm. E.g. Steve Nash dribbles three times before each free throw (plus a few other things!). [Watch his routine here.](#)

Add some math into the equation! Have learners calculate their own free throw percentage. Start off by having them count how many they make out of 10 shots. Increase to a higher number if you have time.

Research NBA and WNBA player salaries and use this data to support a discussion on the gender wage gap between male and female athletes. (See [this article](#) for more info)

Watch this video about the "Edmonton Grads": https://youtu.be/qxJcXsFxyLI

Any Curry fans? Use live statistics from the Curry Count to create some basketball-related math equations:
[Here](#)

Modifications

- Hang hula-hoops off of the basketball nets if the rims are too high for younger students to reach when shooting.

- If basketballs are not available, try using a beach ball or balloon