#### Lesson Plan Title: Ozobot Iditarod Mapping and Coding

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**Discipline / Subject: Technology** 

Topic: Ozobot Iditarod Coding

**Grade Level: 2-8** 

#### **Resources / References / Materials Teacher Needs:**

- Ozobots for coding
- Ozobot coding sheets
- iMovie app
- Enlarged Iditarod Maps traced onto butcher paper 1 per group

#### **Lesson Summary:**

- Before starting the lesson, students should practice making codes independently and honing the color coding skill
- make an original map by projecting the map onto a smartboard/wall and taping a piece of giant butcher paper to trace
- Have a parent volunteer copy the map/that year's race route for each group
- Begin the lesson by explaining the purpose of the lesson to create your story
  of the Iditarod on a large map using an Ozobot as a team
- Students are broken into teams to plan out which checkpoints they will select to use – I would not recommend more than 4 students/group
- Students then research the checkpoints and learn about the route, checkpoints and different aspects of the race they may be unfamiliar with
- They then are asked to come up with different actions that the Ozobot can
  perform that would make sense with things that might happen along the race
  (ex. zig-zag as slipping on ice, or pause for 3 sec. to show a mandatory rest)
- After they plan the actions and stops, they use the Ozobot coding sheets to draw a code directly onto the trail map
- Once this is done, they use a sharpie to color in the rest of the trail map a solid black for the Ozobot to follow
- Students then come up with a script of what they are going to say into the video in a reader's theater/play "script" format
- Then groups begin to then test the Ozobot, to make sure it is correctly performing the commands and makes it the entire length of the trail
- Students can then decorate around the map making sure pictures are not too close to the codes or black line
- After it is working consistently, groups then begin rehearsing for filming

- Once they are satisfied with their preparation, they begin using the iMovie app (or equivalent) to film their bot running the course – they can also use the camera feature then upload their video to the iMovie app to add effects and music
- These are then presented to the class and the teacher (for assessment)

#### **Standards Addressed: (Local, State, or National)**

- 1) Ohio Technology Standards:
  - a) Information and Communications Technology The understanding and application of digital learning tools for accessing, creating, evaluating, applying and communicating ideas and information.
    - i) Topic 1: Identify and use appropriate digital learning tools and resources to accomplish a defined task.
      - (1) With guidance, identify and use digital learning tools or resources to support planning, implementing and reflecting upon a defined task.
    - ii) Topic 3: Use digital learning tools and resources to construct knowledge.
      - (1) Interpret images, diagrams, maps, graphs, infographics, videos, animations, interactives, etc. in digital learning tools and resources to clarify and add to knowledge.
      - (2) Create artifacts using digital learning tools and resources to demonstrate knowledge.
    - iii) Topic 4: Use digital learning tools and resources to communicate and disseminate information to multiple audiences.
      - (1) Produce and publish information appropriate for a target audience using digital learning tools and resources.
  - b) Design and Technology Addresses the nature of technology to develop and improve products and systems over time to meet human/societal needs and wants through design processes.
    - Topic 1: Define and describe technology, including its core concepts of systems, resources, requirements, processes, controls, optimization and trade-offs.
      - (1) Describe a process as a series of actions and how it is used to produce a result.
    - ii) Topic 2: Identify a problem and use an engineering design process to solve the problem
      - (1) Generate, develop, and communicate design ideas and decisions using appropriate terms and graphical representations.

#### **Learning objectives:**

Students will be asked to use a minimum number of checkpoints from the Iditarod race to plan, write a script and produce a code for their Ozobot to perform to complete the race

#### **Assessment:**

- Viewing the video of the Ozobot coding, the teacher will be able to determine the success of the team
- Observation of groups to assess understanding of content and technology
- Reviewing the script of the team will allow the teacher to assess depth of understanding of the checkpoints and Iditarod race

#### **Procedural Activities**

- 1. Students will need some practice with ozobots prior to starting this activity specifically coloring the codes accurately and testing them on a designed track
- 2. Students will need to be shown the capabilities and restrictions of the ozobots beforehand
- 3. Students will need ample space (floor) for maps depending on size

#### **Materials Students Need:**

- Ozobots & chargers
- iPads or other filming devices
- iMovie or similar app
- Large outline of the Iditarod course for that year (and multiple copies for each group)
- Paper to write scripts
- Markers to code the map and decorate upon completion
- Ozobot coding sheets
- Iditarod.com for the map and list of checkpoints

#### **Technology Utilized to Enhance Learning:**

- Ozobots & charges
- iPads or other filming devices
- iMovie or similar app
- Iditarod.com for the map and list of checkpoints to pull information from
- Possibly "Garage Band" app for enrichment/extension

#### Other Information

 Students will be broken into teams for this lesson - I recommend assigning teams rather than let students choosing

#### Modifications for special learners/ Enrichment Opportunities

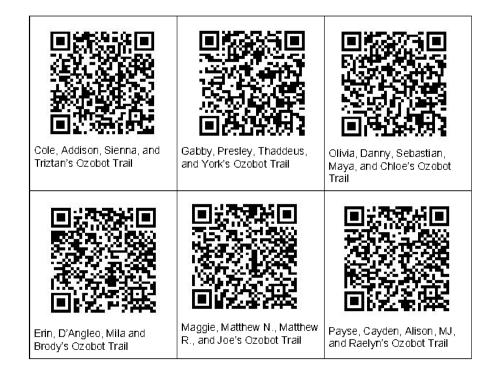
- Differentiating this activity can be done by adjusting the number of checkpoints and difficulty of codes selected by each group
  - Higher ability groups can be challenged to include more checkpoints
  - Lower ability groups can be asked to include fewer checkpoints
- The depth of the required scripts can also vary depending on the ability of the group
- Tech savvy students may also use the "Garage Band" app to create their own music to use in their video

#### Notes:

- Students can design a sled to be placed on top of the Ozobot as a challenge activity
- Students can decorate the rest of the map by drawing landforms or other places of significance

## The Iditarod Trail

Scan the QR Code to watch our Ozobot follow the trail.



Next pages are the Ozobot planning pages for student use (copy & distribute):

### Ozobot planning page - Choose 5 Checkpoints (min.)

Code/Event Checkpoint - South Anchorage Willow Rainy Pass Nikolai Ophir Iditarod Grayling Kaltag Unalakleet Shaktoolik Koyuk Nome (Other)

# Ozobot planning page - Choose 5 Checkpoints (min.) Checkpoint - North Code/Event

Checkpoint - North	Code/⊏vent
Anchorage	
Willow	
Rainy Pass	
Nikolai	
Ophir	
Ruby	
Galena	
Kaltag	
Unalakleet	
Shaktoolik	
Koyuk	
Nome	
(Other)	

