Inventors & Their Inventions

Internet Lesson Plan
Grade level: 6-8

Teacher Activities

GOAL:

To utilize Internet resources to research inventions - the process and the people behind these life changing devices.

OBJECTIVES:

At the end of the unit, the participant will be able to:

• Review and analyze data presented from surveys.
• Describe and outline the main components in the invention cycle.
• Write a job description for an inventor.
• Create and design a poster ad to attract potential inventors to a Fortune 500 company.
• Create a "Patent Plan Handbook" for young inventors.
• Build a table of Renaissance inventions and their dates.
• Imagine and describe life without Renaissance inventions.
• Research and prepare for an interview with a famous inventor.
• Create a biography outlining the inventor of the week listed on a Web site.
• Create a table of female inventors and their inventions.
• Investigate and research an invention of his/her choice utilizing Internet resources.

DURATION:

Two weeks, one hour of on-line time each day.
INSTRUCTIONAL STRATEGY:

Divide the class into pairs or small groups of approximately 3-4 participants each. Provide each group with a two-pocket folder. Distribute the activities in the left pocket of each folder to encourage problem-solving strategies within the group. Have students utilize the right-hand pocket of the folder to record their strategies, take notes, and track project completion. Students can store information they have gathered or printed from the Internet in this pocket as well.

Provide additional resources for students relating to inventors, inventions, and the creation process. Encourage both on-line and off-line research through reference and research material.

PREREQUISITE:

A short introduction to the Internet with information on access and addresses is required before participants go on-line. Ensure that students are familiar with the World Wide Web and the browser they will be using.

ASSESSMENT/EVALUATION:

The activities in this unit will be evaluated on the basis of student participation and performance. Team folders will include information gathered in the process of completing the activities. Encourage cooperative learning, group process, problem-solving, competition, and the use of the Internet as these activities are completed. Serve as facilitator and guide throughout the activities.

OTHER RELATED ACTIVITIES:

• A great thematic class project can be expanded from Activity #1: The power of an invention. Have the class conduct their own invention survey. Students compile a list of questions to ask respondents that relate to inventions and how they have impacted their lives. They gather a large number of responses. When they have completed the survey, students calculate the data, analyze the results, and report back what they discovered. Their reporting vehicle could be a local or school newspaper or even the Web page of their school or district.

• Activity #5: Interview an inventor - consider having students pair up. Have one student role play the inventor he/she selected to interview. The other student would be the interviewer.

• Have students compile a list of famous sayings made by inventors. For example, Albert Einstein said "Imagination is more important than knowledge." As students complete the activities in this unit, they may come across other sayings which can be added to the list. Create a bulletin board which highlights these sayings.
• Create an invention-name associations list. Ask students to create a list of names that are associated with certain inventions. For example, blue jeans are associated with Levi Strauss.

• Many inventions actually came about by accident. In the activities in this unit, students spend time exploring the process of inventing. But what about those inventions that occurred accidentally? Ask students to research and report on inventions that were mistakes but really worked. A few examples are Coca-Cola, potato chips, ice cream cones, and x-rays.

• Ask students to become inventors. Provide each group with a box of materials (vary the materials). For example, give one group a paper clip, a rubber band, 4 Popsicle sticks, glue, and 2 straws. Their task is to create something out of the materials. Students should document their progress as they go through the steps of inventing. Host a show-n-tell session to celebrate their work and inventiveness.

• Live without a modern invention for a day. Allow students to select which modern convenience they will do without for a day. Ask them to write in a journal about the experience. This could entail writing prior to, during, and after the experience occurs.

MATERIALS NEEDED BY TEACHER:

Two-pocket folders

TEACHER NOTES:

Host a brainstorming session in which you ask students to think of every invention that dramatically changed our lives. Ask students to list on a chalkboard similarities and differences between each of the inventions. This discussion should lead to the importance of inventions and how one new innovation can significantly impact our lives.

Ask students to think about how inventions usually come to be. Inventions may be the result of a need or an answer to a problem. Many successful inventions were discovered or created accidentally. The bottom line is an invention is created by a person who was able to see things in a different way or who went outside the normal boundaries of thinking.

As students complete the activities which follow, ask them to think about the qualities found or needed in a person for them to be inventive and creative. Do your they possess these qualities?
Inventors & Their Inventions

Student Activities

ACTIVITY #1: THE POWER OF AN INVENTION

When we say inventions like telephones, cars, and computers have changed the way we live and work, we do not need to say much more. It is so obvious the many ways a single invention can impact an entire population. There seems to be no right or wrong answer when it comes to identifying the single most important invention. To learn about and analyze this issue further, visit the "The Lemelson-MIT Prize Program: 1995 Invention Index" Web page at http://web.mit.edu/invent/www/press2.html.

• Analyze the data presented from the 1,000 adults surveyed.
• Which inventions were the most important? Provide percentages.
• Without which inventions did people say they could not live? Provide percentages.
• How did men and women vary in this survey?
• What attributes do people view inventors as having?
• What inventions made life more complex?
• What inventions had no impact on Americans' lives?
• Now analyze and summarize the data in a short report including:
  What did you discover that surprised you about the surveys?
  Was there any data you had trouble explaining?
  Did you recognize any trends?

Activity #2: The invention cycle

Although some inventions were created accidentally, most were the result of a long and tedious process which involved analyzing a problem and trying to determine ways to solve it. To learn more about the creativity, innovation, and problem solving process most inventors use, visit the Web site "Creativity, Innovation and Problem Solving" at http://www.quantumbooks.com/Creativity.html.
• Create a flow chart which outlines the steps an inventor typically takes.
• Think about TRUE, SEEING, THINKING, and DOING. Describe three main things you learned about each of these and how they relate to the invention cycle.
• Assume a Fortune 500 company has hired your group to recruit bright young inventors for their company.
  - Write a job description outlining the type of person and skills required.
  - Create a poster-sized ad which will be placed in the local newspaper.
  The purpose of this ad is to attract young potential inventors to apply.

Activity #3: Patent protection

Before a patent is sought on an invention, there are some preliminary steps the inventor should take in order to protect him/herself. The Web site "Articles on Inventing and the Commercialization Process" at http://www.nttc.edu/inventions/artindex.html offers information on the "Preliminary Steps in Filing a Patent." Read through the information to learn more about the preparation needed before seeking a patent.

• Create a "Patent Plan Handbook" for young inventors. Within the handbook:
  • Outline the main things an inventor should do before seeking a patent, such as:
    1. Evaluation of the invention
    2. Projected cost and price of invention
    3. Marketing plan
    4. Etc...
  - Keep the handbook simple, use graphics and charts to add interest.
  - Some of this information may be overwhelming to a young inventor, so add words of encouragement along the way.

Another site providing additional information on this topic is "Young Inventors Network - Help for Young Inventors" at http://www.algonet.se/~invent/help.htm.

Activity #4: Renaissance inventions

Imagine life without some of today's basic conveniences. What would it be like without a clock, glasses, or guns? Your first thought might be how nice life would be without some of these so-called modern conveniences. Let's further investigate these inventions, their historical significance and inventors. Visit the Web site "Renaissance Inventions and Technology" at http://www.twingroves.district96.k12.il.us/Renaissance/University/Inventions/Inventions.html.

• Create a table listing the inventor and year invented for each item:
  Clocks
  Gunpowder
  Eye glasses
Printing press
Flush toilet
Microscope
Telescope
Submarine
Match

• Of the Renaissance inventions listed, which invention do you believe positively impacted the world the most? Give supporting reasons for your answer.
• Do you think any of the Renaissance inventions had a negative impact on the world? Support your answer.
• Without which invention do you think you could live? How would your life be different without this invention?

**Activity #5: Interview an inventor**

Imagine having the opportunity to talk with Alexander Graham Bell or Henry Ford. If you could interview an inventor from the past or present, who would you choose, and what would you say to him/her? Try your hand at being the interviewer. Select an inventor to interview from the "Inventure Place: Index of Inventors" Web page at http://www.invent.org/book/book-text/indexbyname.html. Conduct some basic research on the inventor as you prepare for the interview.

• What is his/her name?
• When was he/she born and died (if applicable)?
• What did he/she invent?
• What was his/her most important invention?
• What was his/her most famous invention?
• What kind of an education or career did he/she have?
• Now that you know more about the inventor, compile a list of six questions you would ask him/her.

**Activity #6: Inventor of the week**

So many inventors, so little time! As you explore the theme of inventions and inventors, first think of the obvious inventors. Henry Ford, Alexander Graham Bell, Thomas Edison, and Benjamin Franklin come to mind right away. But there are many other inventors to explore. Visit the Web site "The Lemelson-MIT Prize Program: Invention Dimension" at http://web.mit.edu/invent/.

• What is the invention/inventor of the week?
• Create a biography outlining the inventor.
• Describe life without this inventor or invention.
• If time allows, explore the "Inventor of the Week Archives" section. Create a timeline listing the inventors and their inventions.
Activity #7: Female pioneers

Women today have an advantage over pioneering women of the past. Today more opportunities and education are available to young, inventive women. This may help explain the lack of women in the past who have been recognized for their creative, inventive ideas. But never fear, there are notable women who deserve celebrating. First explore women in computing by visiting the Web site “The Lemelson-MIT Prize Program: Grace Murray Hopper” at http://web.mit.edu/invent/www/inventorsA-H/hopper.html.

- Who was Grace Hopper?
- What did she invent?
- Describe her background, education, and experiences.
- How did she change the world?
- Go to "Inventor of the Week Archives" at http://web.mit.edu/invent/www/archive.html to create a table of female inventors outlining names, contributions, and dates.

Activity #8: Invention investigation

Now it's your turn to learn more about an invention and the inventor behind it. Think about items you use everyday like toothpaste, earmuffs, Frisbees, Band-Aids, water skis, Kleenex, etc. and how they came to be. Learn about the history of the invention, the inventor, and how it was invented by using one of the Web search engines listed or one of your favorites. Search to see what you can find on the item you selected.

"Yahoo" at http://www.yahoo.com/
"Yahooligans!" at http://www.yahooligans.com/
"Excite Netsearch" at http://www.excite.com/
"Alta Vista Search" at http://www.altavista.digital.com/

- What item did you choose to research?
- Who is the inventor?
- When and where was it invented?
- Is there an interesting story or history behind this invention? Briefly describe it.