Student Centered: K-8 Culturally Responsive Coding Experiences

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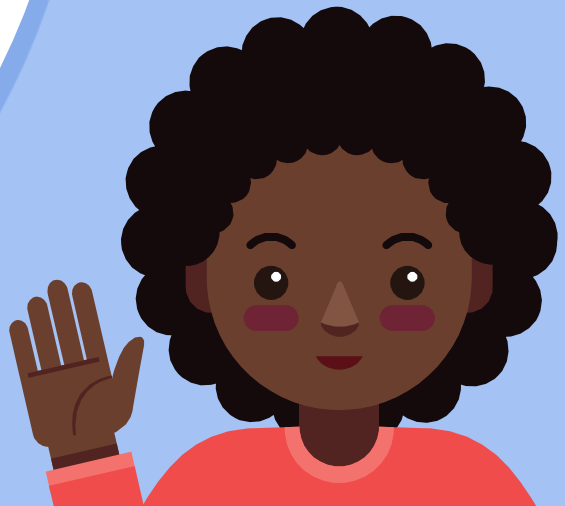


Guiding Questions

1. What is culturally responsive pedagogy? How will a culturally responsive pedagogical stance inform our teaching and learning practices?

2. How do we honour and amplify student voice and culture in learning environments?

3. How might student voice and culture be integrated in coding learning experiences?

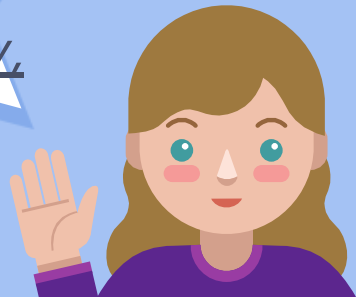
Minds On

What word(s) come to mind with culturally responsive pedagogy?

Culturally Responsive Pedagogy

Culturally responsive pedagogy is not about "cultural celebrations," nor is it aligned with traditional ideas around multiculturalism. It involves careful acknowledgement, respect and an understanding of difference and its complexities.

Capacity Building Series:Culturally Responsive Pedagogy, 2013



What is Culturally Relevant Education?

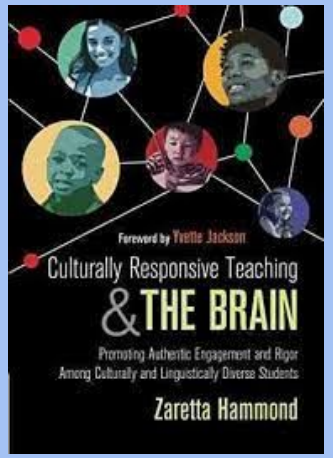
Academic Success or the intellectualism students gain as result of classroom instruction and learning

Cultural Competence or ability to help students appreciate and celebrate their cultures of origin while gaining knowledge of and fluency in at least one other culture

Sociopolitical Consciousness or the ability to take learning beyond the confines of the classroom using school knowledge and skills to identify, analyze, and solve real-world problems

(Ladson Billings, 2014 p. 75)

https://vimeo.com/502449055



DISTINCTIONS OF EQUITY

It is important to distinguish between three key areas when engaged in equity work. We often confuse their particular purposes. As a result, we use them interchangeably when they are not. Below is a simple chart to help you understand the distinctions between them. Remember, it is NOT a continuum. You cannot begin with multicultural education and believe it will lead to culturally responsive instruction. Why? CRT is focused on the cognitive development of under-served students. Multicultural and social justice education have more of a social supporting role.

MULTICULTURAL EDUCATION	SOCIAL JUSTICE EDUCATION	CULTURALLY RESPONSIVE EDUCATION
Focuses on celebrating diversity.	Focuses on exposing the social political context that students experience.	Focuses on improving the learning capacity of diverse students who have been marginalized educationally.
Centers around creating positive social interactions across difference. Diversity and inclusion efforts live here.	Centers around raising students' consciousness about inequity in everyday social, environmental, economic, and political situations. Anti-racist efforts live here.	Centers around the affective & cognitive aspects of teaching and learning. Efforts to accelerate learning live here.
Concerns itself with exposing privileged students to multiple perspectives, and other cultures. For students of color, the focus is on seeing themselves reflected in the curriculum. **Social Harmony**	Concerns itself with creating a lens to recognize and interrupt inequitable patterns and practices in society. **Critical Consciousness**	Concerns itself with building cognitive capacity and academic mindset by pushing back on dominant narratives about people of color. **Independent Learning for Agency**

What is Culturally Responsive Pedagogy/Teaching?

An educator's ability to recognize students' cultural displays of learning and meaning making and respond positively and constructively with teaching moves that use cultural knowledge as a scaffold to connect what the student knows to new concepts and content in order to promote effective information processing. All the while, the educator understands the importance of being in the relationship and having a social-emotional connection to the student in order to create a safe space for learning.

(Hammond, 2015)

How will a culturally responsive pedagogical stance inform our teaching and learning practice?

When educators listen to student voice and use it to co-create the learning environment, students feel they are an integral part of a learning community, that they matter and that they have something of value to offer (Fielding, 2007). This empowers them to take responsibility for their own learning, and that of others, and to take risks and explore new ideas.

Teachers should select mentor texts to support students; reading, writing and thinking skills around the potential to cultivate students' *skills, identities, intellect and criticality*.

To love all children, we must struggle together to create the schools we are taught to believe are impossible: Schools built on justice, love, joy, and anti-racism.

"...teachers are ultimately the bridges between the students' world, their family's fund of knowledge, and the classroom experience."

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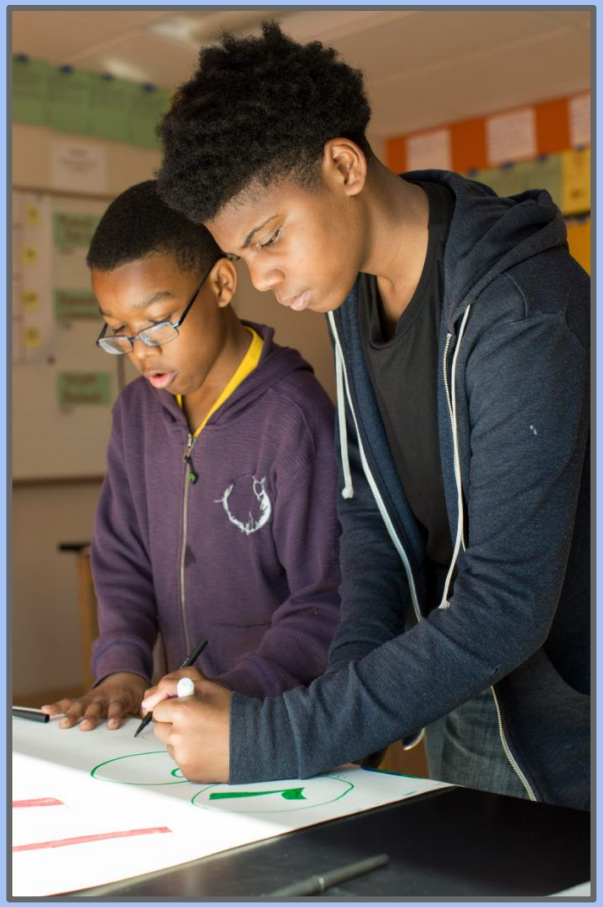
Capacity Building Series: Student Voice, 2013
https://bit.ly/3u4HycA



"Teachers should select mentor texts to support students; reading, writing and thinking skills around the potential to cultivate students' *skills, identities, intellect and criticality*"

(Muhammad, 2020)

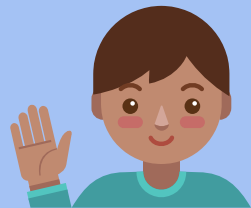
To love all children, we must struggle together to create the schools we are taught to believe are impossible: Schools built on justice, love, joy, and anti-racism.

(Love, 2019)

"...teachers are ultimately the bridges between the students' world, their family's fund of knowledge, and the classroom experience."

(Moll, 2005)

What's in a Name?



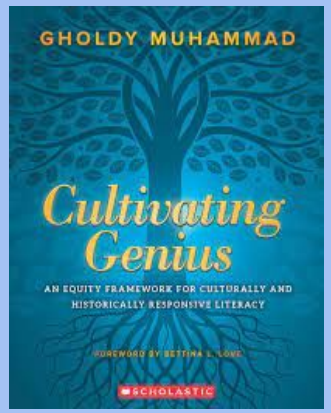
Tell Our Name Stories

Names & Society Critical Questions:

- What do our names reveal about our identities? What do they hide/reveal?
- What is the relationship between our names and our cultural identities?
- What do names suggest about the degree of freedom we have in society? Are some “names” treated differently than others?
- To what extent do we choose the names and labels others use for us?
- What parts of our identities do we choose for ourselves?
- What parts are chosen for us by others or society?

From *Facing History and Ourselves National Foundation* 2015, page 75

How might student voice and culture be integrated in coding learning experiences?



pg. 161

3rd–5th Grade Computer Science

Teacher: Patricia Wong

HRL Learning Goals: A Name Is Just a Name, Right?

Identity: Students will become more self-aware of their own identities and learn ways to respect other individualities.

Skill: Students will use the computer as a tool for generating ideas using computerized devices and systems through coding and programming.

Intellect: Students will learn the concepts of identity, diversity, and inclusion.

Criticality: Students will understand how diversity affects the world and how inclusion can build a better world for all.

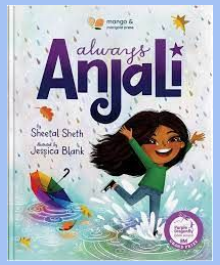
Layered Texts:

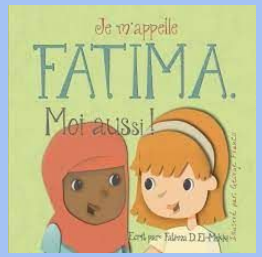
- YouTube video on names (https://www.youtube.com/watch?v=0EP80JclJuU)
- *My Name Is Sangoel* by Karen Lynn Williams and Khadra Mohammed
- short biographies of Michelle Obama, Sonia Maria Sotomayor, and Post Malone
- TED Talk on facial recognition software by Joy Buolamwini

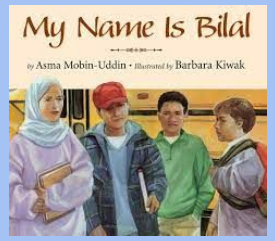
Name Stories: Mentor Texts to Support and Layer Student Learning

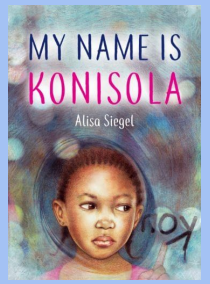
What story might you add?

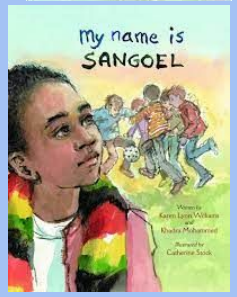
[Padlet Link]

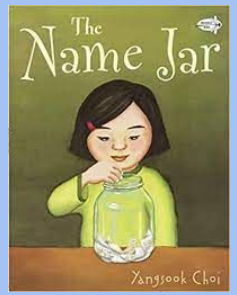


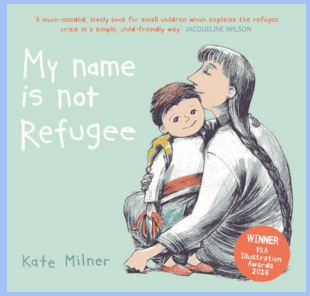


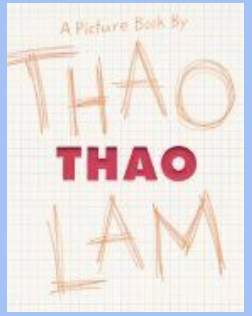


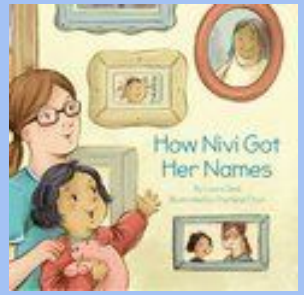


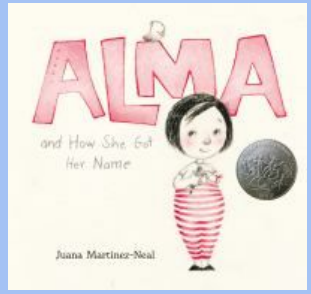


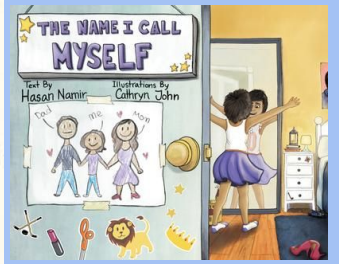








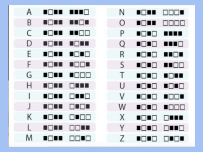




Let's Tinker and Explore!

Tell Our Name Stories: No Tech, Low Tech, High Tech

No Tech
Binary Jewellery



Low Tech
Beebot Emulator

Low Tech
Scratch Coding

1

3

5

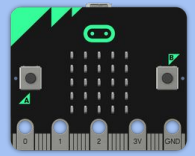
2

4

4

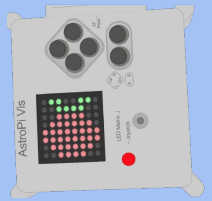
Low Tech
Binary Art- Google Slides /Jamboard

Low Tech
micro:bit



High Tech
Raspberry Pi SenseHAT

emulator



Tell Our Name Stories…. Binary Name Bracelet/Necklace

It is through our names that we first place ourselves in the world. Our names, being the gift of others, must be made our own…They must become our masks and our shields and the containers of all those values and traditions which we learn and/or imagine as being the meaning of our familial past.

From *Hidden Name and Complex Fate* by Ralph Ellison

<u>Name Stories Guiding Questions Framework:</u>

- Who named you?
- Does your name mean something?
- Does your family have a cultural naming practice?

Binary Name Bracelet/Necklace Framework

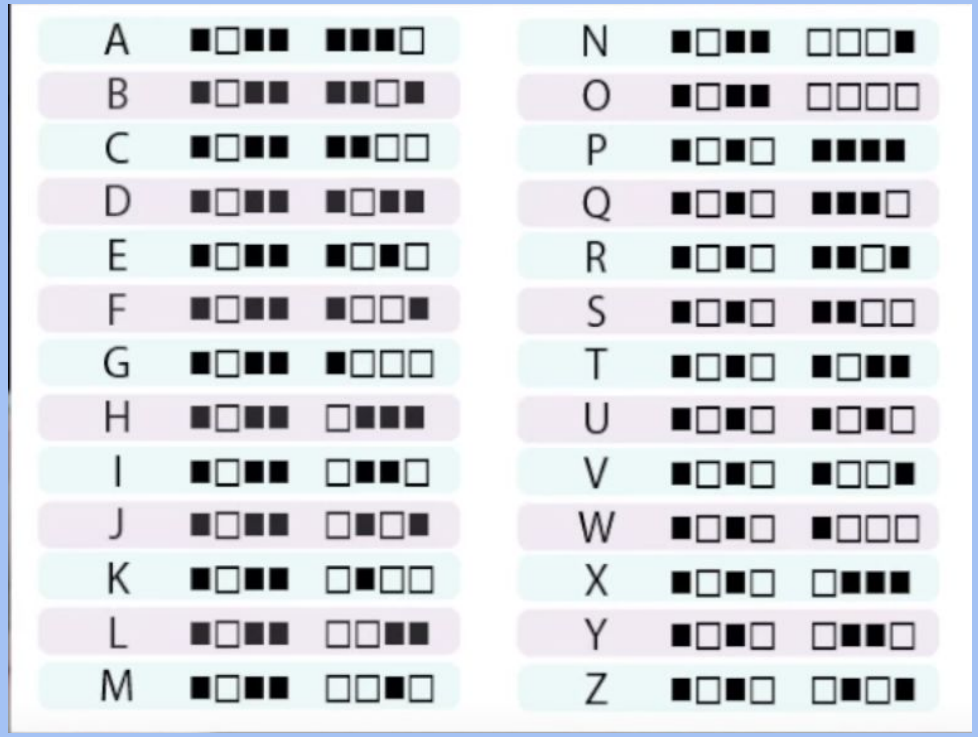
Learning Goals

Students will:

- Encode letters into binary
- Decode binary back to letters
- Connect the concept of storing initials on a bracelet to the storing of information on a computer

How might we use binary code to represent our names?

What mediums can we use to represent binary code?



Retrieved from Unplugged Binary Bracelets Lesson, CODE.org

Resources:

Primary Introduction of Binary Code Concept

ABC's of How to Read Binary

Use beads and crayons to create the letters A, B and C in binary code.

Supplies:
- Crayons
- Two Colors of Beads

Building Space

A 01000001 ○○○○○○○○

B 01000010 ○○○○○○○○

C 01000011 ○○○○○○○○

Building Requirement:
- Build the letters A, B, C with beads
- Color in the circles beside each binary letter.
- Color 0's = _____
- Color 1's= _____

Building Reflections:

What challenges did you have building each letter?

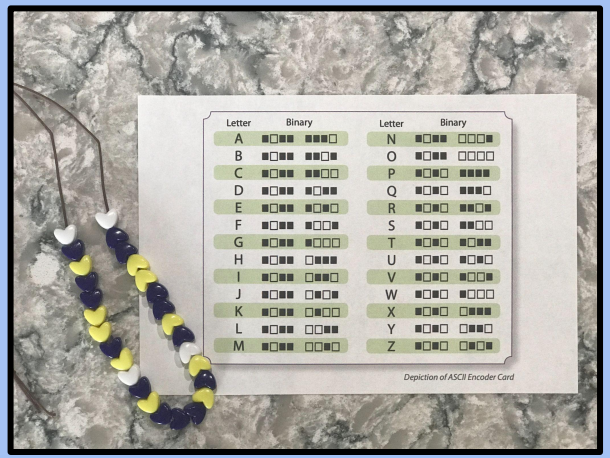
Data Collected:

A used ___ ○ beads & ___ ○ beads.

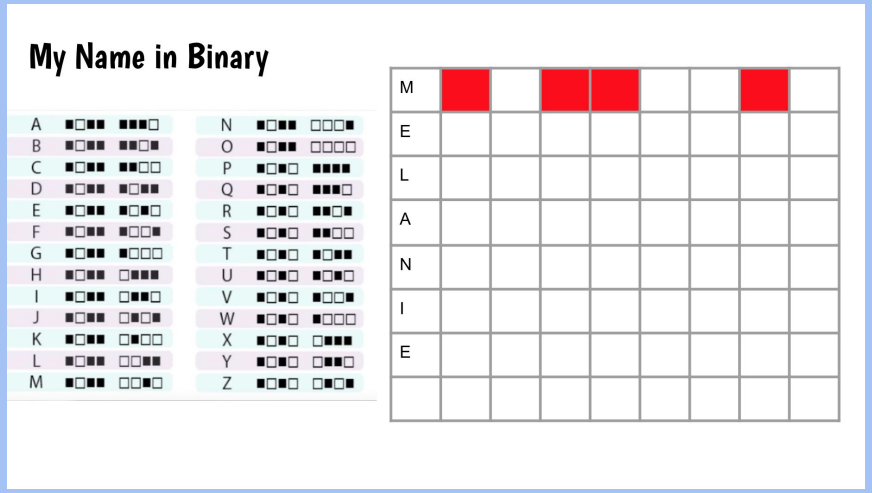
B used ___ ○ beads & ___ ○ beads.

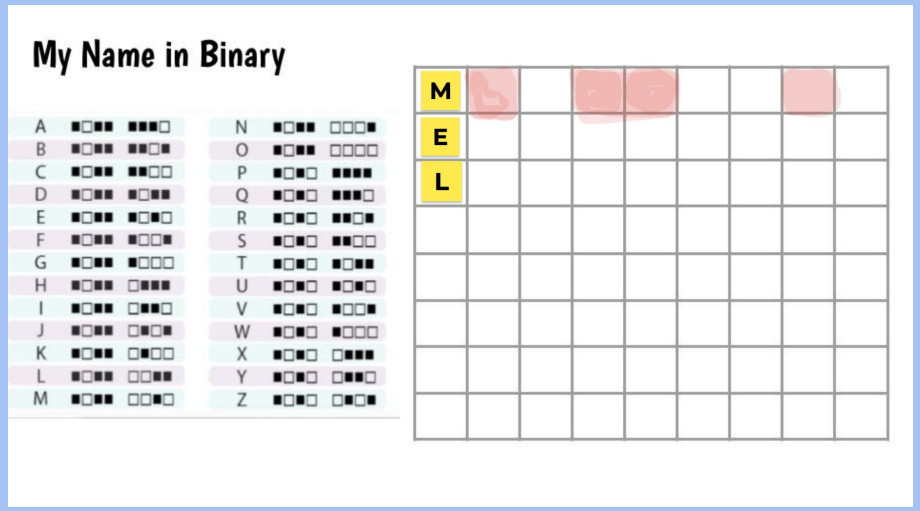
C used ___ ○ beads & ___ ○ beads

Created by JDaniel4sMom.com



My name in Binary - Google Slides or Jamboard



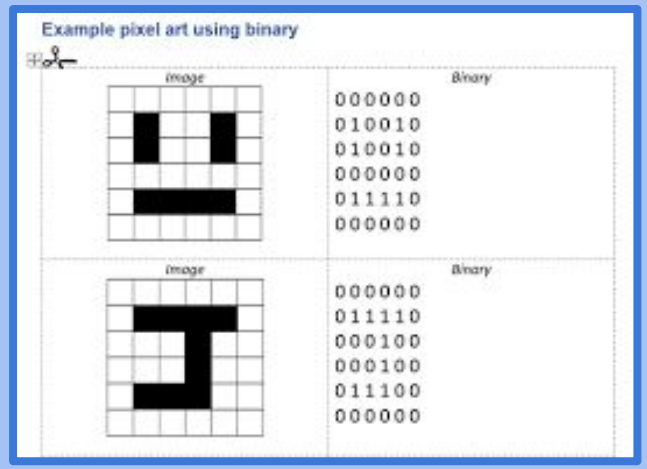


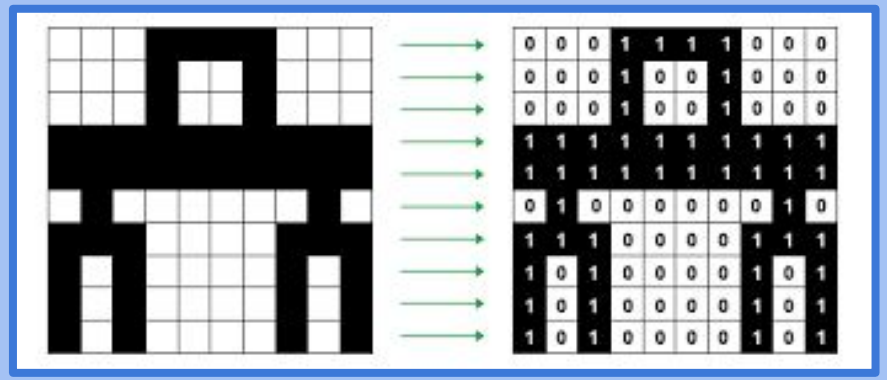
Google Slide Template

Jamboard Template

High Tech - Extension Using Binary Code and Pixelation

What is Binary Code?
Binary Code can be defined as a way to represent information (i.e. text, computer instructions, images, or data in any other form) using a system made of two symbols, which are usually “0” and “1” from the binary number system.

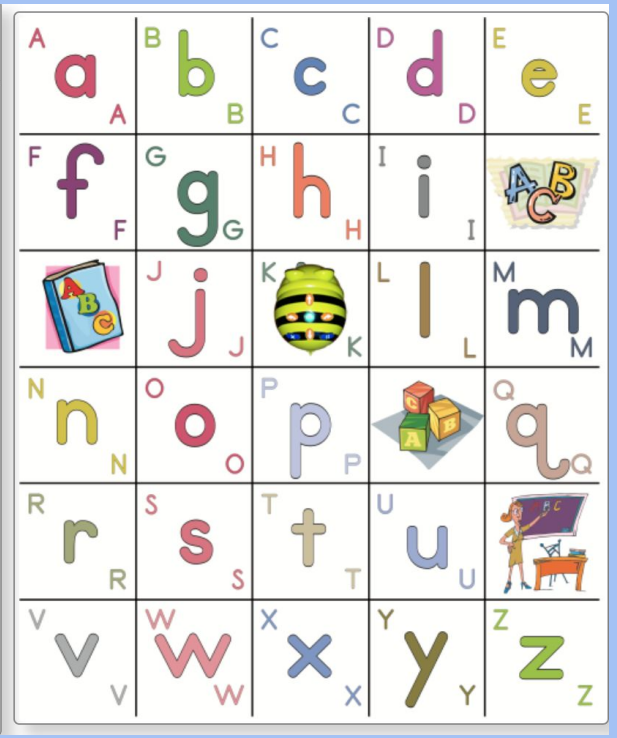




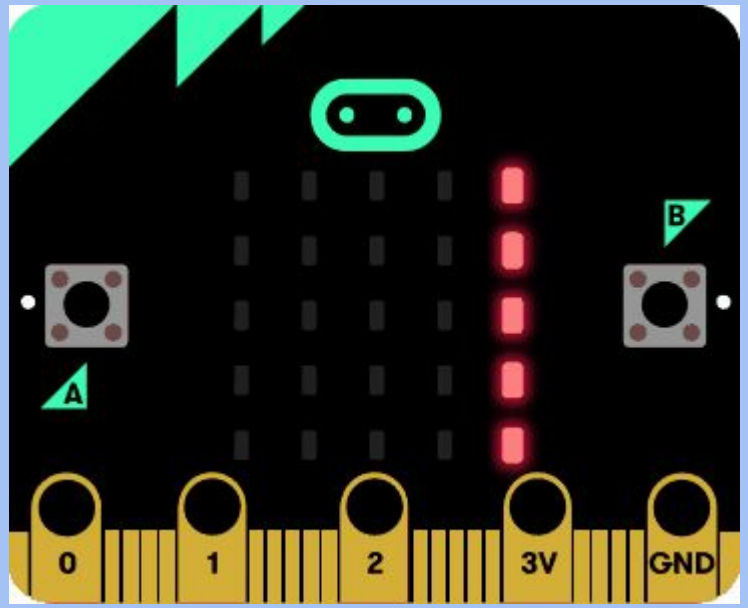
Pixel Art Template- Alice Keeler

Conditional Formatting Pixel Art Template
(using Google Sheets)

How might you program your initials/name with the Beebot emulator?

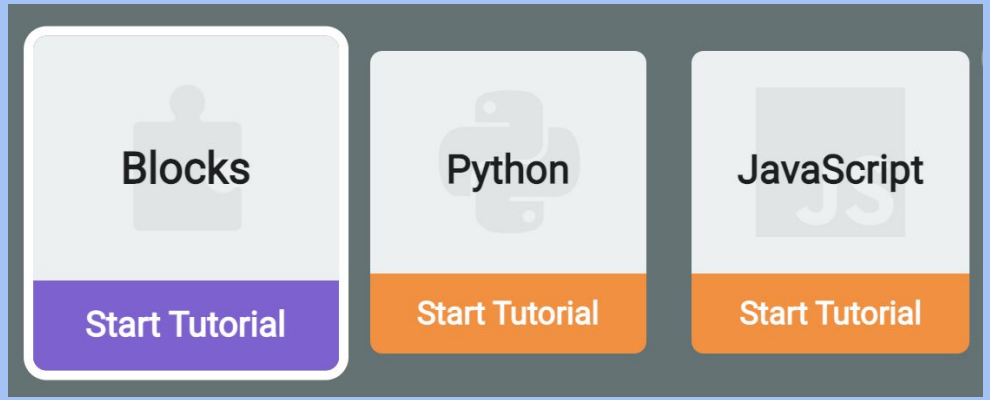


Code Your Name Using the Microbit



Let's experiment with the Tutorial!

Click here and follow the instructions.



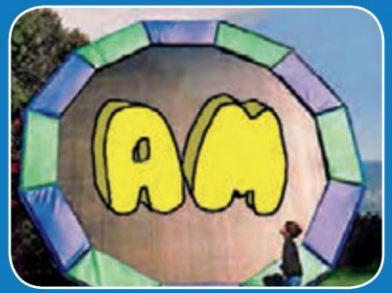
Microsoft Make Code

Micro:bit Classroom

Animate your Name on Scratch

Scratch Teacher Accounts

Animate a Name Cards



Animate the letters of your name, initials, or favorite word.

Animate Your Name with the SenseHAT Emulator

Displaying text

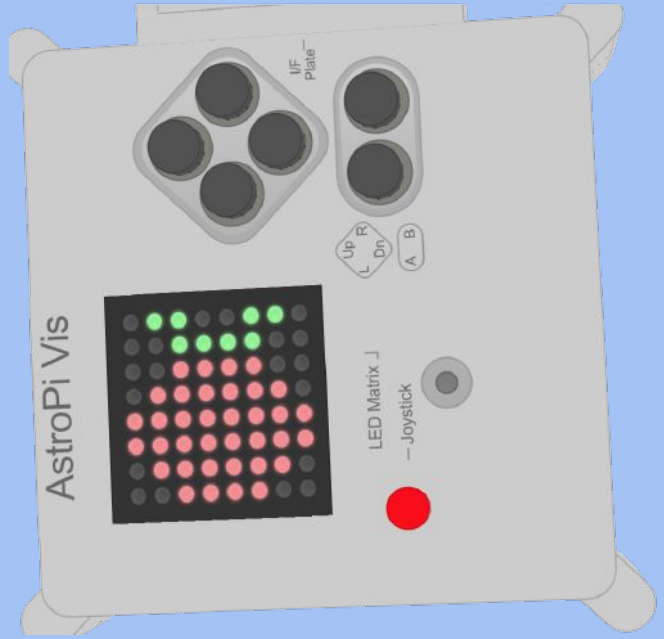
- Display the text “Astro Pi is awesome” on your Sense HAT’s LED display.

Show a message on the Sense HAT

We can change how the message is displayed by adding some extra **parameters** to the `show_message` command.

`scroll_speed`: affects how quickly the text moves across the screen. The default value is `0.1`. The bigger the number, the lower the speed.

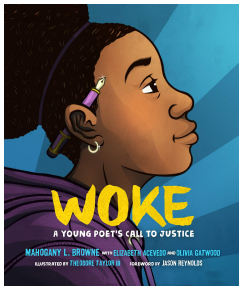
`text_colour`: alters the colour of the text and is defined via three values to specify red, green, and blue. These are also called RGB values.

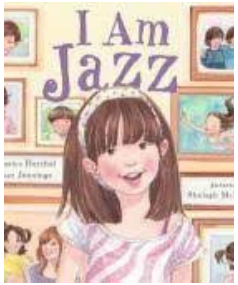


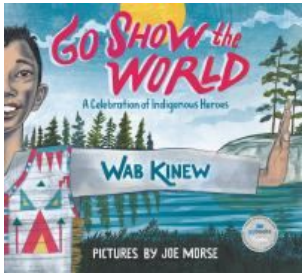
https://projects.raspberrypi.org/en/projects/getting-started-with-the-sense-hat/3

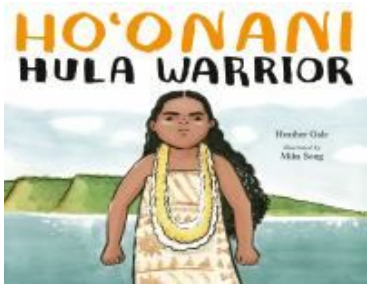
https://trinket.io/sense-hat

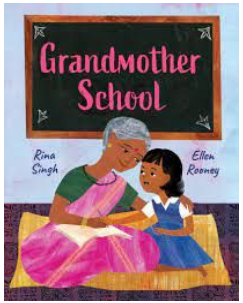
What other histories might we celebrate in story?

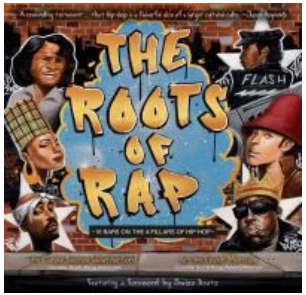




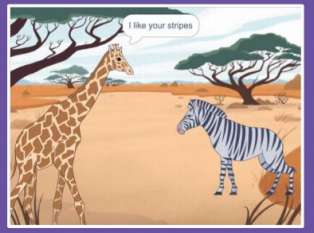








Create a Story Cards



Choose characters, add conversation, and bring your story to life.

Consider and Reflect:

Culturally Responsive Checklist

What communication barriers exist for students with print difficulties or learning exceptionalities?

What communication barriers exist for students who have varying cultural and linguistic backgrounds?

How might we approach learning through an asset driven stance? How might the affordances built into coding platforms capitalize student strengths and empower learners?

How do we align learning across the new Mathematics Curriculum?

Your Facilitators:

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Melanie Mulcaster
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Library K-12 PDSB
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Credits

Special thanks to all the people who made and released these awesome resources for free:

- Presentation template by SlidesCarnival
- Photographs by Unsplash
- Bettina L. Love quote from https://bit.ly/3vyio67
- Luis Moll quote from (2005)*Funds of Knowledge: Theorizing practices in households, communities, and classrooms.*
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