

TRAVEL THE TRAIL: THE HOUR OF CODE

Developed by:

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Discipline / Subject:

Language Arts, STEM, and Computer Science

Topic:

Expository reading and Computer Science

Grade Level:

2nd grade – 6th grade

Resources / References / Materials Teacher Needs:

1. Checkpoint sheets printed in color
2. Wooden skewers and tape
3. White plastic sheeting material and poly-fil for snow
4. Optional: Sphero, robots, or drones connected to a device for coding or programming
5. www.iditarod.com
6. www.sphero.com or www.tickleapp.com to code or program the robot or drone
7. <https://code.org/learn> for resources

Lesson Summary:

Students will read about each checkpoint as they travel the trail from Anchorage to Nome. They can use a Sphero, drone, or other robot to code or program to follow the course.

Standards Addressed:

Common Core State Standards – CCSS

CCSS.ELA-LITERACY.RI.2.10

By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 2-3 text complexity band proficiently, with scaffolding as needed at the high end of the range.

Reading Informational Text:

<http://www.corestandards.org/ELA-Literacy/>

ISTE National Technology Standards:

<http://www.iste.org/standards/iste-standards/standards-for-teachers>

Texas State Standards – Language Arts

- b. (11) Reading/Comprehension of Informational Text/Expository Text. Students analyze, make inferences and draw conclusions about expository text and provide evidence from text to support their understanding.

Texas State Standards – Computer Science

6.37s research advanced computer science concepts such as applied artificial intelligence, expert systems, robotics, depth-first/breadth-first and heuristic search strategies, multitasking operating systems, and computer architecture, such as reduced instruction set computer (RISC) and complex instruction set computer (CISC);

Alaska State Standards – Language Arts

Grade 2: 1. Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of informational texts using key details from the text.

2. Identify the main topic of a multiparagraph text as well as the focus of specific paragraphs within the text.

Alaska State Standards – Technology

A student who meets the content standard should:

- 1) Use technology to observe, analyze, interpret, and draw conclusions;
- 2) Solve problems both individually and with others; and
- 3) Create new knowledge by evaluating, combining, or extending information using multiple technologies.

Learning Objectives:

1. Use research from www.iditarod.com to learn about each Iditarod checkpoint while gaining computer science experience with coding and programming robots

Assessment:

1. Complete the course from Anchorage to Nome
2. Code or program the robot through the course successfully

Procedural Activities

1. Have students research the Iditarod checkpoints on the Iditarod site: <http://iditarod.com/about/the-iditarod-trail/> or <http://iditarod.com/race/checkpoints/>
2. Students should use their knowledge from the site to design and draw Iditarod courses with the checkpoints in order.
3. The teacher will use their designs to create an Iditarod course on the school's playground, field, or even in the gym.
4. It is optional to put down white sheeting plastic to form the course route and add fake snow such as poly-fil for effect.
5. Print off the checkpoint information sheets and tape wooden skewers to the back of each one.
6. Stake them down in order along the trail until you end with Nome and the finish line.
7. Add obstacles such as moose crossings or blizzard warnings to the trail.
8. Students can be put given partners or put in small groups.
9. Give partners or groups a Sphero, drone, or robot with an app downloaded for coding or programming
10. Let students maneuver the robot through the course together, and when they come to a checkpoint sheet they must stop and read the information.
11. The teacher can time the groups from Willow to Nome and the best time is the winner, or just let the program and have fun.

Materials Students Need:

1. Tablets for coding or programming the robot
2. An app downloaded for coding or programming such as www.sphero.com or www.tickleapp.com

Technology Utilized to Enhance Learning:

1. Tablets for coding or programming the robot
2. www.lditarod.com
3. www.sphero.com
4. www.tickleapp.com

Other Information:

1. The Hour of Code is a global school event during one week in December to support computer science skills in the classroom. Students spend one hour to learn basic coding and programming skills. Teachers can find information and resources online at <https://code.org/learn>.

Modifications for Special Learners/ Enrichment Opportunities:**Modified:**

If students need modifications, the Sphero app provides basic programming, and the teacher or a student partner can help program the movements together.

Enrichment:

The Tickle app allows students to actually code the robot's movements which is much more challenging than simple programming.

Students can design the course by researching the geographic area of each checkpoint and recreating the landforms on the course for the robots.