



Drumthwacket

Unit 1: Lesson 1

Understanding Invention vs. Discovery

Objectives

In this lesson students will be able to differentiate between a discovery and an invention by explaining that a discovery is something that already exists in nature, while an invention is something created by someone. Students will be able to identify that an invention starts with an idea, and explain that for an invention to be successful, it usually has to make things easier and or more efficient.

Description

In this introductory lesson students will start a KWL chart on inventors and inventions, and place cards in one of two categories: Invention or Discovery. Students will also work collaboratively to find facts on well-known inventors and inventions and present their information to the class.

Targeted Standards in Lesson 1

Common Core State Standards Grade 4 English Language Arts

- CCSS.ELA-Literacy.RL.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- CCSS.ELA-Literacy.RI.4.1 Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.
- CCSS.ELA-Literacy.RI.4.3 Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.
- CCSS.ELA-Literacy.W.4.1b Provide reasons that are supported by facts and details.
- CCSS.ELA-Literacy.W.4.2d Use precise language and domain-specific vocabulary to inform about or explain the topic.
- CCSS.ELA-Literacy.W.4.9 Draw evidence from literary or informational texts to support analysis, reflection, and research.
- CCSS.ELA-Literacy.SL.4.1 Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others' ideas and expressing their own clearly.
- CCSS.ELA-Literacy.SL.4.1c Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.





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New Jersey Grade 4 Social Studies Standards:

- 6.1.4.C.12- Evaluate the impact of ideas, inventions and other contributions of prominent figures who lived in New Jersey.
- 6.1.4.C.16- Explain how creativity and innovation resulted in scientific achievement and inventions in many cultures during different historical periods.

Resources

Texts:

- Toys: Amazing Stories Behind Some Great Inventions by Don Wulffson
- (Nonfiction)
- Frindle by Andrew Clements (fiction)
- The Gadget War by Betsy Duffy (fiction)
- 100 Inventions that Made History by DK Publishing
- Invention by Lionel Bender (Highly detailed and comprehensively photographed. Text: DK Eyewitness Books)

Games:

- Which Came First (<http://www.mit.edu/afs/athena/org/i/invent/www/ima/which1.html>)

Assessments:

- T-Chart
- Rubric for Oral Presentations
- Observations and anecdotal notes
- Student responses (oral and written)
- Participation and engagement.
- Graphic Organizer/Exit Slip
- Student workbook (for entire unit)

Introduce the Unit:

The teacher should explain to the class that during the next few weeks, they will be studying New Jersey inventors and inventions.

Pacing Guidelines:

This lesson will take two to three 45-minute periods to complete

Introduce the Lesson:

What is invention? What is discovery? Why do people invent or discover?





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Day 1

- Step 1:** Teacher will distribute a KWL chart to each student. Ask: “What is an invention?”, “Why do people invent things?” “What do we know about inventions?” “What are some inventions we use every day?” As students brainstorm responses, the teacher should display the answers, and have the students copy them onto the “K” section of their KWL charts.
- Ask students to turn and talk to a partner to discuss what they want to learn about inventors and inventions, and have them share with the whole group. These ideas should be written on the “W” section of the KWL chart.
- Step 2:** Explain to the students that as they go through the unit, they will be able to add what they learned in the “L” section of their KWL chart.
- Step 3:** Introduce vocabulary words: discovery, invention, inventor, efficient, innovation, artifact, exhibit
- Step 4:** Write the words “invention” and “discovery” on the board.
- Step 5:** Divide the class into small groups. Distribute index cards (made ahead of time) with the following words written on them: telephone, dinosaur bones, light bulb, penicillin, electricity, diamonds, gravity, car, machine, computer, etc).
- Step 6:** Ask the students to work collaboratively to place the cards in the appropriate category, invention or discovery. Remind them that if they disagree, they need to give each other reasons as to why they think the card belongs in one category instead of the other.
- Step 7:** As students work on the activity, the teacher should monitor their progress, asking questions to facilitate discussion amongst the students.
- Step 8:** Share as a whole group. After the class has come to a consensus as to which of the items are inventions and which are discoveries, ask students to turn and talk to their partner or group to come up with a definition of each of the two categories (invention and discovery). Students should be able to explain that an invention is something brand new or created, while a discovery is something that already exists in nature.





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Day 2&3

Step 10: Introduce several famous inventors and their inventions such as: Eli Whitney; cotton gin, Thomas Alva Edison; light bulb, Henry Ford; assembly line, Model T, and Alexander Graham Bell; telephone.

Step 11: Have students work collaboratively to research these inventions using the Internet and/or reference books.

Step 12: Answer the research questions (see student workbook pg.... or see pdf , graphic organizer.....) Allow students enough time for the research.

Step 13: Have each group give an oral presentation on the invention they researched.

Step 14: Distribute a t-chart (Invention – How this Invention Changed Lives)

- Have the students think about what they learned from each other during the oral presentations and fill in the chart accordingly. Students will complete a graphic organizer about Thomas Edison.
 - a. Students should be familiar with Thomas Edison and his inventions. Model the research process by conducting a whole class research investigation on Thomas Edison.
 - b. Provide students with information about Thomas Edison. Have them contribute to the process of completing the organizer.
 - c. Turn and talk with a partner about what they might write for each section on the organizer when you get to that section.
 - d. Together as a class, complete the organizer for Thomas Edison.
 - e. Graphic Organizer/Exit Slip – What were his {Thomas Edison's} most important inventions? How did they make life easier?
- Students as Collaborators: Students will work in groups to generate ideas for their “TOP TEN Great Inventions.” Students will have to work cooperatively to brainstorm a list, while justifying the prioritizing the inventions. They will share their lists with the class.





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- Students as Reflectors: Students will complete a “Question and Reflection” page so students can capture their ideas and ponder the introduction lesson.

Step 15: *Journal Writing:* What makes all of these inventions successful? How would your life be different without these and other inventions?

Other Activities

- “Which Came First” (game) <http://www.mit.edu/afs/athena/org/i/invent/www/ima/which1.html>
- Exit Slip: How would your life be different without these and other inventions?

Assessments:

- While researching any inventors or inventions, students will answer these questions (These will be on a worksheet), which can then be used as an assessment tool): What problems led to this invention? How does this invention work? How does this invention help people? How do you think it changed their lives? Would you consider this a successful invention? What improvements have been made to these original inventions?
- Observations, anecdotal notes, student responses (oral and written), participation and engagement.
- Exit Slip: What character traits do you share with inventors?

