



# Design a Multi-function Hat

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Unit: Henry as Innovator

Topic: Engineering

## Thoreau Quotations

“I am inclined to think that my hat, whose lining is gathered in midway so as to make a shelf, is about as good a botany-box as I could have and far more convenient, and there is something in the darkness and the vapors that arise from the head--at least if you take a bath--which preserves flowers through a long walk. Flowers will frequently come fresh out of this botany-box at the end of the day, though they have had no sprinkling.”

—*Journal*, June 23, 1852

“*Viburnum nudum* berries generally green, but some, higher and more exposed, of a deep, fiery pink on one cheek and light green on the other, and a very few dark purple or without bloom, black already . I put a bunch with only two or three black ones in my hat, the rest pink or green. When I got home more than half were turned black,--and ripe!!”

—*Journal*, August 10, 1854

## Background

Henry loved nature. He would spend hours of his day in nature: walking, observing, collecting, and writing. Henry also believed that we should all do things we love rather than doing jobs that we did not like just to make money. One of Henry’s goals while he was at Walden Pond was to make just enough money to live and then spend the rest of his time doing things he loved. As part of his love of nature, he would collect items to carry home and study further. And rather than buying something new to carry his items home, he would use his hat as a “botany box” to carry specimens. Using his hat for two purposes allowed him to save money, spend more time doing what he loved, and helped him to carry fewer items to impede his walk.

## Objectives

1. Students will identify activities that they love to do.
2. Create a multi-function hat of their own that they can use during an activity that they enjoy.
3. Students will test their multi-function hat out in the real world and brainstorm ideas to improve upon the design.

## Method

Students will identify an activity that they love to do and brainstorm possible ways for using a modified hat to support their engagement in that activity. They will then make enhancements to their hat and test out these enhancements in the “field”.

## Time Required

90 minutes

## Materials

- Hats (students can bring a hat or hats could be constructed in class or with the help of an art teacher)
- A wide variety of materials for repurposing their hat, such as string, tape, paper, scissors, glue, cardboard, pipe cleaners, popsicle sticks, paper clips, foam, anything from the recycling bin, natural items, etc.

## Procedure

1. Explain to the students about how Thoreau loved being in and studying nature and how this love of nature and of learning inspired him to transform his hat into a botany box (see the background section), in which he would collect natural objects that he wished to study more in-depth.
2. Ask each student to journal about an activity that they love. Have them write the activity as if they were explaining it to someone that had never heard of it. What do they love about the activity? How do they feel when they’re doing that activity? When did they start doing that activity? How did they learn to do it? What items do they need to do the activity?
3. Once they’ve written about the activity, ask them to brainstorm ideas about how they might use a hat to do that activity. For example, a student that loves to go fishing could turn their hat into a fishing net. Another student may love to read, so they could convert their hat into a bag to hold books. The idea is to have both a hat that they can wear at times but that, with a few adjustments, could also be used for an activity they love and then turned back into a hat they can wear. This will help them keep their life simple by using one thing (a hat) for two purposes.
4. Have them pair up with another student to share their activities and their ideas about how to use a hat in that activity. Ask the students to help their partner think about other ways they might use their hat or different design considerations. Remind the students to listen carefully to their partner before speaking up with their own ideas.
5. Have each student draw out their multi-function hat and list what materials they will need to convert it from a hat into something they can use in their loved activity. Depending on their designs, you may need to ask them to gather items from home to

build their multi-function hat. Or you may want them to limit their design based on the materials you collected for them to use.

6. Once the students have decided what they'll use their hat for and have a design, now it's time to create the multi-function hat.
7. Upon completion of multi-function hat, give the students a week (or more, if needed) to try out using their hat during the activity.

### Reflect and Explain

- List out all the different activities that the students loved on the board (include one for each student even if there are repeats). Then pair students together that have very different activities to share why they love that particular activity. Remind the students that we all have different interests, which makes the world a more interesting place. We also must respect that one person might really love an activity that we have no interest in but that does not mean we can't learn from the other person or even gain an interest in the activity. Ask them each to practice active listening and respect.
- After they've used their multi-function hat, have them journal about things that worked well, things that did not work, and how they could improve the design. If desired, each student could give a 1-2 minute presentation on their multi-function hat.

### Extensions

1. Once the students have tested out their multi-function hat, have them improve upon the design and re-test the new design. After re-testing, are there still things they wanted to improve? Did an improvement actually improve it or would they rather have stuck with the original design?
2. Pair them up with a younger student, and have them teach the younger student how to do the activity that they loved.

### Vocabulary

**botany box** - a stiff container used by botanists to keep field samples viable for transportation. The main purpose of the botany box is to transport plants without crushing them and by maintaining a cool, humid environment.

**modification** - a change or adjustment.

**multi-function** - more than one function.

## Common Core Standards

### English Language Anchor Standards (all grades)

- [CCSS.ELA-LITERACY.CCRA.W.2](#)  
Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.
- [CCSS.ELA-LITERACY.CCRA.W.3](#)  
Write narratives to develop real or imagined experiences or events using effective technique, well-chosen details and well-structured event sequences.
- [CCSS.ELA-LITERACY.CCRA.W.4](#)  
Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.
- [CCSS.ELA-LITERACY.CCRA.W.10](#)  
Write routinely over extended time frames (time for research, reflection, and revision) and shorter time frames (a single sitting or a day or two) for a range of tasks, purposes, and audiences.
- [CCSS.ELA-LITERACY.CCRA.SL.1](#)  
Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively.
- [CCSS.ELA-LITERACY.CCRA.SL.4](#)  
Present information, findings, and supporting evidence such that listeners can follow the line of reasoning and the organization, development, and style are appropriate to task, purpose, and audience.
- [CCSS.ELA-LITERACY.CCRA.SL.6](#)  
Adapt speech to a variety of contexts and communicative tasks, demonstrating command of formal English when indicated or appropriate.
- [CCSS.ELA-LITERACY.CCRA.L.1](#)  
Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- [CCSS.ELA-LITERACY.CCRA.L.2](#)  
Demonstrate command of the conventions of standard English capitalization, punctuation, and spelling when writing.
- [CCSS.ELA-LITERACY.CCRA.L.3](#)  
Apply knowledge of language to understand how language functions in different contexts, to make effective choices for meaning or style, and to comprehend more fully when reading or listening.
- [CCSS.ELA-LITERACY.CCRA.L.4](#)  
Determine or clarify the meaning of unknown and multiple-meaning words and phrases by using context clues, analyzing meaningful word parts, and consulting general and specialized reference materials, as appropriate.

- CCSS.ELA-LITERACY.CCRA.L.5  
Demonstrate understanding of figurative language, word relationships, and nuances in word meanings.
- CCSS.ELA-LITERACY.CCRA.L.6  
Acquire and use accurately a range of general academic and domain-specific words and phrases sufficient for reading, writing, speaking, and listening at the college and career readiness level; demonstrate independence in gathering vocabulary knowledge when encountering an unknown term important to comprehension or expression.

### Math Practice Standards (all grades)

- CCSS.MATH.PRACTICE.MP1 Make sense of problems and persevere in solving them.
- CCSS.MATH.PRACTICE.MP2 Reason abstractly and quantitatively.