Lions, Tigers, and OZOBOTS, Oh My!

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Agenda

What are Ozobots?

Let’s Try It! - Lesson ideas for High School

Ozobot Curriculum Examples

Final Thoughts - How can you integrate this tool in your classroom?

What are Ozobots

Or learn about the Ozobots from the ITC Staff

https://www.youtube.com/watch?v=Rfnhzz5Eq-c&feature=youtu.be

Meet Ozobot Bit and Evo

Ozobot Bit

- Follows lines
- Program using sequences of colors
- Program with block based Ozoblocky

Ozobot Evo

- All of the above PLUS
- Program using Javascript
- Sensors
- More LED lights
- Bluetooth enabled
- Sounds
- And even MORE

Programming the Ozobot

Drawing the Code

Color Code Sheets-
https://play.ozobot.com/print/guides/ozobot-color-codes-reference.pdf

LET'S TEST THE OZOBOT TO SEE WHAT IT CAN DO!!

Programming the Code

Ozoblockly-
https://ozoblockly.com/

Ozobot Curriculum Examples

Be On The Lookout For Examples That Show:

Collaboration

Creativity

The Design Process

Use of Programming Skills

Explanation of Systems

Debugging

Future Farm Game

https://blog.ozobot.com/2018/05/31/creator-of-the-month-ipswich-libraries-future-farm-game/

This is a game that can be played by coding the robots using markers based on several parameters

"It's the year 2500 and robotics is commonplace in our world. The farming community utilizes this advancement allowing them to create larger farms and tend to them using significantly less people as well as create a much higher quality of product. Unfortunately, this means the farming industry has become a cutthroat one... Farmers have been attempting to create programs and code to enhance their machines but at the same time have also been hacking their competitors and creating programs that can hinder and sabotage their efforts. You are one of these farming programmers and you must fight for the crops using your code. Will you become the victor?"

Agriculture and Technology

http://www.businessinsider.com/15-emerging-agriculture-technologies-2014-4

https://www.asirobots.com/farming/

https://monsanto.com/innovations/plant-breeding/articles/produce-ancestors/

Future Farm Game

https://blog.ozobot.com/2018/05/31/creator-of-the-month-ipswich-libraries-future-farm-game/

2 player game

To win: Program the Ozobot farmer to pick up the MOST amount of crops from the board

- Each person choose 10 cards from the stack
- You must use the codes from each card to plan your game board so that your Ozobot farmer picks up the most pieces of corn (crops).
- Any unfilled lines will be filled in with a solid black line so the Ozobot will continue moving through the fields
- Place the corn pieces in the inside corners of your fields. Collect corn (crops) as the Ozobot passes by both sides of the corn playing piece
- You will have one minute to play.

Future Burger

https://portal.ozobot.com/lessons/detail/future-burger

This activity introduces parameters in how you need to organize what the robot does

- Sequentially
- Safely
- Efficiently

You are a production engineer at Future Burger, a chain hamburger restaurant that prides itself on innovation and speed. You came up with the great idea of using robots to prepare the burgers of the future. In order to test out the robots in one of the stores, you need to provide the store with a layout of the hamburger production line. Keeping in line with their Fast and Fresh motto, you will need to come up with the most efficient production line possible.

Future Burger

Stations:
Buns (top and bottom - must get one at a time)

Raw burgers (cold station)

Cooking station (hot station)

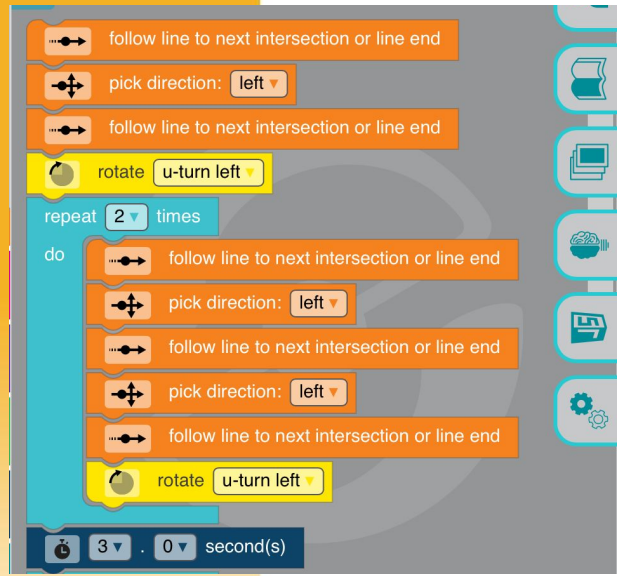
Two toppings can be at one cold station (4 toppings total)

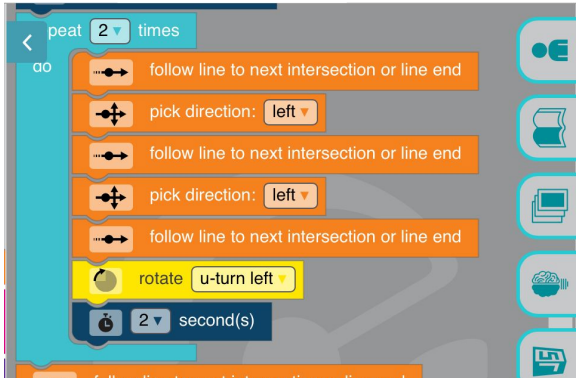
All condiments are together on one cold station

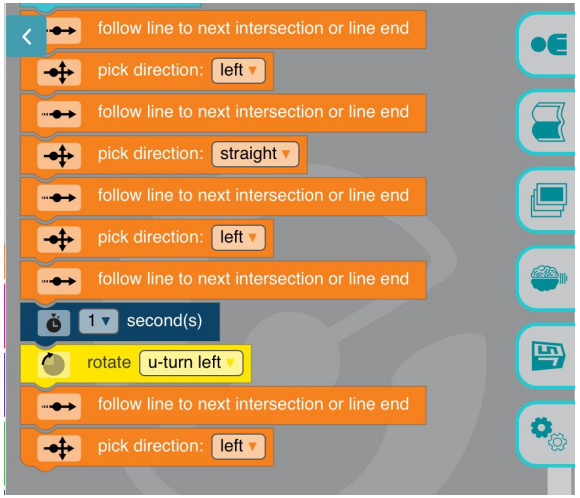
Requirements (Research or Assessment):

- As a company that values safe food practices, make sure to include a hand washing station for the robots. The hand washing station is specifically formatted for sterilization of robots and require only 1/10th of the CDC recommended hand washing time. *(20 seconds)*
- Hands must be washed after handling raw meat.
- The cooking station is very hot. Cold food sitting one foot away from the hot station maintains a temperature of 45 degrees . Every one foot away lowers the temperature two degrees. *(cold food must be maintained at 40 degrees)*
- Burgers must be cooked to safe minimum temperatures according to foodsafety.gov. *(160 degrees)*
  - 1 seconds – 140 degrees
  - 2 seconds – 150 degrees
  - 3 seconds – 160 degrees
  - 4 seconds – 170 degrees
- Each topping takes one second to complete.
- Getting the raw burgers and buns doesn't need wait time.
- All and any condiments on top of the burger take 1 second to complete.
- Toppings must go on top of the burger.
- Buns can be kept at room temperature.

Future Burger







Applying These Ideas to Your Classroom

Turn to a neighbor and discuss:

How can some of the ideas presented through these activities be used in your classroom?

How would you modify the activities to work for one of your content standards?

Business Process Simulation Modeling

https://portal.ozobot.com/lessons/detail/business-process-modeling

This activity has students think about how to turn ideas into models and then test them by using data collection methods, especially in situations where there may be multiple variables

1. ***A radio station wants to set up a telethon to help raise money for a local band to attend the Macy's Thanksgiving Day Parade. They will be collecting pledges for 12 hours and want to know how many calls each operator should expect to receive in one hour during this time based on average call times between 3-10 minutes.***

2. ***They know that people generally pledge between $20 and $120 per call, so they want to determine about how much they will raise in the 12 hour time period by randomly choosing pledge amounts.***

Business Process Simulation Modeling

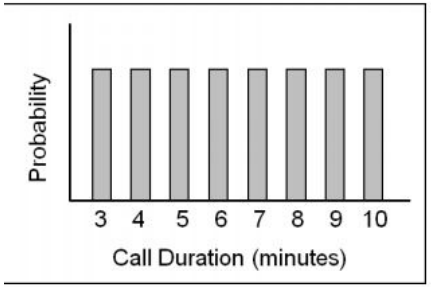
https://portal.ozobot.com/lessons/detail/business-process-modeling

1. ***A radio station wants to set up a telethon to help raise money for a local band to attend the Macy's Thanksgiving Day Parade. They will be collecting pledges for 12 hours and want to know how many calls each operator should expect to receive in one hour during this time based on average call times between 3-10 minutes.***

If there is an equal likelihood that each call will last for one of these intervals of time, how do we represent this information so that the Ozobot will randomly choose these durations? (3 minutes to 10 minutes)

(HINT- Ozobot follows solid lines and turn randomly at intersections)

If an operator works for an 8 hour shift, how many calls should they expect to receive?

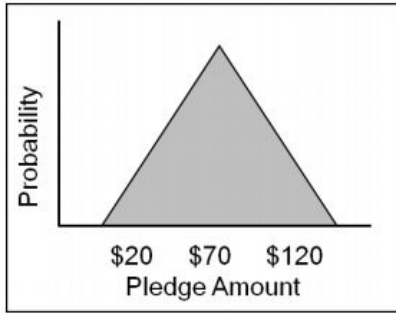


Business Process Simulation Modeling

https://portal.ozobot.com/lessons/detail/business-process-modeling

2. A radio station wants to set up a telethon to help raise money for a local band to attend the Macy's Thanksgiving Day Parade. They know that people generally pledge between $20 and $120 per call, so they want to determine about how much they will raise in the 12 hour time period by randomly choosing pledge amounts. They know from their work in the past that generally callers pledge the following amounts:

- ⅕ of callers pledge $20
- ⅖ of callers pledge $70
- ⅕ of callers pledge $120
- ⅕ of callers pledge either $30, $40, $50, $60, $80, $90, $100, or $110



How do we represent this information so the Ozobot will randomly d[illegible] amounts?

Business Process Simulation Modeling

What other variables could you include and model using the Ozobots?

Are we missing data that could help us with our calculations?

Can students represent this information in various ways?

What Ozobot codes could you use to make the Ozobot move more quickly through the models?

How could you modify this activity for your classroom?

Program Simulator

https://portal.ozobot.com/lessons/detail/program-simulator

This activity helps you learn how to read a program and then make your ozobot move throughout that program. It teaches students how to think:

- logically, and in sequential order
- about using specific vocabulary
- about how to precisely communicate instructions

This activity could be made easier or harder depending on your students abilities and does not necessarily need Ozobots to complete the tasks

Snow Plow

https://portal.ozobot.com/lessons/detail/ozo-plow

This activity introduces a real world model to have students control a robot to complete a task

Simulation of a Robotic Warehouse

https://portal.ozobot.com/lessons/detail/simulation-robotic-warehouse

This activity helps students simulate the job of picking items in a warehouse to complete orders.

Vacuum Cleaner Simulation

https://portal.ozobot.com/lessons/detail/evo-vacuum-simulation

Create a program that will allow a vacuum cleaner to clean a room in a pattern without bumping into the walls. This introduces the use of sensors

Robots in the world around us

Robots help at home- https://blog.ozobot.com/2018/04/03/evos-buddies-15-robots-help-around-home/

Robots in the World- https://blog.ozobot.com/category/robots-in-the-world/

Additional Ideas

The Path of a Traveling Salesman-
https://portal.ozobot.com/lessons/detail/basic-training-3

Learning about Dorothy Vaughan and Fortran-
https://portal.ozobot.com/lessons/detail/dorothy-vaughan-fortran

The Odyssey and Creating a Point of View-
https://portal.ozobot.com/lessons/detail/ozobot-odyssey

Collect Clean Energy-

https://portal.ozobot.com/lessons/detail/clean-energy-cruise

Additional Ideas

Fashion Runway- https://blog.ozobot.com/2018/06/07/builtwithozoblockly-evos-fashion-runway/

Construction Zone Challenge-

https://portal.ozobot.com/lessons/detail/construction-challenge

Ozobot Job Hunt- https://twitter.com/i/moments/980505010881544192

https://blog.ozobot.com/category/every-job-is-a-steam-job/

Automatic Breaking- https://portal.ozobot.com/lessons/detail/automatic-breaking

Ozobots in Action - Videos (Middle)

Oregon Trail
http://blog.ozobot.com/2018/04/30/creators-of-the-month-third-graders-bring-back-the-oregon-trail/

Ozobots and Math
http://learningchambers.blogspot.com/2016/10/how-to-integrate-ozobots-into-your-math.html#more

STEAM Stories
http://blog.ozobot.com/2018/03/27/creator-of-the-month-ms-ligouris-murder-mystery-stories/

Ozobot Lessons and Resources

Try using OzoBlocky- https://ozoblockly.com/
Watch the tutorial, view the Get Started section, or start at the Novice section

Ozobot Lessons- https://portal.ozobot.com/lessons
Check out Ozobot on Twitter or Facebook for great ideas being posted by teachers

ITC Ozobot Resources- https://www.winthrop.edu/itc/default.aspx?id=45884

Ozo-Blog- https://blog.ozobot.com/

Webinars and PD-
https://ozobot.com/stem-education/webinars-and-professional-development

Discounts on Ozobots

If you are interested in purchasing Ozobots, you will receive a 10% discount if you purchase using an Ozobot Ambassador code, which also assists us in purchasing more Ozobots for use with our teacher candidates here and in your classrooms!

Winthrop uses the following Ambassador Code:
OZOEDU-3254bf6s
https://shop.ozobot.com/
Enter this code at checkout for 10% off your purchase.

Contact Information

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