Idita-vation (Innovation Along the Trail)

Developed by: Jen Reiter, 2014 Iditarod Teacher on the Trail (created 2019)

Discipline / Subject: Design Thinking

Topic: Design Thinking

Grade Level: 2-8, others with modifications

Resources / References / Materials Teacher Needs:

Musher- Inventor Jeff King : https://www.youtube.com/watch?v=bWw-gA7gfPQ
Sanka's 8 Traits - Innovation: http://iditarod.com/zuma/8-traits-of-iditarod-innovation/
"Tools and Trails" Section of Mush! Sled Dogs of the Iditarod by Joe Funk (available on Amazon)

Background on Design Thinking:
https://dschool.stanford.edu/resources-collections/a-virtual-crash-course-in-design-thinking

Lesson Summary:

Students will explore innovations that affected the Iditarod Sled Dog Race, and then follow the Design Thinking Process to create an innovation of their own.

Standards Addressed: (Local, State, or National)

Standards for each step of the Design Thinking are located here:
https://www.davidleeedtech.org/design-thinking-standards

Learning Objectives:	**Assessment:**
TLW identify a problem and work to create a solution to the problem.	Students can be assessed on their final prototype.

Procedural Activities:

1. Present the students with the following two pieces of information:
   - Dick Wilmarth won the first Iditarod in a time of 20 days, 00 hours, 39 minutes, 41 seconds
   - Mitch Seavey has the current fastest winning time (2017) of 8 days 3 hours 40 minutes 13 seconds

2. Poll the students or lead a discussion about what may be contributing to the Iditarod Race moving so much faster.

3. Introduce the term "Innovation" to the students via Sanka's Eight Traits of Iditarod.

4. Share the Jeff King Video to introduce to the students the idea that Iditarod Mushers are on the forefront of innovations that are changing the face of dog sled racing.
*** Note: There are additional readings included in the text set if additional reading experiences are needed.

5. Let the students know that working in teams they will have the chance to go through the Design Thinking Process as they try to create a product for a client, Nathan Schroeder.

6. Leading the students through the Design Thinking Process:
   - Empathize (8-10 minutes): During this step, students will hear from Nathan about a problem he faces on the trail. Share with the students the reading about Nathan's glove and Velcro problem. You can also provide students with gloves and booties or Velcro so they can experience the problem for themselves. Remind them that they should be asking "WHY?" a lot during this part of the process.
   - Define (3-5 minutes): During this phase, students will define the problem, and identify the issues surrounding them. Have them complete the Point of View card. Remind them they should be using verbs to address the problem. What does Nathan need to do? Thinking strictly of products (nouns) can limit the outcomes.
   - Ideate (15 minutes): Have each team member independently create lots and lots and lots of solutions for the challenge. They should shoot for at least seven ideas! They should be visual, sketching ideas. For the last five minutes or so, have them share their ideas with their groups to get feedback.
   - Prototype (10 minutes): Have the students chose one solution and create a physical prototype for the design. Depending on the materials available, this prototype could be a workable prototype or a just a model with substitute materials. If needed, it could also be presented in a labeled drawing.
   - Test: Students should share their prototypes and get feedback. Ideally, this would come with a meeting with the client. For the sake of this experience, this presentation could be made to the class or even to another teacher in the building.
   - If time allows, students should take the feedback they were provided and start the process over to improve their prototype.

Materials Students Need:
Articles
Gloves
Booties with Velcro closures or just strips of Velcro
Large sheets of paper for brainstorming
Materials for prototyping – Maker Lab, Tinker Crates, etc.

Technology Utilized to Enhance Learning:

Other Information:

Modifications for Special Learners/ Enrichment Opportunities:

- The students could work with a partner for the entire project.
- Students could create an advertising campaign for their final product.

Idita-Vations: Innovations on the Iditarod Trail
Text Set

General Sources:

Mush! Sled Dogs of the Iditarod by Joe Funk
http://www.newsminer.com/evolution-of-gear-makes-race-faster/article_958425d2-b953-11e4-88e8-fb21a36ab121.html
https://newsroom.cisco.com/feature-content?articleId=1364634

Jeff King –

A New Cooker: http://iditarod.com/video/jeff-kings-newest-innovation-2/
Cooker: http://www.adn.com/iditarod/article/former-iditarod-champion-jeff-king-shows-new-tricks/2016/03/12/
Soft Snow Runners: http://www.ktuu.com/content/news/Iditarod-champion-Jeff-King-has-a-solution-to-soft-snow-476299333.html
Sleds: http://www.youtube.com/watch?v=bWw-gA7gfPQ

Mitch Seavey –

Knife: http://www.adn.com/alaska-beat/article/iditarod-musher-mitch-seavey-suing-knife-company-over-blade-design/2012/05/12/

Alan Moore –

Sleds: http://www.newsminer.com/mushing/iditarod/new-technology-transforms-dog-sleds/article_aa8863b4-c603-11e4-a364-139e1cb27a84.html

Spot Trackers:

http://www.seeker.com/how-tech-is-changing-alaskan-dog-sledding-1501528324.html

Because You've Always Wondered-Pee Pants for Women:

http://www.thepostgame.com/blog/dish/201303/new-invention-aiding-iditarod-mushers
http://wzozfm.com/newest-invention-pee-pants-for-women-on-the-go-being-tested-at-the-iditarod/

"Races are Won and Lost in Checkpoints"
Nathan Schroeder

Nathan Schroeder ran the Iditarod for four consecutive years, taking home Rookie of the Year honors in 2014. He also runs races in the Lower 48 and in fact, is a four-time champion of the John Beargrease Sled Dog Marathon.

On a fall day, Nathan was starting to prepare for the upcoming race and was working with piles and piles and piles of booties. Used booties had to be washed and checked for holes. New booties had to be sorted and grouped in bundles of four to make them easier to grab and use with the team. "I really hate dealing with booties," he mused.

An observation that Nathan made, as he reflected on his races and wondered what he could do to improve his standings is that he believes races are won and lost in checkpoints. If mushers can effectively master their checkpoint routines, they can shave time off their total race by leaving earlier. Or, they can get their dog chores taken care of faster, allowing more time to take care of themselves and get some much needed rest.

When asked what slows him down in the checkpoints, he thought for a minute and then said, "Booties," pointing to the huge pile in front of him.

Putting booties on a full team of dogs while wearing glove to be exact.

Wearing gloves while working the Velcro needed to secure the booties is an exercise in frustration for him. If he tries to wear his big warm mushing gloves, he can't hold on to the Velcro to open and close it correctly. If he tries to work the Velcro with his liner gloves, the Velcro sticks to the gloves and adds time to the process, as he has to stop to pull the Velcro off his gloves repeatedly. As the weather can frequently get well below freezing during the race, not wearing gloves isn't really a choice either.

Can you design a way to help Nathan with his glove and Velcro problem to help him speed up his checkpoint routine for the next time he runs the Iditarod?

Design Thinking: Statement of Need

_____(client's name)

needs a better way to _____

because right now there are these problems:

_____

_____

_____

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