MOBILE TECHNOLOGIES LESSON PLAN

OLTD 508 Assignment #2

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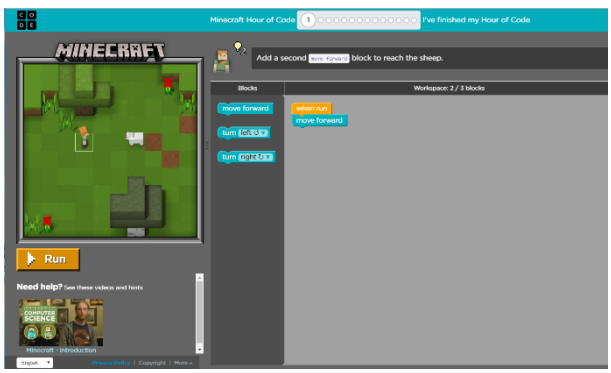
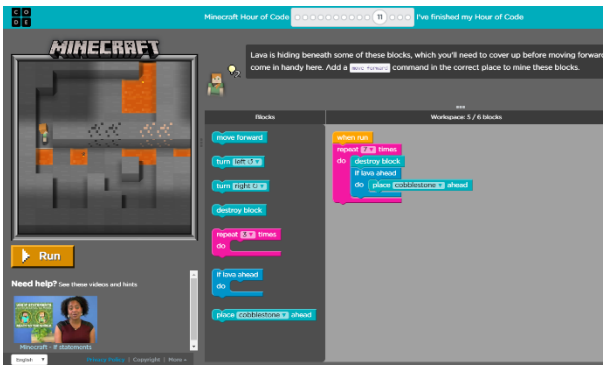
BRIEF SYNOPSIS OF THE "TRADITIONAL ACTIVITY/LESSON"

The lesson that I have chosen to update using mobile technology is the intro to coding lesson that I use in Digital Literacy 8 (previously Info. Tech. 8). In our school grade 8 students do a rotation through the 3 ADST subject areas of Information Technology, Home Economics, and Technology Education. They are in each course for one third of the semester, which works out to approximately six weeks. The main focus of their six weeks in Info. Tech. is to learn the basics of coding. The age group of these students is 13-14. In this lesson I introduce the concept of coding by showing a video and talking about how the first step to learning how to code is learning how to think like a computer. I then have students complete the Minecraft Adventurer hour of code lesson on Code.org (https://code.org/minecraft) and complete a short quiz on our Schoology LMS course page to reinforce the main coding concepts learned in the Minecraft exercise (https://www.schoology.com/). This lesson is done on desktop computers using a web browser and takes approximately 1 hour to complete. The learning outcome of this lesson is to have students learn the basics of computational thinking by using blockly style code to make a sprite (character) move around the screen and perform tasks. The concepts they learn in this lesson transfer very well to Scratch (https://scratch.mit.edu/), which is the web-based coding platform we use for the remainder of the unit.

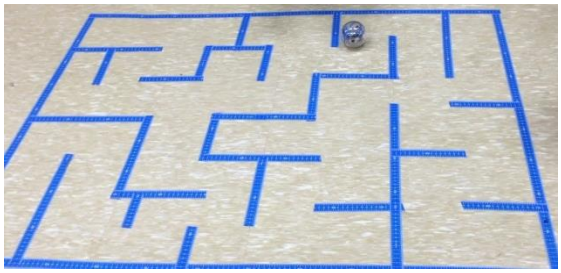




UPDATED VERSION UTILIZING MOBILE TECHNOLOGIES

The new version of this lesson I have created also uses blockly style coding to teach basic computational thinking concepts the students learned in the Minecraft lesson, except in this version students will use a mobile device to write and send code to an actual robot that makes it move to navigate a maze.

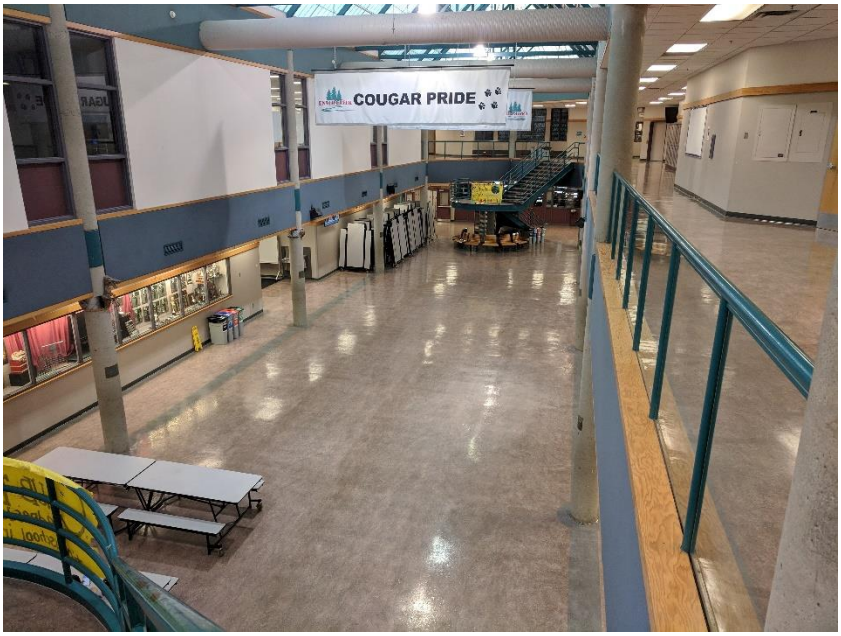
Students will write the code required for a Sphero SPRK+ robot to navigate a maze that is drawn on a piece of poster board floor using Sphero maze tape. Students will create the mazes on a piece of white poster board using an image they find on the internet, their creativity, and tape. Students will then trade their completed mazes with another student. Students must then use the Sphero Edu app to write the code required for their SPRK+ robot to successfully navigate the maze and send the code to their robot using Bluetooth on their mobile device.



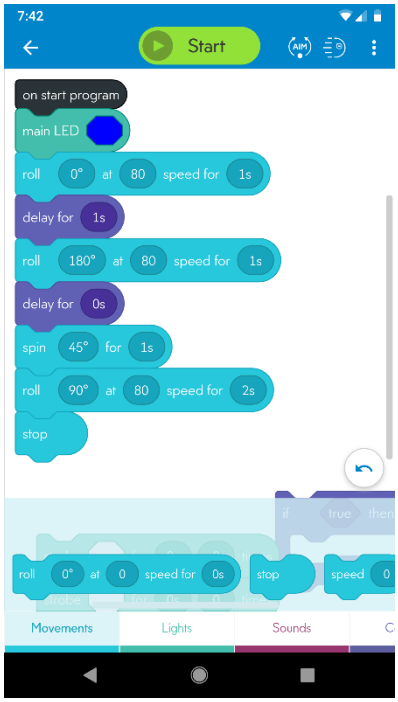
My inspiration for this lesson is two Sphero SPRK+ coding robots that my school purchased in May for our department to test out. If I were able to order a class set of these I could use them to put this new lesson plan into practice. The image below is of a class set of Spheros. In our district tech catalougue Sphero SPRK+ robots cost $149.95 each or $1599.95 for a set of 12 as pictured below.

LESSON LOGISTICS

1. Students will be given a school provided iPad or they may use their own personal device.
2. The class will move out of the computer lab and down to the Quad area in the school where there is more space.
3. Students will use the school WIFI and a web browser app such as Google Chrome or Apple Safari to find a picture of a maze that they will use tape to recreate on a poster board.
4. Students will take a picture of the maze they create and post a picture of it to a discussion form on the class Schoology page using the Schoology app on their mobile device.
5. Students will trade mazes with another student.
6. Students must use the Sphero Edu app and a Sphero protractor to write the code required for their SPRK+ robot to navigate the maze.
7. Students will use Bluetooth to send the code from their mobile device to their Sphero robot.
8. Students will take a screenshot of their completed code and use the camera on their mobile device to film their robot completing the maze.
9. Students will upload the screenshot of their code and the video of their robot completing their maze to the class discussion form on Schoology as a reply to the student who posted a picture of the maze.



The Quad



Sphero Edu App

RESOURCES REQUIRED

- 20 Sphero SPRK+ robots (https://www.sphero.com/sprk-plus)
- 20 rolls of Sphero maze tape.
- 20 Sphero protractors for measuring angles
- 20 mobile devices running iOS or Android (school provided iPads or student's personal mobile devices)
- Sphero Edu app installed on all devices (https://play.google.com/store/apps/details?id=com.sphero.sprk)
- Schoology app installed on all devices (https://play.google.com/store/apps/details?id=com.schoology.app)
- Camera installed on all devices
- 20 poster boards
- Large open space for students to use tape to draw the pattern they choose on the floor
- WIFI

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Content: Students will use the internet view the assignment instructions and the discussion form on the Schoology mobile app. Students will use the web browser to look up a maze pattern for another students SPRK+ robot to follow.

Compute: Students will use the Sphero Edu app, WIFI, and Bluetooth to create and send code to their Sphero SPRK+ robot.

Communicate: Students will send the code from their mobile device to the SPRK+ robot. Students will post a photo of their maze, a screenshot of their code and a video of their robot completing the maze to the class LMS for their classmates and teacher to see via the Schoology app.

Capture: Students will use the camera on their mobile device to take a photo of the maze the create and record their robot carrying out the code they have written for it to complete a classmate's maze. Students will take screenshots of their code.

ADVANTAGES & DISADVANTAGES OF MOBILE DEVICE IN PLACE OF PAST METHODS

I believe that the mobile version of this lesson has many advantages over the more traditional one I currently use in the computer lab. First, I believe that having students move out of the sit-down classroom environment and down to the quad will get them moving around which has been proven to make them more alert and stimulate more brain activity. Second, I think that being able to tangibly see the code they write making an actual robot move is a more powerful learning experience then watching a sprite move on a computer screen. This also allows students to see that coding is used for a lot more than just video games and may also inspire them to join the school robotics club and learn more about coding on their own time. Third, I think that this new lesson requires more critical thinking and problem solving than the Minecraft lesson does. Students will make a lot more mistakes in this lesson but they will also learn how to correct them and troubleshot coding problems more effectively.

The main disadvantage to this mobile version of the lesson is cost. I currently only have access to 2 Sphero SPRK+ and it would require the school spending over $2500 to purchase 18 more Sphero robots to make a class set. Another disadvantage is that not all grade 8 students have mobile devices so I would need to rely on school iPad cart which may be booked on the day I would like to do this lesson.

APPS AND RESOURCES USED

Code.org (https://code.org/minecraft)

Schoology LMS (https://www.schoology.com/)

Schoology app (https://play.google.com/store/apps/details?id=com.schoology.app

Sphero (https://www.sphero.com/sprk-plus)

Sphero Edu app (https://play.google.com/store/apps/details?id=com.sphero.sprk

Quinn, C (2018). *Designing mlearning*. Retrieved from http://www.worklearnmobile.org/mobile-experts/designing-m-learning-clark-quinn-quinnovation/