SASTA OLIPHANT SCIENCE AWARDS

SOUTH AUSTRALIAN SCIENCE TEACHERS ASSOCIATION

Highly Commended

Programming, Apps & Robotics

Year 5-6

Oaki Bellison

Belair Primary School


2
1
Level
Paper and Cardboard

Bin it Right

By Oaki Bellison

Aim

When I looked in the bins in my school, I realised every single one was filled with incorrectly sorted rubbish. I felt I needed to make a digital game to teach the students how to correctly sort their rubbish. The game is based on the South Australian Government schools' four bin waste management system, using rubbish that the students at my school usually throw away.

I thought the best way to teach students to correctly sort rubbish would be to motivate them to learn using a fun game and to show them what happens if they get it right or wrong. If they put an item in the correct bin, a pop-up will tell them the positive impact of them putting it in the right bin and give them a point. If they put the item in the wrong bin, a pop-up will tell them the negative impact that would have on the environment and which bin would be better. To motivate students to get the answers right, they have two shops that they can spend their points in: one for an avatar upgrade and one for a speed boost. If they get 150 points, they win.

Scientific Purpose

My game teaches important concepts from environmental science. Its scientific purpose is to show how choices we make at school impact waste management systems (the way communities collect, sort and recycle rubbish). By showing the students what happens when they get it in the wrong or right bin, it teaches them about how they can have an impact on environmental issues like climate change and making sure we don't run out of important resources like water, trees, oil, and metals.

Potential Applications

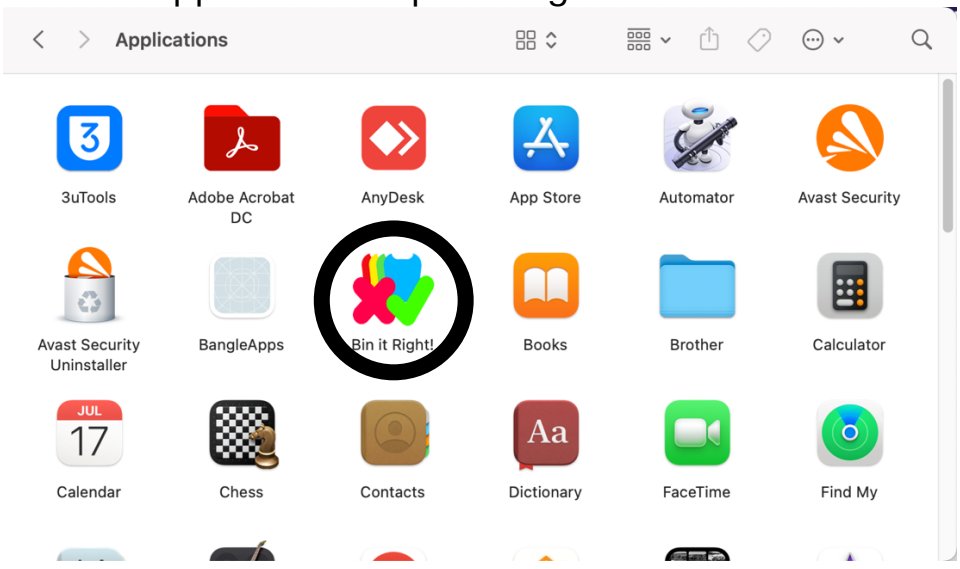
The "Bin it Right" game has been designed for use in schools to teach students about what bins to put rubbish into. If it is successful at changing behaviour at my school, I could put it online for use in other schools across South Australia. If students learn how to correctly sort rubbish at school, they can use this knowledge at home and in the community. If most people are sorting rubbish correctly every day, then it will have positive impacts on the environment.

Computer / Device Needed to Run the Program

"Bin it Right" is compatible with MacOS, Windows, Linux operating systems and works on both 64-bit, 32-bit ARM and Apple Silicon processors. If the device doesn't support any of these, it may be able to run the HTML version which opens it up in a web browser.

Instructions

1. Click on the link to download the program, then extract the zip file, then double click the application to open the game.



2. After pressing start, use the arrow keys, W, A, S, D keys, trackpad, X, A, B, Y buttons on a controller or your touchscreen to move your avatar around the schoolyard.

3. Move the avatar to the pile of rubbish to pick up an item.

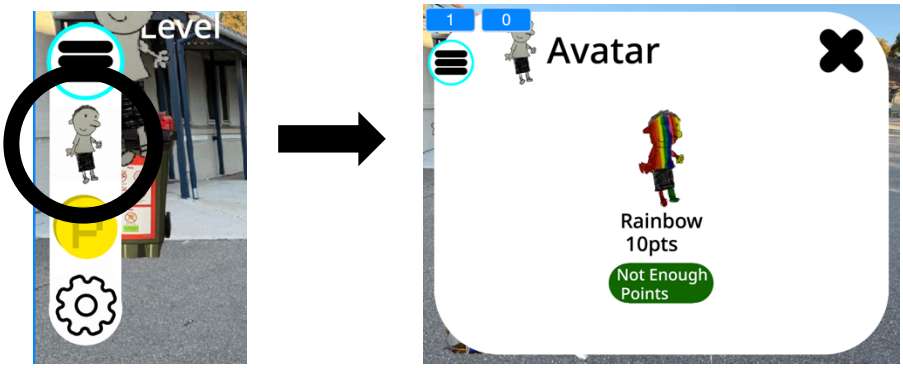
4. Move your avatar to the bin you think that item should go in, then press “confirm” by clicking the button with a trackpad or touchscreen, pressing “space” on a keyboard, or “R” or “start” on a controller.

5. A pop-up will appear telling you if it is correct or incorrect.

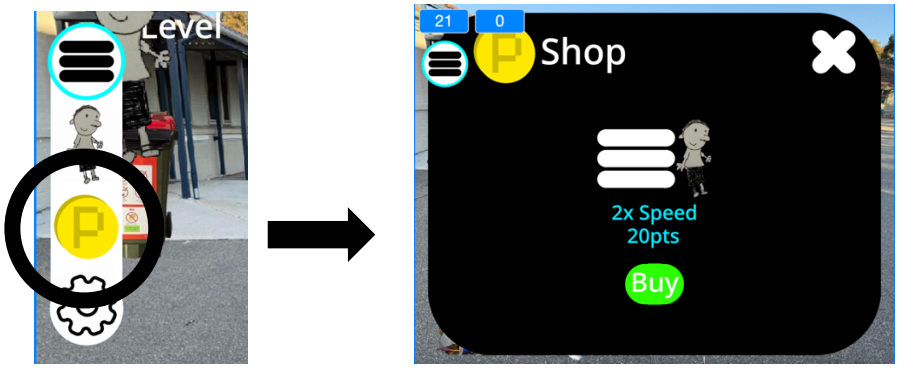
6. Read the pop-up to learn what happens if you make that choice in real life.

7. Press “continue” by clicking the button with a trackpad or touchscreen, pressing “space” on a keyboard, or “R” or “start” on a controller. If you were correct, you will get a point (shown in the top left corner of the screen).

8. Once you have earned 10 points, you can click on the avatar on the dropdown menu to buy and activate a rainbow avatar.



9. Once you have earned 20 points, you can buy a speed boost by clicking on the yellow coin, then clicking on “buy”. This will make your avatar move faster.



10. If you ever need to start-over, go to the dropdown menu, click on the settings icon, then click what you want to reset.

To close the shop windows, click on the cross icon in the top right corner of the window.

11. Get 150 points to win the game!

Download the game by clicking a link below:

Windows 64 Bit: https://www.dropbox.com/scl/fi/raydwi7jxeggrwusq5fvk/Bin-it-Right-Windows-64-Bit.zip?rlkey=29q4mh3w4hq6zyv82alk4mcrh&st=183xmu5n&dl=0
Windows 32 Bit: https://www.dropbox.com/scl/fi/luz25r0uwmakkzh0083ba/Bin-it-Right-Windows-32-Bit.zip?rlkey=7le37cp2fjm5v7pn6x4faan9h&st=xrp5jkyk&dl=0
Windows ARM: https://www.dropbox.com/scl/fi/c8myunyw7y554ivosfi77/Bin-it-Right-Windows-ARM.zip?rlkey=itp7qt2zih8dw2v6lvlnxqeoq&st=y8wshfv1&dl=0

Linux 64 Bit: https://www.dropbox.com/scl/fi/ox145bhvn4ufpn5yqgsov/Bin-it-Right-Linux-64-Bit.zip?rlkey=g7z0vxraafi3vvpdljixocle5&st=092n5fci&dl=0
Linux ARM 64 Bit: https://www.dropbox.com/scl/fi/w23l9yowovx96d8v8vspl/Bin-it-Right-Linux-ARM-64-Bit.zip?rlkey=o2lo0pqpo69qkqesxenxv3puw&st=qz7p05mm&dl=0
Linux ARM 32 Bit: https://www.dropbox.com/scl/fi/m5kjor27axdhf3ahm6jvm/Bin-it-Right-Linux-ARM-32-Bit.zip?rlkey=alrwfgkbuhlyz1uulm3iq2qeq&st=vw63ovx9&dl=0

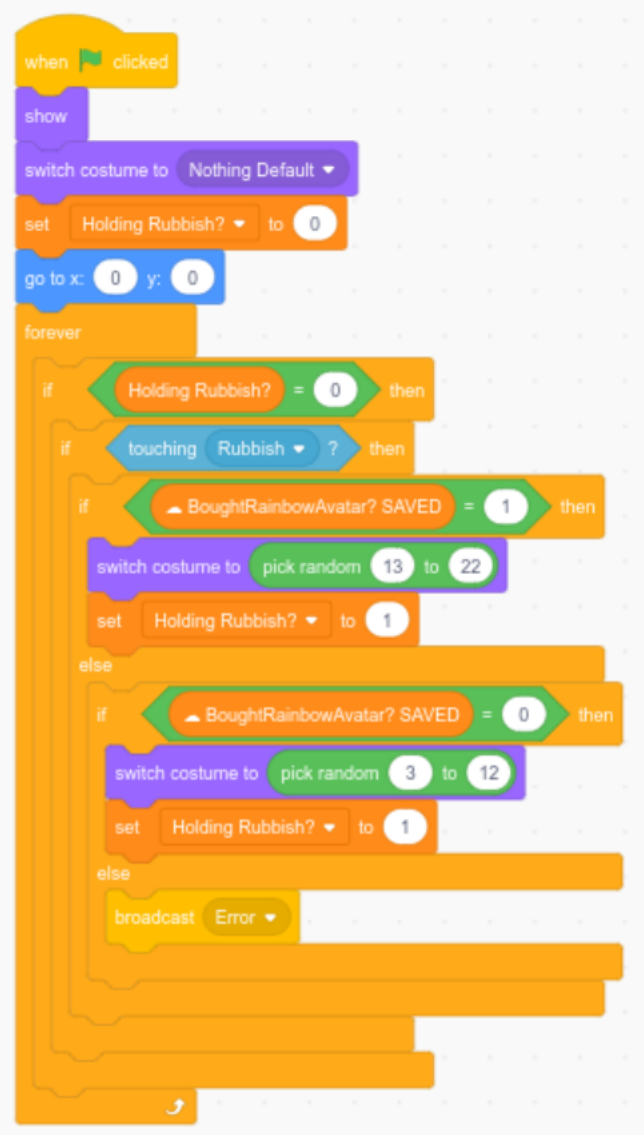
macOS: https://www.dropbox.com/scl/fi/mk2meaa3mrec56xxf1n21/Bin-it-Right-macOS.zip?rlkey=10hdr128kduuhdwqhizybfpoa&st=937z12tc&dl=0

HTML: https://www.dropbox.com/scl/fi/llobkbfdasvfppvqp7di4/Bin-it-Right.html?rlkey=3tnx4mkuflxdd11skrx4udh9w&st=1ud57kfx&dl=0

Program and Explanation

“Bin it Right” was built on Scratch and packaged into a program with Turbowarp.

Examples of the code:

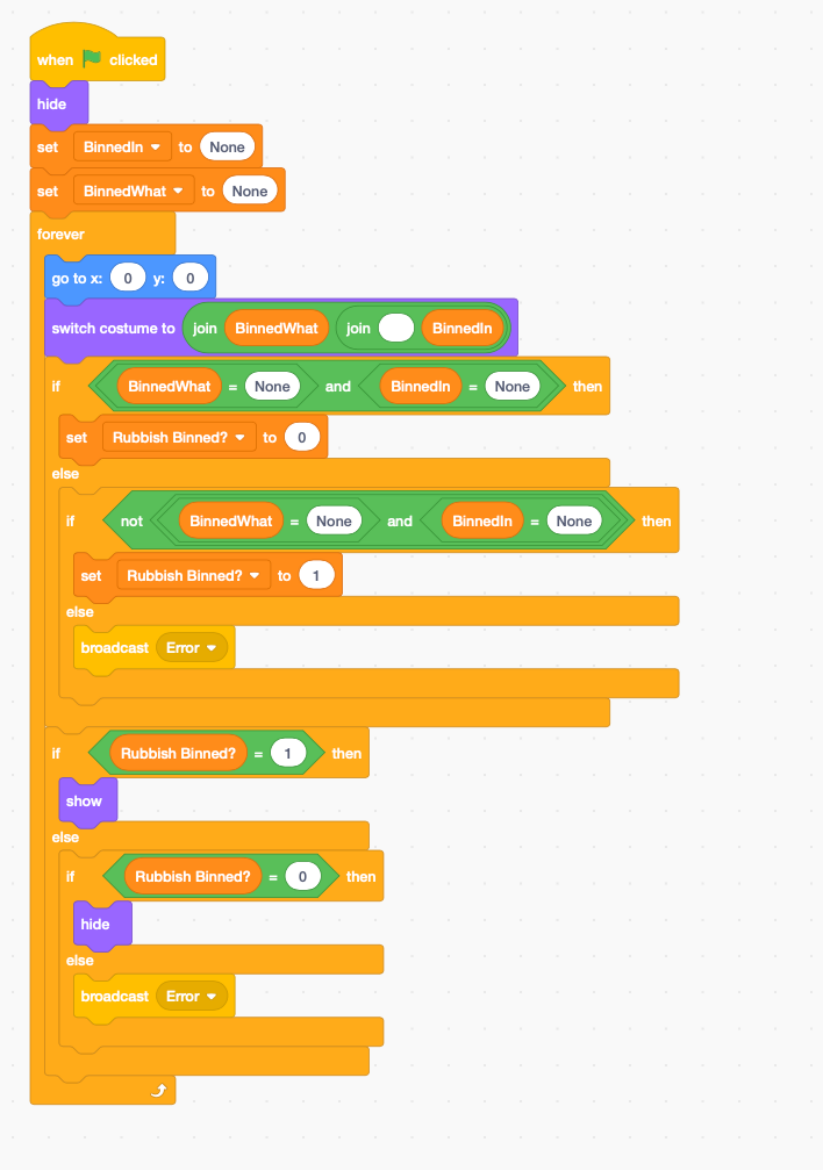


This shows the code for randomly selecting some rubbish from the rubbish pile and putting it in the avatar’s hands.

This shows the code for moving the avatar down. It also checks if you are not just trying to go down, but left or right and down diagonally.

This shows the code for detecting if you put it in the right bin or the wrong bin.

This shows the code for when you activate, deactivate or buy the “speed upgrade”.



This shows the code for detecting if you have put anything in the bin and also for deciding what information to give depending on whether you are correct or incorrect.

Acknowledgement of External Support

I would like to acknowledge and thank the following people for helping me with my project:

Mummy A – For helping me with the research and giving me guidance and support when writing what happens when each item goes into each different bin. She also helped me put my report together.

Julie from the school canteen – for helping me understand which bin lunch bags need to go in and why.

Techspace Learning (Robotics Club) – for giving me feedback when I asked which layout looked the best.

My class at school - for giving me feedback after I demonstrated my unfinished game.

My teacher, Catie - for recording the feedback given by my class.

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