iCREaTM

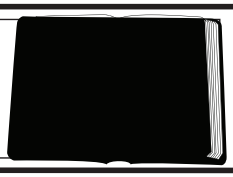
Middle School Resource Guide

United States Patent and Trademark Office

Table of Contents

Teacher's Guide

Recommended learning level: Middle School



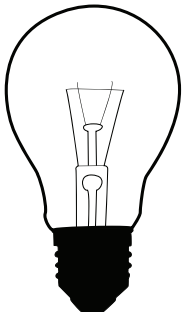
Overview

The i-ⒸⓇeaTM™ curriculum provides a unit of lesson plans and activities to enable understanding and actual engagement in the processes of creating and inventing with a focus on the protections of intellectual property provided by patents, trademarks and copyrights.

The introductory portion of this guide is designed to provide the educator with background information and other relevant material to facilitate the implementation process.

Unit Goal

At the middle school level students will understand terminology relevant to the topic, the value of U.S. laws and services provided to foster creativity and step-by-step processes to enable organization of the creative process and ensure intellectual property is protected. Additionally, students will explore the digital citizenship and responsibility issues that confront everyone who is engaged in accessing, using and developing intellectual property with the assistance of digital technologies.



Curriculum Format, Scope and Implementation Strategies

Fostering problem-solving skills, exploration and creativity are integral parts of today's educational best practices, and with the advent of digital technologies, intellectual property issues are an increasingly necessary part of all curricula. This material is designed to be flexible and easily implemented by educators as a part of any of the following academic subjects: computer/technology, social studies/history/civics, science, language arts, and library science.

Scope

The following topic sections provide the framework of instruction:

- Patents
- Trademarks
- Copyrights
- Intellectual Property (IP) Theft and other IP protections
- Creative Problem Solving

Each of the topic sections: Patents, Trademarks, Copyrights, and Intellectual Property Theft includes a main lesson plan that addresses the key learning objectives. Each main lesson is supported by a selection of "Curriculum Connections," cross-curricular activities that can be selected appropriate to academic subject matter or interest. At this level, Curriculum Connections are inclusive of any or all of the following components:

- Historical Connections
- Be Inspired (true stories of creativity and invention)
- Technology Connections

Creative problem solving provides two sections:

Section 1: A series of teacher-facilitated lesson/activities to demonstrate organized steps in the invention process including:

- Brainstorming
- Logging ideas
- Research
- Avoiding scams and fraud

Section 2: A workbook-style resource to enable students to study and engage in the various elements of the creative process and age-appropriately learn the documentation necessary throughout the process for protecting creative works. This option is appropriate for teachers who:

- expect students to work in a more self-directed manner
- work with students who are engaged in working on their own inventions
- want a group-guided experience for special needs students with less-developed reading comprehension skills

CREATE – A Successful Strategy for Implementation

1. **C**ompletely read the Teacher's Guide section.
2. **R**eview the lessons, activities, Invention Connection and other resources, and make your selections.
3. it into your schedule.
4. access, etc.
5.
6. survey assessments at .

Assessment

An integral part of the i-SAFE education program is the maintenance of a database of student survey responses designed to chart student understanding of the concepts presented, as well as the status and evolution of the Internet behaviors of youth. These assessment surveys are completed online and are completely anonymous.

Please have your students complete the pre assessment prior to engagement in this curriculum and the post-assessment upon completion. Instructions:

- If beginning the i-SAFE program with this unit, administer the pre assessment online at **http://www.isafe.org** by clicking on the link, Surveys/Assessments, prior to the lesson, and selecting the appropriate assessment link.
- If ending the i-SAFE program with this unit, administer the post assessment online at **http://www.isafe.org** by clicking on the link, Surveys/Assessments, prior to the lesson, and selecting the appropriate assessment link.
- To verify School ID#, login at **http://www.isafe.org**, go to the "My Info" page and select "Find your school ID."

Authentic evaluation strategies of specific lesson and/or activity concepts are provided in the lesson plans.

Educator Resources

Relevant Information

Use this section:

- as preparatory materials to confidently teach the curriculum
- to help determine how this curriculum integrates into the subject matter you teach
- to provide direction on how to plan integrated instruction with others in your school

What is the Value of Intellectual Property Rights Education?

Think Science!

Students of all ages engage in creative and inventive projects as part of their science education. They are not always aware however of the potential value of their own work and the steps necessary to protect their work.

Think Economics!

Intellectual property is a vital component of today's economy. As technologies grow, U.S. copyright-based industries continue to be one of America's largest and fastest-growing economic assets.The October 2007 report, *The True Cost of Copyright Industry Piracy to the U.S. Economy,* by Stephen E. Siwek, concludes that each year copyright piracy from motion pictures, sound recordings, business and entertainment software, and video games costs the U.S. economy $58.0 billion in total output, costs American workers 373,375 jobs and $16.3 billion in earnings, and costs federal, state, and local governments $2.6 billion in tax revenue. (Resource: *The True Cost of Copyright Industry Piracy to the U.S. Economy, by Stephen E. Siwek* available at **http://blog.copyrightalliance.org/files/u227/SiwekCopyrightPiracy_studypdf.pdf**)

Effective protection of intellectual property rights is essential to fostering creativity and to supporting our economic and financial infrastructure as these rights create incentives for entrepreneurs, artists, firms, and investors to commit the necessary resources to research, develop and market new technology and creative works.

The Internet has, in a matter of a few short years, enabled market and technological developments to create an instantly accessible global environment in which the distribution of both legitimate and illegitimate goods flourishes as never before. As economic freedom expands to more and more countries, their manufacturers and consumers are increasingly interconnected due to advances in telecommunication networks, integrated financial markets, and global advertising.

This interconnected global economy creates unprecedented business opportunities to market and sell intellectual property worldwide. Geographical borders present no impediment to international distribution channels. Consumers enjoy near-immediate access to almost any product manufactured in the United States or abroad, and they are accustomed to using the international credit card system and online money brokers (such as PayPal) to make payment a virtually seamless process worldwide. If the product can not be immediately downloaded to a home PC, it can be shipped to arrive by the next day.

Think Music and the Creative Arts!

Youth of today can be inspired with the knowledge of how intellectual property rights protect their original creations. Creative artists are enabled to make worthwhile contributions to society because their work is protected by copyrights. These rights allow artists to have control over what happens to their creations, ensuring that they have the ability to market and sell their work.

Think Social and Civics Education!

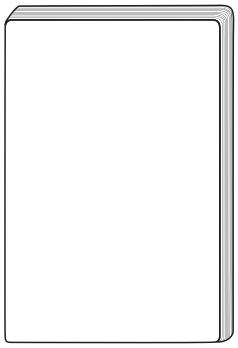
Let's face it, Cyberspace is not a separate entity from the physical world; it is a real aspect of our community and social existence, with youth leading the way towards adopting full integration of technology resources in almost everything we do.

Think Digital Literacy and Responsibility! (This means encompassing all academic areas; especially: technology, language arts, research, and library science skills.)

In this day and age it is easy to equate ease of access to materials with the concept of free for the taking. And, in fact, it is an age in which the laws surrounding this issue as they pertain to technological usage are still being written. Consequently, it has become more and more apparent that digital literacy and/or computer technology education must keep pace by including integrated education on the responsible usage of technologies.

The loss of $58 billion per year to copyright piracy, as reported in Sivek's 2007 report, illustrates the fact that the same technology that benefits rights holders and consumers, also benefits intellectual property thieves seeking to make a fast, low-risk buck. As we encourage this generation of tech-savvy students to create and invent, it is incumbent upon us to include as part of digital literacy education, instruction on recognition and coping techniques to deal with the ever-present Internet scamsters hoping to take advantage of those who have creative ideas they wish to share with others.

Today's United States Patent and Trademark Office (USPTO)



In the United States, the concept of protection for property rights is as old as the ideas of the founding fathers, who wrote the U.S. Constitution as the supreme law of the United States of America. When the delegates from various states met in Philadelphia in 1787 to frame the U.S. Constitution, one of the problems before them was to give protection to inventors and authors.

Before the Constitution was adopted, many of the colonies and states granted patents. The colonial and state patents, unlike modern patents, were issued only by special acts of legislature. There were no general laws providing for the granting of patents. On September 11, 1787, the delegates signed the Constitution. Included in Article 1, Section 8 was the provision, *Congress shall have the power... to promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries.*

George Washington signed into law the first patent act on April 10, 1790, and the first copyright law on May 31, 1790. The responsibility for administering the patent laws was given to the Department of State, and responsibility for issuing patents was placed upon a three-member board: the Secretary of State Thomas Jefferson; the Secretary of War Henry Knox; and the Attorney General Edmund Randolph. That first year, the patent board issued three patents. Since that time many other revisions to patent laws, processes, and even to the management and title of the governing office have occurred. Nearly 8 million patents have been issued and over 3 million trademarks registered.

In its earlier days the Patent Office had on various occasions the responsibility for administering copyright matters, collecting and publishing agricultural information, and even collecting meteorological data. In 1870, the commissioner of patents was given jurisdiction to register trademarks. In 1975, the U.S. Patent Office became known as the U.S. Patent and Trademark Office (USPTO). Today, this office is a part of the Department of Commerce, and employs about 9,000 people. The Library of Congress' Copyright Office is responsible for registering copyrights.

Due in part to the growth and development of digital technologies, today's USPTO has become a valuable, user-friendly resource for teachers, students, and inventor/creators of all ages. In 2000 it enabled an online filing system for patent applications. The official Web site of the USPTO, **www.uspto.gov**, is a valuable help to anyone interested in understanding the concepts related to patent and trademark applications and other

invention guidelines, and serves to provide a remarkable database of searchable patents and trademarks. By publishing and distributing copies of every U.S. patent, the USPTO has made available to the public the world's greatest scientific and mechanical library.

Under the patent system, American industry has flourished. New products have been invented, new uses for old ones discovered, and employment given to millions. A small, struggling nation has grown into one of the greatest industrial and economic powers on earth.

The Topics – It's All About Intellectual Property

Similar to the way the law recognizes ownership rights in material possessions such as cars and homes, it also grants rights for intangible property, such as the expression of an idea or an invention. The law protects intellectual property in four distinct areas: patents, trademark, copyright, and trade secrets.

Much of the following information can also be found in the middle school level student reference and activity pages.

Patents

A patent issued by the United States Patent and Trademark Office protects and enables the creative process by granting a property right to the inventor. U.S. patents only protect property in the United States, United States Territories, and United States Possessions. A patent gives inventors "the right to exclude others from making, using, offering for sale, or selling" the invention in the United States or "importing" the invention into the United States.

There are three different types of patents in the United States.

- **Utility patents:** These patents protect processes, machines, manufactured items, or compositions of matter. Some examples include medicine, electronics, and sporting equipment. This is the most common form of patents.
- **Design patents:** These patents protect new, original, and ornamental designs for manufactured items. For example, the design of athletic shoes or an automobile body.
- **Plant patents:** These patents cover asexually reproduced and distinct plant varieties. For example, hybrid tea roses, as well as Better Boy tomatoes.

Who Can Obtain a Patent and How?

Anyone can apply for a patent, and this is one reason why it's important to provide students with this knowledge. "Empowerment" is a key term in today's educative process; and if you think about it, what can be more empowering than enabling youth with the understanding that their ideas have value, their intellectual property may be protected and their ideas may really take them somewhere—to fame, fortune or more discoveries!

A patent is obtained through the process of applying to the U.S. Patent and Trademark Office. Detailed instructions and a supporting activity can be found in the main lesson plan on Patents.

Trade Secrets

A trade secret is confidential business information. We include the topic of trade secrets with patent protection as well as when talking about intellectual property theft because trade secret protection works as an alternative to patent protection. Trade secrets are broader in scope than patents, and include scientific and business information (*e.g.*, market strategies). One interesting aspect of the concept of trade secrets is that

the information can be freely used (loses its legal protection) if it is obtained or learned through legitimate means, such as reverse engineering or public disclosure.

Trademarks and Service Marks

The federal and state laws of trademarks and service marks protects a commercial identity or brand used to identify a product or service to consumers. The federal Lanham Act prohibits the unauthorized use of a trademark, which is defined as, "any word, name, symbol, or device" used by a person "to identify and distinguish his or her goods, including a unique product, from those manufactured or sold by others and to indicate the source of the goods." (Resource: U.S. Trademark law: 15 U.S.C. § 1127 available at **http://www.uspto.gov/web/offices/tac/tmlaw2.html**.)

A service mark is a trademark that identifies and distinguishes the **services** of one provider from services provided by others, and indicates the source of the services.

Any time you claim rights in a mark, you may use the TM (trademark) or SM (service mark) designation to alert the public to your claim, regardless of whether you have filed an application with the USPTO. However, you may use the federal registration symbol ® only after the USPTO actually registers a mark, and not while an application is pending. Also, you may use the registration symbol with the mark only on or in connection with the goods and/or services listed in the federal trademark registration.

By registering trademarks and service marks with the U.S. Patent and Trademark Office, the owner is granted the exclusive right to use the marks in commerce in the United States. Registered trademark owners can exclude others from using the mark, or a comparable mark, in a way likely to cause confusion in the marketplace.

Copyright

In this digital age, copyright issues are often in the forefront of the news. The advent of easy file sharing via the Internet and other means of copying digital works put music-, video-, and game-loving youth in the position of facing the ethical and legal decisions involving copyright on almost a daily basis.

At its basis, copyright is the legal right granted to a creator of an original work of authorship to control publication, production, sale or distribution of it. including literary, dramatic, musical, artistic, and certain other intellectual works,

Copyrights begin upon creation of a work in tangible form (a form that can be seen or touched, such as books or drawings, or seen and heard, such as movies, CDs, or video games). An oral folktale isn't protected by copyright until it's written down or recorded. Similarly, other creations such as an ice sculpture, or sand castle would be too transient to meet the requirement of tangibility. In addition, for something to classify as copyrightable it must be inherently creative or "original." A mere collection of facts – such as a telephone directory – would not be copyrightable, but a clever collection of facts or a work accumulating such facts in an original way might be copyrightable.

Copyright laws are based on the concept that someone who creates a work of authorship deserves to be compensated for it, balanced with the rights of the public to the free flow of ideas and information, thus promoting new works of authorship and benefiting society as a whole.

Copyrighted work does not have to be registered, or protected by a notice (although this is recommended to make clear to the public that the author is claiming copyright protection in the work). Works are protected by copyright law even if the copyright notice is not shown.

Students should not only learn the legal restrictions of copyright, but also legal alternatives to using copyrighted materials. Additionally, it is important for youth to understand that copyright automatically applies to their own original work.

Web Resources

Use this section to supplement materials, lessons and activities in this curriculum.

The official website of the USPTO at **htt://www.uspto.gov/** provides extensive information on all of the topics covered in this curriculum. Guided exploration of this site can be especially helpful in teaching high school level students.

Additional Suggestions:

Inventor Resources at **http://www.uspto.gov/web/offices/com/iip/index.htm** provides links to specific topic information, frequently asked questions and downloadable brochures

Bright Lights for grades 6-12 (Kids' Pages) at:
http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/special/kidbright.html provides online activities to reinforce concepts taught in this curriculum. Specific suggestions are offered in individual Curriculum Connections activities.

Special Resources; Guiding Lights: Parents, Teachers and Coaches at **http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/special/guide1.htm** provides links to the following helpful resources:

- Patent and Trademark Depository Library program
- Small Business Administration Business Plan Tutorial
- InventNow.org

How-to information and online patent search at:
http://uspto.gov/patft/index.html

How-to information and Trademark Electronic Search System (TESS) at:
http://www.uspto.gov/web/trademarks/workflow/start.htm

Lesson/Activity Resources

Use this section as a resource to obtain additional information on stories and facts presented in the lessons and activities.

Patents

- Main lesson: General information Concerning Patents at **http://www.uspto.gov/main/patents.htm**
- Patent pages for earmuffs **http://www.google.com/patents?id=hXcbAAAAEBAJ&dq=earmuffs**
- Information on Chester Greenwood at
  http://inventos.about.com/library/inventors/blgreenwood.htm
  http://www.ideafinder.com/history/inventions/earmuff.htm
- Information on the paperclip **http://www.freepatentsonline.com/4237587.html**
- Tech connection: **http://www.uspto.gov/patft/index.html** or at **http://www.google.com/patents**.
  http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/games/miner.html
  http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/games/gameinventors.html

Trademark

- Main Lesson: trademark comparison resources at **http://en.wikipedia.org/wiki/List_of_generic_and_genericized_trademarks** and **http://www.uspto.gov/main/trademarks.htm**
- Information on developing names **http://www.best-business-skills-training-info.com/trademarking/Play-The-Business-Game-With-A-Trademarked-Name.html**
- Curriculum Connections:
  http://www.uspto.gov/go/kids/kidsound.html

Copyright

- Main Lesson: **http://www.loc.gov/copyright**
  http://www.uspto.gov/main/profiles/copyright.htm
- Curriculum Connections:
  Understanding fair use at **http://www.copyright.gov/fls/fl102.html**
  Confu and multimedia fair use at **http://www.ptc.edu/Copyright_Center/CONFU.htm**
  http://www.isafe.org

Intellectual Property Theft

- Main Lesson: **http://www.cybercrime.gov/ip.html** and **http://www.uspto.gov**
- Curriculum Connections:
  David LaMacchia court case at **http://www.onlineethics.org/CMS/computers/compcases/lamindex.aspx**
  Plagiarism **http://www.plagiarism.org**/

Creative Problem Solving and Invention Connection

- Brainstorming: **http://olc.spsd.sk.ca/DE/PD/instr/strats/brainstorming/index.html**
- The Pencil and the Eraser – Hyman Lipman: **http://inventors.about.com/library/inventors/blpen.htm**
- Young Inventors: **http://www.factmonster.com/ipka/A0768091.html**
- The History of the Telephone **http://inventors.about.com/library/inventors/bltelephone.htm**
- The Library of Congress Research Center: Who is Credited with Inventing the Telephone? At **http://www.loc.gov/rr/scitech/mysteries/telephone.html**
- The Inventor's Log: **http://www.inventionconvention.com/ncio/inventing101/001.html**
- How to Keep an Inventor's Log Book at **http://inventors.about.com/cs/logbook/ht/Log_book.htm**
- Invent Help: How to Begin an Inventor's Log or Journal at **http://www.inventhelp.com/inventors-log-or-journal.asp**
- Patent Searches: **http://www.uspto.gov/main/profiles/acadres.htm** and **http://www.google.com/patents**
- Patent Scams:
  http://www.uspto.gov/web/trademarks/workflow/start.htm
- USPTO: Top Ten Scam Warning Signs at **http://www.uspto.gov/web/offices/com/iip/documents/scamprevent.pdf**
- The American Inventor's Act: **http://www.uspto.gov/web/offices/dcom/olia/aipa/index.htm**
- Today in Technology **http://www.tecsoc.org/pubs/history/2001/mar30.htm**

Educational Standards

All lessons are designed to meet accepted educational standards and best practices in teaching. The following chart defines basic alignment to relevant national educational standards. Access specific standards documents for information on performance indicators and benchmarks.

Lesson Topic: Patents

National Science Standards 5-8	**American Library Association (ALA/ACRL)** Information Literacy Standards	**National Council for the Social Studies (NCSS)** Curriculum Standards for Social Studies: II	**National Language Arts Standards K-12**
NS.5-8.1: Science as Inquiry	ALA Category I: Information Literacy Standard 1, 2, 3	Strand II: Time, Continuity and Change	NL-ENG.K-12.1 Reading for Perspective
NS.5-8.5: Science and Technology	ALA Category II: Independent Learning Standard 6	Strand V: Individuals, Groups, and Institutions	NL-ENG.K-12.4 Communication Skills
NS.5-8.7: History and Nature of Science	ALA Category III: Social Responsibility Standard 8, 9	Strand VI: Power, Authority, and Governance	NL-ENG.K-12.7 Evaluating Data
		Strand VII: Production, Distribution, and Consumption	NL-ENG. K-12. 8 Developing Research Skills
		Strand VIII: Science, Technology, and Society	NL-ENG.K-12.12 Applying Language Skills

Lesson Topic: Trademarks

National Science Standards 5-8	**American Library Association (ALA/ACRL)** Information Literacy Standards	**National Council for the Social Studies (NCSS)** Curriculum Standards for Social Studies: II	**National Language Arts Standards K-12**
NS.5-8.1: Science as Inquiry	ALA Category I: Information Literacy Standard 1, 2, 3	Strand V: Individuals, Groups, and Institutions	NL-ENG.K-12.1 Reading for Perspective
NS.5-8.5: Science and Technology	ALA Category II: Independent Learning Standard 6	Strand VI: Power, Authority, and Governance	NL-ENG.K-12.4 Communication Skills
	ALA Category III: Social Responsibility Standard 8, 9	Strand VII: Production, Distribution, and Consumption	
		Strand VIII: Science, Technology, and Society	

Lesson Topic: Copyright

National Educational Technology Standards (NETS-S)	**American Library Association (ALA/ACRL)** Information Literacy Standards	**National Council for the Social Studies (NCSS)** Curriculum Standards for Social Studies: II	**National Language Arts Standards K-12**
Standard 3: Research and Information Fluency	ALA Category I: Information Literacy Standard 1, 2, 3	Strand IV: Individual Development and Identity	NL-ENG.K-12.1 Reading for Perspective
Standard 5: Digital Citizenship	ALA Category II: Independent Learning Standard 6	Strand V: Individuals, Groups, and Institutions	NL-ENG.K-12.4 Communication Skills
	ALA Category III: Social Responsibility Standard 8, 9	Strand VI: Power, Authority, and Governance	
		Strand VII: Production, Distribution, and Consumption	
		Strand X: Civic Ideals and Practices	

Lesson Topic: Intellectual Property theft and Other IP Protections

National Educational Technology Standards (NETS-S)	**American Library Association (ALA/ACRL)** Information Literacy Standards	N**ational Council for the Social Studies (NCSS)** Curriculum Standards for Social Studies: II	**National Language Arts Standards K-12**
Standard 3: Research and Information Fluency	Standard One: 1.1/1.2	Strand IV: Individual Development and Identity	NL-ENG.K-12.1 Reading for Perspective
Standard 5: Digital Citizenship	Standard Two: 2.1	Strand V: Individuals, Groups, and nstitutions	
	Standard Three: 3.1/3.2/3.3/3.4/3.5	Strand VI: Power, Authority, and Governance	
	Standard Four: 4.1/4.2/4.3	Strand VII: Production, Distribution, and Consumption	
		Strand X: Civic Ideals and Practices	

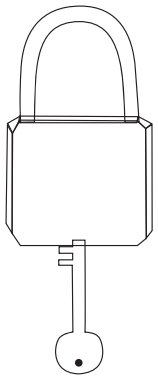
Lesson Topic Creative Problem Solving and the Invention Connection

National Educational Technology Standards (NETS-S)	**National Science Standards 5-8**	**American Library Association (ALA/ ACRL)** Information Literacy Standards	**National Council for the Social Studies (NCSS)** Curriculum Standards for Social Studies: II	**National Language Arts Standards K-12**
Standard 1. Creativity and Innovation	NS.5-8.1: Science as Inquiry	ALA Category I: Information Literacy Standard 1, 2, 3	Strand IV: Individual Development and Identity	NL-ENG.K-12.1 Reading for Perspective
Standard 2. Communication and Collaboration	NS.5-8.5: Science and Technology	ALA Category II: Independent Learning Standard 6	Strand V: Individuals, Groups, and Institutions	NL-ENG.K-12.4 Communication Skills
Standard 3. Research and Information Fluency	NS.5-8.7: History and Nature of Science	ALA Category III: Social Responsibility Standard 8, 9	Strand VI: Power, Authority, and Governance	NL-ENG.K-12.7 Evaluating Data
Standard 4. Critical Thinking, Problem-Solving & Decision-Making			Strand VII: Production, Distribution, and Consumption	NL-ENG.K-12.12 Applying Language Skills
			Strand X: Civic Ideals and Practices	

LESSON PLAN—Intellectual Property and Patents

Recommended learning level: Middle School

Estimated Lesson Time – Allow 45 minutes or more to adequately complete activities.



Learning Objectives

Students will:

- define the term "patent"
- understand the patent process in the United States
- recognize how inventions have changed the way we live
- comprehend the necessity of patents in protecting the legal rights of inventors

Materials

- a copy of the selected pages from patent #5,038,412 (provided) or of the complete patent, available at **http://www.uspto.gov/patft/index.html**, for each student group
- optional: copies of the Chester Greenwood story for each student

Vocabulary

1. **Patent** - The legal right to exclude others from producing or using an inventor's discovery or invention.
2. **Invention** - A discovery, finding, process, or product that is new or innovative.
3. **Infringement** - The improper use of a patent, trademark, or copyright by persons not authorized to do so.
4. **Intellectual property** – Property that originates from an idea in one's brain.

Procedures

- Provide each student with a copy of the reference page and briefly introduce. Have students read silently and prepare for discussion.
- Give students 10 minutes to read the page on their own and write short answers to the questions at the end.

Discussion

- Ask students to consider how things we use every day came to be. Hold up a variety of common everyday items found in schools such as: ruler, paperclip, pencil, and paper.
- Discuss how someone might have invented these items. Ask students to formulate their own definition for an invention. Write the definition on the board and refine as a class.
- Have students discuss the motivation behind inventing new items (they may use their written work as a resource for discussion). Why might someone invent something? Sample answers might be: to meet a need, solve a problem, make money, curiosity, etc.
- Ask students if any have ever had an idea for a new product or item. Discuss.
- Reinforce that inventions are a type of intellectual property that are legally protected by patents.
- Explain: An inventor follows the steps, indicated on a patent application form from the USPTO, to receive a patent to protect his or her invention.

Activity

Option 1:

- Have a student read the story of Chester Greenwood to the class.
- Discuss the story by answering the following questions:
    > What sparked Chester Greenwood's invention?
    > How did a problem result in a new invention?
    > Can anyone get a patent or create a new invention?

Option 2: Pass out copies of the reference/activity page to each student; have students read and write answers to the questions.

Group activity

- Divide students into small groups.
- Introduce the activity: Since Chester Greenwood's invention, earmuffs have gone through many adaptations.
- Give each group a copy of the selected pages from patent #5,038,412, a patent for a headband with earmuffs. (NOTE: The complete patent is 6 pages long and can be downloaded at **http://www.uspto.gov/patft/index.html**
- Instruct students that they are to create a design for their own adaptation of the earmuff or headband with earmuff. Use the following questions to stimulate creative and critical thinking.
    > What could be added to earmuffs to make them more useful or fun?
    > What type of adaptation of the earmuffs would appeal to different age groups: young children, teens, adults, older adults, etc.
    > How might you use popular technologies to improve earmuffs?
- Using the patent copy as a model, have students:
    > write an abstract for their invention
    > provide at least 2 drawings of how the invention would look
    > write the introduction of the description of their invention, using the first 2 paragraphs of the detailed description of the headband with earmuffs as a model.
- Have students prepare a short presentation for the group on their new inventive ideas. Each presentation must include an answer to the following question (post on the board or have students write it down): As compared to Chester Greenwood 's invention, how will this new invention change an aspect of life for some people (the target market)?

Presentation and Discussion

- Have student groups share their new inventions and answers to the question.
- Reinforce: There is a patent to protect almost every object we use every day. Many new items must take into account prior patents to make sure the invention is new.

Evaluation

Group presentation content should demonstrate:

- a representative abstract description
- an adequate graphic representation
- descriptive introduction that describes (at minimum) the following:
    > what type of product the invention relates to
    > how it combines 2 or more objects
    > a brief description of when, where, or how this invention would be used
- an answer to the question that describes how the new invention creates an improvement for the target audience

Go Online (Optional)

Select one of the student invention ideas or have each group research their own idea:

- Do a search for patents that are the same or similar to the group's idea.
- Share what is found.

LESSON EXTENSIONS

Use activities found in the Curriculum Connections to reinforce concepts of the main lesson with cross -curricular activities that enable critical thinking.

What is an Invention?

To invent is to create something useful and not previously in existence, through independent investigation, experimentation, and basic brain power. Inventions can be nearly anything, and can come as a result of a moment of ingeniousness, as a solution to a problem, or as a development from years of research. Inventions can be common things such as paperclips or more complex things such as the latest drug to tackle headaches. Anyone can be an inventor!

Patents – Invention Protection

Inventions can be worth money for the inventor. The inventor must protect his or her invention to maintain the rights to prevent others from producing and selling the product. Inventions are protected from copying and theft by patents.

What is a Patent?

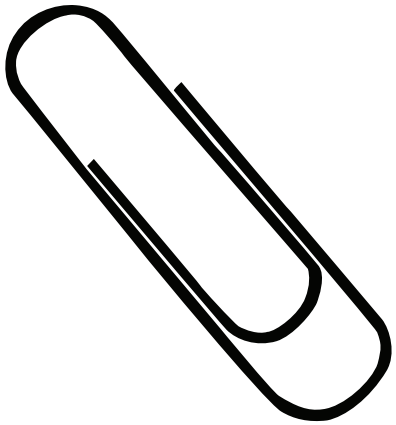
A patent for an invention is the grant of a property right to the inventor, issued by the United States Patent and Trademark Office. Patents only protect this type of property in the United States, United States territories, and United States possessions.

What is granted is not the right to make, use, offer for sale, sell or import, but the right to exclude others from making, using, offering for sale, selling or importing the invention into the United States for up to 20 years without the inventor's permission. This gives the inventor the opportunity to produce and market the invention him or herself, or license others to do so, and to make a profit.

Who Owns That Paperclip? The Invention as Property

Take the example of the paperclip. You personally may go out and buy a paperclip. You now own that paperclip. You can use that paperclip, sell that paperclip, or even throw away that particular paperclip. However, you have no rights to any other paperclip.

The rules are different for the ones who invented the paperclip. Oliver T. W. Hsiao and Thomas Tan from Taipei, Taiwan, the inventors of one type of paperclip, applied for a patent to protect their invention in 1979. It holds patent number 4,237,587. This patent gives them the right to collect money for their invention. They can sell the rights to the invention to a company or to others. Hsiao and Tan made money when they either made or sold the right to make the paperclip that you own. They own the rights to the idea behind the paperclip you have.



Types of Patents

There are different types of patents in the United States.

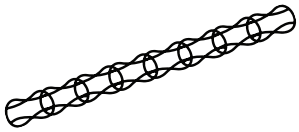
- Utility patents: these patents protect processes, machines, manufactured items, or compositions of matter. Some examples include medicine, electronics, etc.
- Design patents: these patents protect new, original, and ornamental designs. Examples are the design athletic shoes, or an automobile body.
- Plant Patents: these patents cover asexually reproduced and distinct plant varieties, for example, plant patents cover hybrid tea roses, as well as Better Boy tomatoes.

Think About It – Write About It

Use the back of this page to write about the following:

- What one invention most affects your life? Why? What would you do without it?
- Patents ensure that the inventor of a new item is the only one who can receive compensation in some form, and therefore encourages future inventors to also invent. What might happen if no one was ever compensated for their invention?

Curriculum Connections



These cross-curricular activities support main lesson concepts through critical thinking-activities.

Technology Connection – Patents in the Age of Technology

Discuss and Experience

Use the following to facilitate a student discussion about how the Internet has changed the patent application process. Follow up by allowing students to search real patents online by using a key word search at the official United States Patent and Trademark Office site: **http://www.uspto.gov/patft/index.html** or at **http://www.google.com/patents**.

Explain the following:

Searching for patents is kind of like being a detective. Before a person can apply for a patent, he or she must first make sure that no one else has already patented/invented the same invention. There are three basic ways to search for a patent:

1. Search by patent number: Each patent has its own number. One can do a simple straightforward search by this number.
2. Search by inventor name: One can also search for an invention if the inventor's name is known. This search can also be used to search random names.
3. Search by using key words: The most challenging way to find an invention (but also quite fun) is to search for key words. One can look up any key word from dog collar to paperclip to see what the search turns up!

Use the following open-ended questions to inspire students to reflect on how use of the Internet has impacted applying for a patent with the following open-ended questions:

- How do you think the Internet has helped inventors who have things to patent?
  Possible responses might include – the Internet enables people to access help, do their own research and get application materials, and file their application online.
- Are there any negative effects? Possible responses might include – The Internet enables scam artists with ways to advertise and get money for unreliable services such as guaranteeing that an inventor can make a lot of money through them; Unprotected intellectual property on the Internet can be stolen.

Have students do key-word searches online using the link(s) provided above, and then discuss what was found. For example, search "dog toy." Select several of the options and compare the items.

Historical Connection 1 – Invention Timeline

Looking at an historical timeline provides an easy way to put the evolution of design and invention into perspective. In this activity, students create a timeline by researching a prepared list of inventions.

Procedures

Activity 1 (option: this activity may also be done on the board with the whole class providing input)

On a blank piece of paper have each student create 4 columns and label them:

1800 – 1899 1900 – 1949 1950 – 1974 1975 – Present

Read through the random list of inventions and have students place each one in the column that indicates the date range they think it was invented. Note: Each column contains 15 inventions; you can choose to give that information or not.
Save results until the end of activity 2.

Activity 2

Choose one of these options to implement this part of the timeline activity:

- individual homework – each student builds a timeline by researching the dates of invention.
- small group work – each group divides up the responsibilities of researching the inventions and then creates a group timeline.
- class project – each student is assigned a different invention to research. The group gathers and builds the timeline as each student provides his or her findings.

Task: Pass out the list of inventions to students and have them create their timelines according to your instructions and any missing information about their invention(s) that they think is important.

Conclusion

- Review the timelines.
- Have students compare their results in Activity 1.
- What were the most surprising results?

Historical Connection 2 – Match the Inventor

Materials/Preparation

- Internet access

Procedures

This activity can be completed by individuals in a computer lab setting or as homework, or in a group setting by accessing the Web site and using a projector to enable the group to see the page.

- Instruct students that they are going to play a game – "Inventor IQ" – Match the Inventor to the Clue.
- The purpose of the game is to attempt to identify who invented various items based upon clues.
- Access game at: **http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/games/gameinventors.html**.

Discuss

Meet back as a class and have students share what they found.

- Have the students discuss which patented inventions they recognized.
- Discuss how students figured out each invention and inventor.

Historical Connection 3 – Patent Identification

Materials/Preparation

- Online access

Procedures

- Instruct students that they are going to play a game – "Gold Mine" – Identify the Patent.
- The purpose of the game is to attempt to identify what an item is based upon the patent drawing.
- Access game at: **http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/games/miner.html**.

Discuss

Meet back as a class and have students share what they found.

- Have the students discuss which patents they recognized.
- Discuss how students figured out what the patent covered.

Timeline Activity

1. Peter Cooper Hewitt invents the fluorescent light bulb.
2. Joseph-Armand Bombardier patents the Ski-Doo® snowmobile.
3. The first disposable diaper is patented by Marion Donovan.
4. The Java® computer language is invented.
5. Scott Olson invents Rollerblades® in-line skates.
6. Richard G. Drew patents Scotch® tape.
7. William Kellogg invents corn flakes cereal.
8. A typewriter is invented by W.A. Burt.
9. The telegraph is invented.
10. Charles Goodyear invents rubber vulcanization.
11. George Lerner patents the Mr. Potato Head® toy.
12. YouTube is invented.
13. Pierre Lallement obtains the first U. S. patent for a bicycle.
14. Thomas Edison invents the cylinder phonograph.
15. The Apple® MacIntosh® is invented.
16. Charles Duryea patents a gasoline automobile.
17. The NanoNuno® instantly drying umbrella is invented.
18. Edward Binney and Harold Smith co-invent children's crayons.
19. The CD-ROM is invented.
20. Max the Robotic Cat is invented.
21. Walter Hunt invents the safety pin.
22. Wilbur and Orville Wright invent the first gas-powered manned airplane.
23. Mary Anderson invents windshield wipers.
24. Clarence Crane invents Life Savers® candy.
25. Earle Dickson invents the Band-Aid® bandage.
26. Walter E. Diemer invents bubble gum.
27. Vannevar Bush invents the analog computer.
28. John Atanasoff and Clifford Berry build the first electronic digital computer.
29. Ralph Schneider invents the first credit card – a Diners Club® card.
30. Arthur Fry invents the Post-it® note.
31. Gary Starkweather of Xerox® invents the laser printer.
32. Charles Ginsburg invents the first videotape recorder (VTR).
33. Joseph Woodland and Bernard Silver patent the first bar code.
34. Texas Instruments invents the transistor radio.

35. John Backus, working for IBM®, invents the computer language, Fortran.
36. Barbed wire is invented.
37. Richard Knerr and Arthur Melin re-invent an ancient item and call it a Hula Hoop®.
38. The Windows® operating system is invented.
39. The videodisc is invented.
40. The wrench is patented by Solymon Merrick.
41. The Yale® (cylinder) lock is invented.
42. Melville Bissell patents the carpet sweeper.
43. John G Kemeny and Tom Kurtz invent the computer language, BASIC.
44. Thomas Edison invents the first commercially successful light bulb.
45. Douglas Engelbart invents the computer mouse.
46. Robert Dennard invents RAM (random access memory).
47. Nolan Bushnell invents the first video game, Pong®.
48. Paul Galvin invents the car radio.
49. The push-through tab on drink cans is invented.
50. Clarence Birdseye invents frozen food.
51. W. Carrier invents the air conditioner.
52. Elias Howe invents a sewing machine.
53. The first IBM®-PC is invented.
54. Tim Berners-Lee creates the World Wide Web/Internet protocol (HTTP) and www language (HTML).
55. The Pentium® processor is invented.
56. AbioCor® artificial heart is invented.
57. The Finger Saver table-saw blade is invented.
58. W.L. Judson invents the zipper.
59. The first American patent for gelatin is granted.
60. Walter Frederick Morrison and Warren Franscioni invent the Frisbee® flying disc.

Timeline Activity—Answer Key

1829 A typewriter is invented by W.A. Burt.

1835 The wrench is patented by Solymon Merrick.

1837 The telegraph is invented.

1839 Charles Goodyear invents rubber vulcanization.

1845 The first American patent for gelatin is granted.

1845 Elias Howe invents a sewing machine.

1849 Walter Hunt invents the safety pin.

1861 The Yale® (cylinder) lock is invented.

1866 Pierre Lallement obtains the first U. S. patent for a bicycle.

1873 Barbed wire is invented.

1876 Melville Bissell patents the carpet sweeper.

1877 Thomas Edison invents the cylinder phonograph.

1879 Thomas Edison invents the first commercially successful light bulb.

1893 W.L. Judson invents the zipper.

1895 Charles Duryea patents a gasoline automobile.

1901 Peter Cooper Hewitt invents the fluorescent light bulb.

1902 W. Carrier invents the air conditioner.

1903 Edward Binney and Harold Smith co-invent children's crayons.

1903 Wilbur and Orville Wright invent the first gas-powered manned airplane.

1903 Mary Anderson invents windshield wipers.

1906 William Kellogg invents corn flakes.

1912-1913 Clarence Crane invents Life Savers® candy.

1920-1921 Earle Dickson invents the Band-Aid® bandage.

1923 Clarence Birdseye invents frozen food.

1928 Walter E. Diemer invents bubble gum.

1929 Paul Galvin invents the car radio.

1930 Richard G. Drew patents Scotch® tape.

1930 Vannevar Bush invents the analog computer.

1942 John Atanasoff and Clifford Berry build the first electronic digital computer.

1948 Walter Frederick Morrison and Warren Franscioni invent the Frisbee® flying disc.

1950 Ralph Schneider invents the first credit card – a Diners Club® card.

1951 Charles Ginsburg invents the first videotape recorder (VTR).

1951 The first disposable diaper is patented by Marion Donovan.

1952 Joseph Woodland and Bernard Silver patent the first bar code.

1952 George Lerner patents Mr. Potato Head®.

1953 Texas Instruments invents the transistor radio.

1957 John Backus, working for IBM®, invents the computer language, Fortran.

1958 Richard Knerr and Arthur Melin re-invent an ancient item and call it the Hula Hoop®.

1959 Joseph-Armand Bombardier patents the Ski-Doo® snowmobile.

1963 The videodisc is invented.

1964 John G Kemeny and Tom Kurtz invent the computer language, BASIC.

1968 Douglas Engelbart invents the computer mouse.

1968 Robert Dennard invents RAM (random access memory).

1972 Nolan Bushnell invents the first video game, Pong®.

1974 Arthur Fry invents the Post-it® note.

1975 Gary Starkweather of Xerox® invents the laser printer.

1975 The push-through tab on drink cans is invented.

1979 Scott Olson invents Rollerblade® in-line skates.

1981 The first IBM®-PC is invented.

1984 The CD-ROM is invented.

1984 The Apple® MacIntosh® is invented.

1985 The Windows® operating system is invented at Microsoft®.

1990 Tim Berners-Lee creates the World Wide Web/Internet protocol (HTTP) and www language (HTML).

1993 The Pentium® processor is invented.

1995 The Java® computer language is invented.

2001 AbioCor® artificial heart is invented.

2003 Max the Robotic Cat is invented.

2006 YouTube is invented.

2006 The NanoNuno® instantly-drying umbrella is invented.

2006 The Finger Saver table-saw blade is invented.

LESSON PLAN—Intellectual Property and Trademarks

Recommended learning level: Middle School

Estimated Lesson Time – Allow 45 minutes or more to adequately complete activities.

Learning Objectives

Students will:

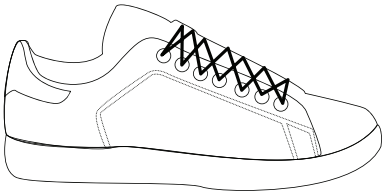
- be able to define the term "trademark"
- categorize products as generic or brand name
- identify popular trademarks
- associate the symbols: TM, SM and ® with the protection of trademark
- demonstrate understanding of why trademarks are important by creating and assessing mock trademarks

Vocabulary

Trademark – A trademark includes any word, name, symbol, sound, scent, or device, or any combination used, or intended to be used, in commerce to identify and distinguish the goods of one manufacturer or seller from goods manufactured or sold by others, and to indicate the source of goods. In short, a trademark is a brand name. Sound and scent marks are protected in the United States, but not all countries protect them.

Materials

- a copy of the reference page for each student
- a copy of the activity page for each student group
- access to a blank board or chart



Procedures
Discussion

Introduce the concept of trademarks through the following prompts and questions:

- Ask students to raise their hands if they are wearing Nike athletic shoes.
- Ask students to raise their hands if they are wearing Levi's jeans.
- Ask students to raise their hands if they have a Jansport backpack.
- Ask students to raise their hands if they have a Bic pen.
- Ask students what all of these items have in common.
- Explain that each item you were asking for was being identified by a brand name.
- Ask students what other brand names they know of.
- Ask students why they might be more inclined to buy a "brand" name item.
- Ask students to give the "generic" name for each item – Nikes (sneakers), Levi's (jeans), Jansport (backpack), Bic (pen).
- Explain that brand names are the trademarks for an item. It is how that item is identified and helps with marketability.
- Explain that in addition to brand names, scents, smells, logos, and even colors can also be trademarks.
- Ask students if they can think of any trademarks that aren't names. (For example, Burger King's king, McDonald's arches, etc.)
- Explain that they will be learning more about trademarks from the reference page.

Reference Page

- Hand out a copy of the reference page to each student.
- Read through the reference page as a class (do not go over the Think About It questions at this time).

Go Online Option

Reinforce the concept of brand name vs. generic name with the following activity:

- Have students brainstorm a list of generic names that they believe were once trademarks.
- Go online to: **http://en.wikipedia.org/wiki/List_of_generic_and_genericized_trademarks** and compare the students' list to the list provided at this wikipedia webpage. NOTE: Let students know that Wikipedia entries are made by the public, and may not be 100% true. Note that on this page, reference citations for verification are asked for. If desired, have students try to verify several of the entries.

Activity – Classroom Scavenger Hunt

- Direct students to look all over the classroom for trademark items.
- Remind students that the presence of the symbols TM, SM or ® are clues that indicates a trademark.
- Encourage students to look "outside of the box" at clothing worn by other students, items outside windows, school products, and more.
- Give students 5 minutes to hunt for marks.

Presentation & Discussion

- Meet back as a class to share the trademark items they have found in the classroom .
- Discuss the symbols they noticed.
- Ask students to identify trademark products they use in everyday life.

Group Activity

- Break into small groups.
- Hand out an activity page to each group.
- Have each student group brainstorm a new name for an existing product of their choice in each category.

Presentation & Discussion

1. Meet back as a class to share the products and their new names.
2. Discuss how marketable each name is and if it would be protected by trademark.
3. As a class, vote for the best new name in each category.
4. Select one or two products from the list of best new names.
5. Have students list reasons they think the selected marks would be beneficial for the product and list on the board.
6. Ask: Do they think this new name could become so well known that it would become a generic name? Why or why not?
7. As a class, review the following key trademark concepts and associate the list created with the concepts:

> A trademark can be any word, name, device, symbol, logo, sound, scent, or any comination of those.

> Trademarks dentify the source or origin of a product or service.

Review discussion

Have students discuss the "Think About It – Talk About It" questions from the reference page:

- Why are trademarks a necessity?
- If you received a Whopper in a Big Mac box, what would you think?
- What are other ways trademarks are ingrained in our society?

LESSON EXTENSIONS

Use activities found in the Curriculum Connections to reinforce concepts of the main lesson with cross-curricular activities that enable critical thinking.

Understanding Trademarks

The average American encounters thousands of trademarks each day–from the closet to the kitchen, on the way to school or to work, in newspapers and magazines, on TV and radio, in supermarkets, arcades, restaurants and shopping malls. We are surrounded by trademarks.

Just what is a trademark? Trademarks provide us with valuable information. They are source indicators that allow us as consumers to know what to expect in the quality of a product or service. They allow us to buy with the assurance that we are getting products or services that we liked in the past or to avoid those products or services we did not like. In addition to offering protection to the consumer, trademarks are often a company's most valuable assets. They stand as emblems of a company's reputation and good will. Often, consumer confidence and trust built upon brand loyalty encourages product sales.

A trademark can be a word, name, symbol, sound, scent, or any combination, that identifies and distinguishes the source of the product of one person or company from that of another. A service mark is the same as a trademark except that it identifies and distinguishes the source of a service rather than a product, such as a dry cleaning service or banking services.

A trademark may be registered at the U.S. Patent and Trademark Office. A federal registration is not required, but does provide advantages. The symbol ®, which indicates federal registration, puts the world on notice that the trademark owner has exclusive rights to use it for particular products or services in the United States.

Your Turn:

Look around the classroom or in magazines and newspapers, to identify everyday trademark products. List on a separate page.

Brand vs. Generic

A trademark name is known as a **brand** name. Most inventions have two names – a brand name and a generic name. For example, think about Coca-Cola. You may know it as Coke – the brand name, but its generic name is soda or pop. It is important for new inventions to be given both a brand name and a generic name. That way people identify it generically, and associate the brand with quality and desire to purchase.

Some of our everyday words were actually once registered trademarks in the United States. *Escalator*, *aspirin* and *yo-yo*, along with many other words, have been so commonly mis-used that they have lost their trademark significance and are now generic names for those products.

Companies spend millions of dollars to advertise their products, so no company wants their trademarks to be used generically. The Kimberly-Clark Corporation, which owns the trademark Kleenex for facial tissues, and the Xerox Corporation are two examples of companies that have spent time and money in court to enforce their trademark rights.

Can you match the following trademarks with generic names for the products or services?

ROLLERBLADE®	Overnight courier service
COKE®	Facial tissue
KLEENEX®	Photocopier
XEROX®	Soft drink
FEDEX®	In-line skate

Marketing makes the brand name a desired one.

Think About It

Band-Aid is a registered trademark that was almost becoming generic to mean any adhesive bandages. To guard against this, Johnson & Johnson changed the lyrics of their famous commercial jingle from *"I am stuck on Band-Aids, 'cause Band-Aid's stuck on me"* to *"I am stuck on Band-Aid brand, 'cause Band-Aid's stuck on me."*

- What types of "brand" names do you buy? Why?
- Identify some service marks that you are familiar with.
- How does a trademark make a difference in the bottom line – or money?
- If a trademark becomes generic as in the case of the escalator, do you think it is a good thing for the company who created the trademark? Why or why not?

Why are Trademarks Important?

Trademarks can help make an invention sell. Trademarks identify the source or origin of a product or service. Trademarks, or brand names, can also come to signal quality of a product to consumers. A shopper may be more inclined to pick up the Tylenol bottle due to the name, rather than the generic equivalent.

Points to Note:

- A federally registered trademark can be renewed forever.
- Trademarks can be lost if the name becomes generic.
- TM and SM are the symbols to alert the public that the owner is claiming rights to a trademark or service mark.
- Registration of trademarks at the U.S. Patent and Trademark Office is not necessary but helps with enforcing protection.

Do You Know?
The Symbols of Trademarks

Any time you claim rights in a mark, you may use the TM (trademark) or SM (service mark) designation to alert the public to your claim, regardless of whether you have filed an application with the USPTO. However, you may use the federal registration symbol ® only after the USPTO actually registers a mark, and not while an application is pending. Also, you may use the registration symbol with the mark only on or in connection with the goods and/or services listed in the federal trademark registration.

Trademark Activity

Directions: In your groups select a common everyday object to rename. Your group will be provided with five categories. For each category, brainstorm a name that meets the requirement for the object your group has selected.

The Object: What object do you choose to rename? (it could be a specific car, a paperclip, a brand of cereal – be creative!)

The Categories:

Culture and Mythology: Select a name with ties to culture or mythology. For example, Nike is the Ancient Greek word for victory. It is the perfect name for sportswear shoes.

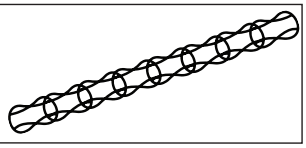
Nature: Select a name with ties to nature – plants, animals, etc. What traits do you want associated with your products? For example – if you want people to think fast and sleek when they see your car – Jaguar is a perfect name.

Connotation: Select a word that is not necessarily descriptive of the product but has the connotations you want to imply. For example, Leapfrog is the name for an educational toy manufacturer. People who hear the name might think their kid is leap frogging ahead of the other kids by learning with their equipment.

Acronyms: Another choice is to truncate (shorten the name) or make up an acronym. For example, Alleve, is short for alleviate – implying that the medicine will alleviate symptoms. IBM is an acronym for International Business Machines (a descriptive name that becomes more easily marketed when turned into an acronym).

New and Original: Create a name that is completely new and original to label the item.

Curriculum Connections



These cross-curricular activities support main lesson concepts through critical-thinking activities.

Technology Connection – Trademark Hunt

Materials/Preparation

- online access

Procedures

Instruct students to go on a U.S. trademark hunt online – find a trademark for each of the following categories:

- sound
- logo
- smell
- phrase
- other (one unique trademark that does not fall into any of the previous categories, such as the design of a building or an animated character.)

Discuss

Meet back as a class and have students share what they found. Select several trademarks and for each selected, discuss what they think the intended "hook" is for the trademark. Is the trademark descriptive, suggestive, etc.? Refer to the main lesson plan as a resource if necessary.

For each selected trademark:

- Have the students assess how successful they think the trademark is and why.
- Have students discuss steps that can be taken to make sure that a trademark does not become a generic name for a product.

Historical Connection – Trademark Sounds

Goal: Students will examine the concept of sounds as trademarks and their value to identifying products.

Materials/Preparation

- student online access to **http://www.uspto.gov/go/kids/kidsound.html**
- capability to listen to online sound

Procedures

In a class with one computer:
Complete this activity by going to the webpage and selecting several of the sounds that you think will be recognized by the students.

Have students write answers to the following questions about each:

- What do they associate the sound with?
- Where do they usually hear it?
- How do they think the trademark has helped the product or service?

In a computer lab or as homework:

Working individually or in pairs, have students review at least 6 of the sounds found on the webpage. Have them write answers to the following questions about each:

- What do they associate the sound with?
- Where do they usually hear it?
- How do they think the trademark has helped the product or service?

Historical Connection – Which Came First?

Materials/Preparation

- Internet access

Procedures

This activity can be completed by individuals in a computer lab setting or as homework, or in a group setting by accessing the Web site and using a projector to enable the group to see the page.

- Instruct students that they are going to play a game – "Chicken or Egg?" – Which Came First?
- The purpose of the game is to show how trademarks evolve over time.
- Access game at: **http://www.uspto.gov/web/offices/ac/ahrpa/opa/kids/games/chickoregg.html**.

Discuss

Meet back as a class and have students share what they found.

- Have the students discuss which trademarks they recognized.
- Discuss the benefits of trademarks in identifying products.

LESSON PLAN—Intellectual Property and Copyright

Recommended learning level: Middle School

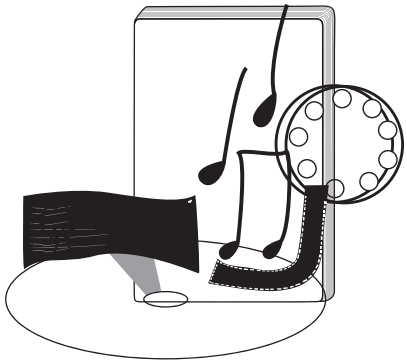
Learning Objectives

Students will:

- recognize the copyright notice and its meaning
- age-appropriately understand how copyright laws apply to creative works of authorship
- be able to demonstrate their knowledge and understanding of copyright protections

Materials

- a copy of the reference page for each student
- a copy of the activity page for each student
- access to a blank board or chart



Procedures
Discussion

- Guide a brief discussion about property and lead into a definition of intellectual property.
- Ask students what they consider to be property. Discuss their answers and list them on the board.
- Ask students if something one of them thinks up, and then writes, draws, or makes, is property. Ask how this is different from regular property.
- Discuss why these items should be considered property. Ensure that the following points are covered: many people make their living from them, they belong to, or are owned by, the creator.

Reference Page and Continued Discussion

- Pass out reference page and have students read it over. Refer to the section on copyright in the Teacher's Guide, to add information that is age appropiate for your students. Continue the discussion with the following topics:
  - > What does copyright mean? Copyright is protection provided by the laws of the United States to the creators of things like books or other written works, as well as other dramatic, musical, and artistic works. To be protected by copyright, the works must be in tangible form. This protection means that the owner has control of what can be done with his or her original work.
  - > Copyrighted works are protected from being copied, distributed, performed, or changed without the creator's (or owner's) permission. This protection is available to both published and unpublished works, and applies to students' work.
  - > What does the term intellectual property mean? Intellectual property is a product of the intellect, such as inventions, music, written word, and pictures.
- Have the class brainstorm examples of intellectual property that they think have some type of value to the creator or owner.
- Possible examples: music you hear on the radio makes money for its owners; an author makes money from his books; a school project made by a student may get a good grade.

- Discuss the scenario about the teacher using his student's work. (The essay is intellectual property that belongs to the student. The teacher should have obtained permission from the student before posting.)

 Group activity

- Divide students into small groups and provide each group with an activity page.
- Instruct students to complete the first section. They should consider the work, money, effort, etc. that goes into creating work that is protected by copyright. Discuss if desired.
- Have students complete the chart using the information they have learned in this lesson.

Presentation

- If desired, prepare a section of the board or a large chart to record answers.
- Have the groups take turns sharing the points they included on their charts.

The charts should include the following information:

Protections:

- Copyrighted works cannot be copied without permission (given).
- Copyrighted works cannot be distributed without permission.
- Copyrighted works cannot be performed without permission.
- Copyrighted works cannot be changed without permission.

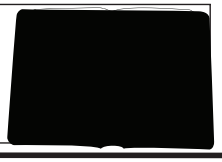
Results of Protections:

- Enables an artist to become known for his/her work (given).
- Is an incentive for the creation and production of more creative works.
- Enables the creator to make money from his/her work.
- Gives the creator legal foundation in a court of law to protect his/her work.

Evaluation

- Review posters and/or webpages for concepts listed above.
- Acknowledge those who show the copyright notice on their work.

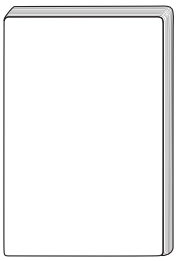
Copyright Know-How



As citizens, we have rights. A very important right is to be able to own property, and therefore, be able to say what is done with our property. Many times we think of "property" as something like land, a bicycle, or a soccer ball, but you have learned that intellectual property is a kind of property made from things that we can create using our minds. Each person who has created intellectual property owns it and has the right to say what is done with it. It's called "copyright."

The following kinds of intellectual property are covered by copyright:

literary works (books, stories, poems, etc.)	sculptures
musical works including any song words	movies and videos
drama – plays and musicals	radio and television broadcasts
dances, ballets	sound (audio) recordings
graphic art such as paintings, drawings, digital art	designs for buildings
photographs	computer software



Copyrighted works are protected from being copied, distributed, performed, or changed without the creator's (or owner's) permission. This protection is available to both published and unpublished works.

It is important for people to let others know that their own work is special and deserves the respect of copyright. This is done by putting a special notice on the work made up of the copyright symbol – a letter "c" inside a circle: ©, the year, and the name of the creator.

Copyrights begin upon creation of a work in tangible form (a form that can be seen or touched).

Although copyright registration is not required, registration of a copyright with the U.S. Copyright Office creates a legal, public record of the copyright facts and details. This is especialy useful for materials that have known commercial value. Go to **http://www.loc.gov/copyright** for instructions on how to register copyright.

Think About It – Talk About It

You have written a long essay as an assigned school project and you turn it in.

Your teacher thinks you deserve an A and without telling you, he proceeds to post the text of it on an online bulletin board to show other teachers the work his students are doing.

- Was it legal for the teacher to do that?
- Do the laws of copyright apply here?
- Is this fair? To whom, and why?

Why Copyright?

A lot about copyright is about money! If people are allowed to have copyrights and make money from them, it is a strong incentive for the creation and production of creative works. Copyright provides a measure of control over one's creations. In order for someone to bring a lawsuit against another for copyright violations, the creative work must have commercial (monetary) value.

The Value of Copyright

If you create a work of art such as a story, a song, a painting or a photograph, what is your investment (effort, time, money, etc.)?

Choose a type of work that would be protected by copyright, and that you might create (a story, song, painting, etc.) and fill in the following:

Materials you would need:

Cost of those materials:

Time to create:

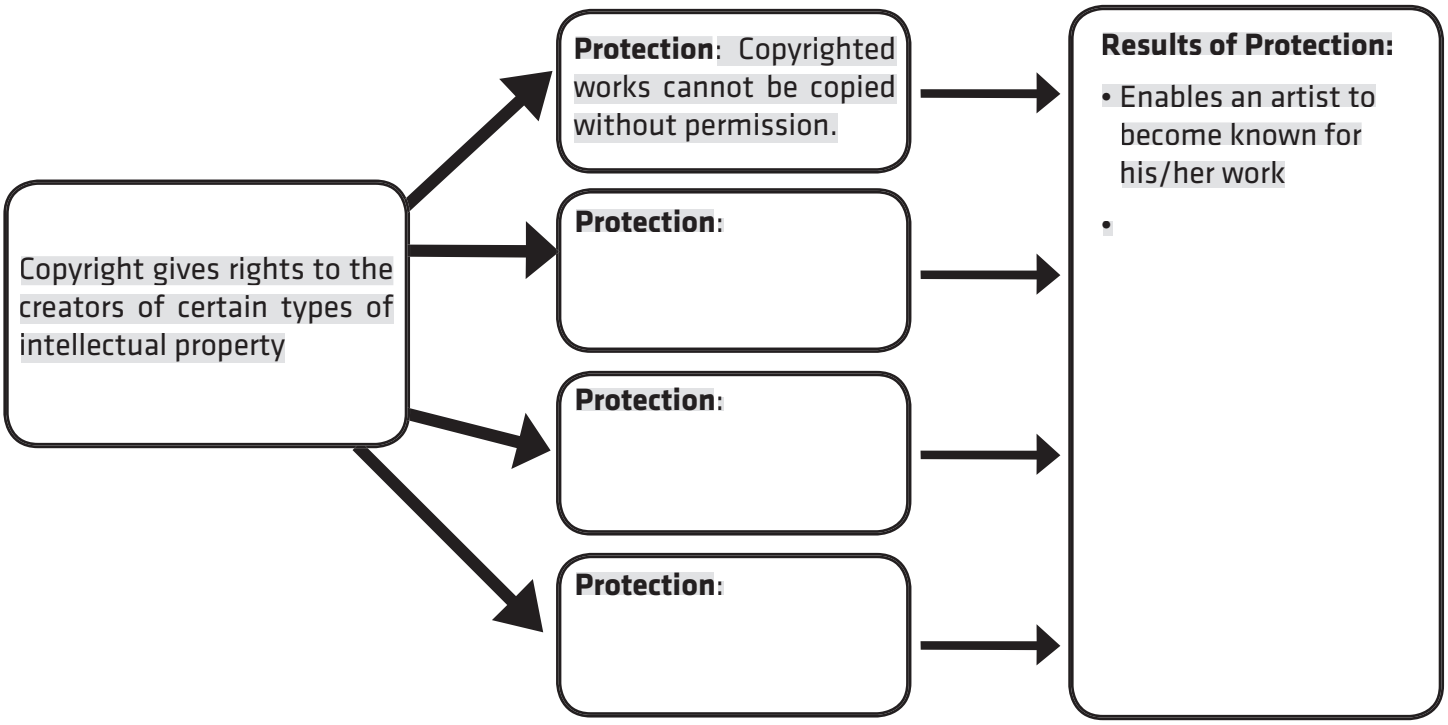
Cost of your time:

Distribution – how would you distribute story? Cost/Time factor:

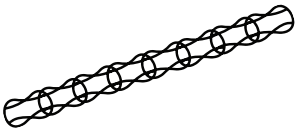
What would be the impact of someone taking your story, copying your story, or stealing your story?

Chart it!

Directions: Using the reference information from this lesson and the chart below, organize your thoughts on the reasons copyright protection for original works of authorship is as important as the laws that protect ownership of other tangible property. Some boxes have been filled in to help you get started. When finished, create a small poster or webpage with your group, to let others know about the importance of copyright protections.



Curriculum Connections



These cross-curricular activities support main lesson concepts through critical-thinking activities.

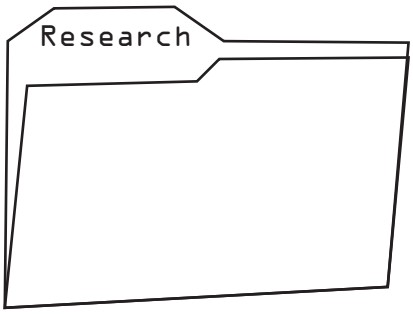
Technology/Digital Literacy Connection – Cite Your Source

Materials/Preparation

- a copy of the activity page for each student
- a pre-selected webpage for students to use as a resource

  or

- a book, article or other non-Internet reference material for students to use as a resource



Procedures

- Read the reference materials with students.
- Discuss the correct format for citing a source.
- Direct students to access an online Web site of your choice, or to the other non-Internet reference selected.
- Using their selected source, have students write a short paragraph in which they paraphrase.
- Have students take down the information to cite the source and then correctly cite the source.

Discuss

- Meet back as a class and have students share what they found.
- Select a few students to demonstrate whether the source was correctly cited.
- Offer pointers for correct paraphrasing and citation.

Literacy Connection – Facts About Fair Use

Materials/Preparation

- a copy of the reference page for each student
- a copy of the activity page for each student or student group

Procedures
Discuss

Inform students that there is much more to copyright than what they learned in the last lesson. Lawmakers came to the realization that sometimes, to advance education, students and teachers need to use products that are protected by copyright. To cover these situations, an addition to the copyright laws, called the Fair Use Doctrine, was created to allow limited exceptions for those who want to use copyrighted material for reasons such as educational purposes.

- Discuss why fair use exceptions might be granted.
- Discuss how the world/school work might be different without fair use exceptions.
- Hand out the reference page, What's Fair about Fair Use?, and cover as a class.
- Have students complete the corresponding activity page.

Discuss

Have students review what they have learned from the activity. (Use the teacher's Answer Key below to go over the correct answers to the scenario worksheet.) Cover these questions:

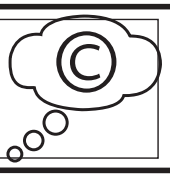
- What are some valid fair use exceptions?
- What were some scenarios where fair use did not apply?
- What should you do if fair use does not apply and you want to use a copyrighted work?

Discuss school projects students have done.

- When have you made use of the fair use exceptions?
- When have I (the teacher) made use of the fair use exceptions?
- Why do we still need to cite sources?

Answer Key		
Scenario 1:	**Is this acceptable fair use?** Yes **No**	**Why?** Fair use provides that you can use a portion of a song – less then 30 seconds, not the entire song. If you limited it, it would be OK.
Scenario 2:	**Is this acceptable fair use?** **Yes** No	**Why?** While you are allowed to use a small amount of information found online in a report – realize this is PLAGIARISM. You need to cite sources to let others know these aren't your original thoughts and ideas.
Scenario 3:	**Is this acceptable fair use?** **Yes** No	**Why?** Even though the history fair is a public event, the video will only be used by an individual in a one-time educational presentation. As long as you are credited as the creator of the video, this is fair use.
Scenario 4:	**Is this acceptable fair use?** Yes **No**	**Why?** While this started as a school project, you cannot use other people's work to make money. By including the project in a video yearbook and selling it, it is no longer fair use.
Scenario 5:	**Is this acceptable fair use?** **Yes** No	**Why?** Most government materials are free of copyright (in the public domain). If you were to check the NASA Web site, it gives permission to use materials freely (except for commercial promotional use). *(For further information:* ***http://www.usa.gov/webcontent/reqs_bestpractices/laws_regs/copyright.shtml****)*

What's Fair about Fair Use?



Fair Use: A set of legal exceptions to copyright laws. Fair use allows certain ways of using copyrighted material for specified purposes without the creator's permission.

Who can claim fair use? Critics, commentators, news reporters, teachers, scholars (students), and researchers. However, this does not give these people free use of any material they want. There are guidelines as to when it is appropriate to use copyrighted materials.

The four factors of fair use:

- Nature of the work (fact vs. fiction; published vs. unpublished)
- Amount and substantiality (How much will be used without permission?)
- Effect of use (will the creator lose money?)
- Purpose and character of the work (commercial vs. nonprofit educational)

It's Tricky!

Here's where it gets tricky. Let's say you are doing a multimedia presentation for school. Under fair use guidelines you are allowed to use small amounts of material found on the Internet or from CDs, books, etc. in your presentation without getting permission from the author. However, if you use this material without giving credit to the creator in a bibliography, you are plagiarizing (using someone else's words as your own). In other words—use it, but cite your source.

Let's say you do give credit for the music and photos you use in the bibliography and you aren't guilty of plagiarizing. You've correctly followed fair use and your project gets an A+. Your teacher wants to showcase your work on the school Web site. Is this fair use? Unfortunately, no! You can't display work in a public forum without permission from the original creators. To present the project you are allowed to use music and pictures for an educational purpose – as soon as you go public with it, such as on the Internet, it is no longer considered fair use. *(Based on CONFU Guidelines)*

Something else to consider:

Most works created and posted publicly by a government organization are freely available. There are some exceptions to this rule and it is always best to check with the government organization first, but this can help with those school projects. For example, if you were doing a project on foreign travel, you could use a picture of a U.S. Passport found on the U.S. Department of State Web site—even if your project were to go public. You would of course still want to give credit to your source.

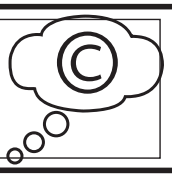
What do YOU really need to know?

You can use graphics and content for educational purposes in small amounts, such as 30 seconds of a song or 1 picture from a book. Just remember to give credit so that you aren't guilty of plagiarizing. However, also remember that work cannot be publicly displayed or put into a situation where it could be distributed or copied. (Examples– Web site, contest, sell for school funds, etc.)

Fair use is supposed to give you the right to enhance your education AND protect the creators and their monetary rights. To violate fair use is to violate copyright laws. Violations of copyright can carry some hefty penalties.

Remember: There is no such thing as "not copyrighted." When you produce something, you automatically hold the copyright.

Apply It!
Is This Fair Use?



Task: Examine each scenario below and decide if it is fair use of copyrighted materials or not. Use your fair use reference page as a resource if needed.

Scenario 1:

You are compiling a video of your year in school to be shown at your class's end-of-the-year party. You are scanning in all of your photos of your friends and putting them in a slide show with music. You know of a song that will make a perfect background. You own the CD so you put the whole track behind your creation.

Is this acceptable fair use?

Yes No

Why?

Scenario 2:

You have a major paper due for school. You find a great Web site covering the information online. You cut and paste two short sections to put into your report. The assignment does not say to include a bibliography for the paper so you don't bother to include one.

Is this acceptable fair use?

Yes No

Why?

Scenario 3:

For a school project you and some friends interviewed people throughout the county on important events in history. You were careful to get written permission from each person interviewed, authorizing the use of their interviews in this project. With your permission, these taped videos were hosted on the school Web site to demonstrate your work. Now, you find out that the history teacher from a school across the county is using one of your video clips during his short speech at the opening of the school's history fair.

Is this acceptable fair use?

Yes No

Why?

Scenario 4:

You have edited together video footage of major news events throughout the year as part of a school project. This included very short clips from news shows like NBC, CNN, etc. The project turned out so well that the school wants to use it as an introduction to the video yearbook they are selling.

Is this acceptable fair use?

Yes No

Why?

Scenario 5:

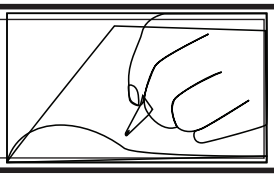
You created an awesome multimedia project on the solar system using graphics you found on NASA's Web site. Now, your teacher wants to post your project on the school Web site as an example to others.

Is this acceptable fair use?

Yes No

Why?

Cite Your Source



The Internet is a great place to find out about things.
Use it correctly in school reports and projects by citing your sources.

Don't take information without giving credit! Taking ideas and words from others and passing them off as your own is **plagiarism**. If you find information you want to use, remember to do the following **before you leave the Web site**:

- Make notes about what you read, but do not copy word for word.
- Copy the URL of any Web site you use. A URL is found near the top of a webpage and looks like this: **http://www.isafe.org**.
- Write down the title of the article.
- Write down the author – the person who wrote the information or the group which sponsors the Web site.
- Write down the date the webpage was made – it's usually at the bottom of the page.

Here's how you put it together:

- First, give the name of the author or the Web site title: i-SAFE Inc.
- Then give the name of the article: Staying Safe Online.
- Next comes the date the article was written: March 11, 2004.
- Finally, write in the date you found the article and the Web site URL where you found it:
- Obtained on March 29, 2006 from **http://www.isafe.org**

List any Web site you use at the end of your report or presentation.
Here's an example:
i-SAFE Inc. Staying Safe Online. March 11, 2004. Obtained on March 29, 2006 from **http://www.isafe.org**

Apply It!

On the back of this page or on a separate sheet, use your source (the Web site or other resource your teacher selects for you) to paraphrase the information (write the information in your own words) in a short paragraph.

Make note of the information you need to cite your source:

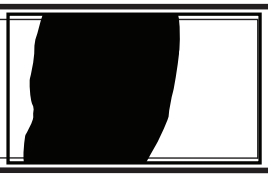
- Name of author and/or Web site title:
- Name of article:
- Date written/published:
- Date you found the article:
- Web site URL:

Now put it all together:

Example: i-SAFE Inc. Staying Safe Online. March 11, 2004. Obtained on March 29, 2006 from **http://www.isafe.org**

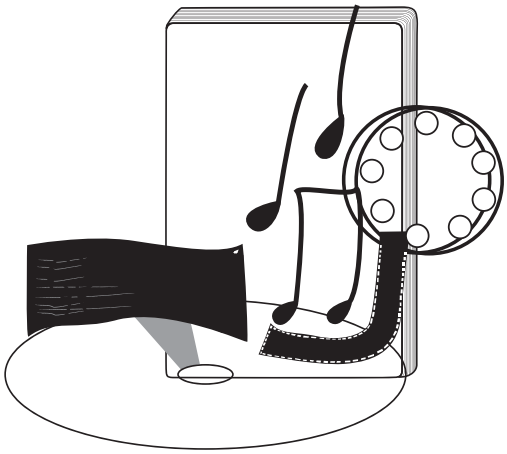
LESSON PLAN–Intellectual Property Theft

Recommended learning level: Middle School



Learning Objectives

Students will:



- identify different types of media as intellectual property: writings, music, videos, computer games, etc.
- associate the concept of trade secrets with intellectual property protections
- understand it is stealing from real people if one copies copyright protected material or downloads material from the Internet without permission
- understand it is against the law to download copyright protected videos, music, etc., from the Internet without permission
- understand that there are legal consequences to those involved in the theft of trade secrets or any other protected intellectual property

Materials

- a copy of the reference page for each student
- a copy of the activity page for each student

Discussion

- From prior lessons, prior knowledge, etc., ask students to self define the term intellectual property.
- Ask students why intellectual property has worth or value.
- Ask students what would happen if we didn't value intellectual property.
- Discuss: If intellectual property has value, is it OK to take it from the one who owns it? Why or why not?
- Ask students to raise their hands in response to the following questions:
  - > Have they ever copied a picture (or cut and pasted from the Internet)?
  - > Have they ever used someone's idea for a school project?
  - > Have they ever downloaded music, software or movies from the Internet?
- Ask students who else might take intellectual property and why?
- Discuss: Why is it their responsibility to ensure that intellectual property rights are respected? Ask them to explain how they can show their own respect for the laws.

Reference Page

- Divide students into small groups.
- Hand out the reference and activity pages.
- Have students read the reference page in their small groups and discuss.

Group activity

- In their groups, have students read the scenarios and discuss.
- Answer the questions according to the directions.
- Have student groups develop their own scenario of IP theft.
- Have groups exchange their scenarios.
- Have each group discuss their new scenario.

Class Presentation and Discussion

- Have groups present the newly written scenarios and solutions.
- Discuss various intellectual property laws and why theft occurs.
- As a class, discuss where students might be tempted to break intellectual property laws, in regards to the online environment – downloading music, copying and pasting into reports, sharing software, etc.

IP Theft Scenario Answer Key

Scenario 1

A new computer super store is opening up. Their major competition is Best Buy. In order to compete, the new store sends out numerous flyers advertising their grand opening. Their name is Bargain Buy, which they prominently display as BB in the same blue print Best Buy uses. In fact, Bargain Buy has imitated many of the designs and character sets in their advertisement in an effort to steal Best Buy's customers away.
Violates trademark law. If Best Buy's logo is a trademark and Bargain Buy has substantially imitated it with the intent of causing market harm to Best Buy, they are infringing. Bargain Buy can create its own logo and market on its own merit.

Scenario 2

The newest software computer game has just been released. However, it costs more than Josh can afford. All of his friends are bragging about how much fun the game is. He doesn't understand how they all got their parents to buy it. Talking to Mark, he learns there is a site out there that lets you download the game for free. Josh can't believe his luck! Now he can have it too. He proceeds to download his own copy.
Violates copyright law. Downloading the game without the copyright owner's permission is an act of piracy. The legal option is to purchase the game.

Scenario 3

Just Juice has recently opened and they are a huge hit with their secret recipe smoothie. It's delicious and packed with more vitamins than any competitor's products. Instead of patenting the unique formula that allows for the inclusion of so many vitamins without altering the taste, Just Juice is keeping it a trade secret. Healthy Smoothie, a competitor, has obtained samples of the smoothie and has reverse engineered it. They've managed to figure out how to imitate the formula and have launched their own smoothie.
No intellectual property theft has occurred. Reverse engineering to discover a trade secret is allowed. Just Juice would have had to patent the formula to prevent others from making it. If Healthy Smoothie had illegally learned the secret, such as from a Just Juice employee, intellectual property theft would have occurred.

Scenario 4

Susan is helping to design the video yearbook that her school will be selling. She is doing a slide show and wants to include some photographs of the planets. She finds just what she is looking for on the nasa.gov site and copies and pastes them into the slide show. She is pretty sure she can use these because she did not see any special notice of copyright for any of them.

No intellectual property theft has occurred. Government material offered in this way generally is not protected by copyright. If Susan had taken pictures from a non-government site, it would have been intellectual property theft – copyright violation. Fair use does not apply to items that are for commercial profit or resell.

Important NOTE: Reinforce to students that the best policy is to check for copyright policies on any Web site they intend to use material from, even a U.S. government site.

NASA's policy can be read at **http://www.simlabs.arc.nasa.gov/copyright_info/copyright.html** and states the following regarding photographs:

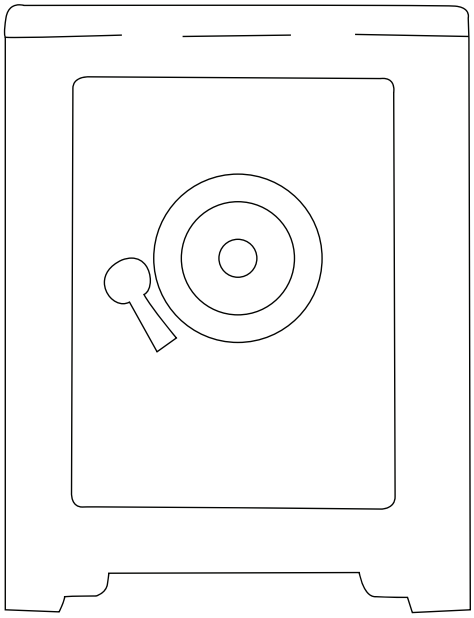
Photography

"Photographs are not protected by copyright unless noted. If copyrighted, permission should be obtained from the copyright owner prior to use. If not copyrighted, photographs may be reproduced and distributed without further permission from NASA. If a recognizable person appears in a photograph, use for commercial purposes may infringe a right of privacy or publicity and permission should be obtained from the recognizable person."

Understanding Intellectual Property Protections

Intellectual property is a broad term used to identify any product of the human intellect that has commercial value. When we say intellectual property, we can mean a variety of creations such as songs, movies, software, medicine, mechanical inventions, a corporate logo, and more. Intellectual property can be divided into a few different categories for which there are different types of legal protection.

Take a look at the following examples:



Example 1: June does extensive research and spends much time perfecting a technique to be used in surgery to cut down on scar tissue. June patents the process that is a result of all her time and energy spent. This patent would allow her to charge a fee for its use by anyone who wants to use it. This fee is her "reward" for the time and effort she put into perfecting the process. If the process isn't useful or needed others won't pay for it. However, if it is truly innovative, June will make money.

Example 2: Mike has spent decades researching, traveling, and writing. He is writing a book on traveling to foreign countries. His book is recently complete and he is ready to have it marketed and sold. As the author, he has the legal right to prevent others from reprinting the book, copying the text on a Web site, or creating a television series from it. This right can make money for Mike as he can sell the publishing rights to others for a flat fee or royalties.

Understand It

Think about the examples you just read. It is important to remember that intellectual property has value simply because of the legal protections we afford it. Legal protections for intellectual property grant the owner the ability to control its use. Without this legal right, the owner could not require payment in exchange for use, resulting in a product that might have intellectual worth but no commercial worth.

Review: Protecting Intellectual Property

The laws protecting intellectual property are divided into different categories. Let's review:

Copyright: Copyright law protects creative expression that is put into tangible form such as writings, songs, movies, software. It protects the actual words in a novel, but not the topic or plot of that novel.

Patents: There are 3 types of patents to protect inventions. A patent can be a utility patent, a design patent, or a plant patent.

Trademarks: This area of intellectual property protection protects distinctive names, logos, designs, scents, packaging, sounds, etc., that are used to identify products in a marketplace.

Trade secrets: This protects others from using information a company takes steps to protect. This protected information, or "secret" provides the company with a competitive edge in its field.

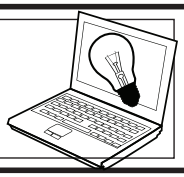
Intellectual Property Theft

Intellectual property theft occurs when someone knowingly or inadvertently takes materials protected for personal use, thus denying the creator monetary compensation. While there are some exceptions, such as when items fall into the public domain, patents expire, or fair use applies (guidelines that provide limited use of copyrighted materials for educational purposes), these are the exceptions – not the rule.

Currently, intellectual property theft is rampant with the advent of the online world. Music sharing, movie downloading, software trading, copying and pasting, graphic use, and more occur daily with the online user giving little thought to respecting the creator's rights and the laws protecting the works.

Have you thought about how this may affect you and your own creative work?

Intellectual Property in the Digital Age



Novels can be read online, music downloaded, software traded, and more. Yet, during these transactions numerous intellectual property laws are being ignored or violated. Peer-to-peer (P2P) networks have made it possible to connect and exchange items with ease. Are peer-to-peer networks illegal? Should they be banned for fostering illegal activity? Another issue of the digital age involves trademark law and the registration of domain names. Is it fair for someone to register and use the domain name htpp://www.disney.com if they are not the holder of the trademark to the name? These and other questions are important ones that need our attention in the digital age.

Think About It:

1. Why are intellectual property laws necessary?
2. What are some consequences of the digital age and the ease of access to intellectual property online?
3. Are new laws governing intellectual property needed?
4. How are the artists or creators of original work being affected by the digital age?
5. What public rights to information access should be protected?

Activity

Directions: Read each scenario in your groups and discuss. Is intellectual property theft taking place? What type of law/code do you think it violates (patent protection, trademark protection, trade secret, copyright, fair use)? List legal options. Have someone in the group jot down the agreed-upon answers for each scenario.

Scenario 1: A new computer super store is opening up. Their major competition is Best Buy. In order to compete, the new store sends out numerous flyers advertising their grand opening. Their name is Bargain Buy which they prominently display as BB in the same blue print Best Buy uses. In fact, Bargain Buy has imitated many of the designs and character sets in their advertisement in an effort to steal Best Buy's customers away.

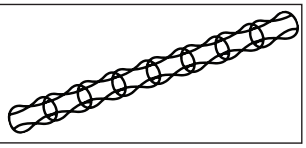
Scenario 2: The newest software computer game has just been released. However, it costs more than Josh can afford. All of his friends are bragging about how much fun the game is. He doesn't understand how they all got their parents to buy it. Talking to Mark, he learns there is a site out there that lets you download the game for free. Josh can't believe his luck! He proceeds to download his own copy.

Scenario 3: Just Juice has just opened and they are a huge hit with their secret recipe smoothie. It's delicious and packed with more vitamins than any competitor's products. Instead of patenting the unique formula that allows for so many vitamins without altering the taste, Just Juice is keeping it a trade secret. Healthy Smoothie, a competitor, has obtained samples of the smoothie and has reverse engineered it. They've managed to figure out how to imitate the formula and have launched their own smoothie.

Scenario 4: Susan is helping to design the video yearbook that her school will be selling. She is doing a slide show and wants to include some photographs of the planets. She finds just what she is looking for on the nasa.gov site and copies and pastes them into the slide show. She is pretty sure she can use these because she did not see any special notice of copyright for any of them.

Your Turn: Write your own scenario for a case that demonstrates intellectual property theft.

Curriculum Connections



These cross-curricular activities support main lesson concepts through critical-thinking activities.

Historical Connection – Intellectual Property Theft Case

Materials/Preparation

- reference story, "Who is David LaMacchia?"

Procedures

- Hand out copies of the story, "Who is David LaMacchia?" to students.
- Have them read silently and prepare for the discussion.

Discuss

Discuss the following questions:

- Did David LaMacchia do anything wrong?
- Is the No Electronic Theft (NET) Act fair?
- How are laws constantly evolving and changing as technology advances?

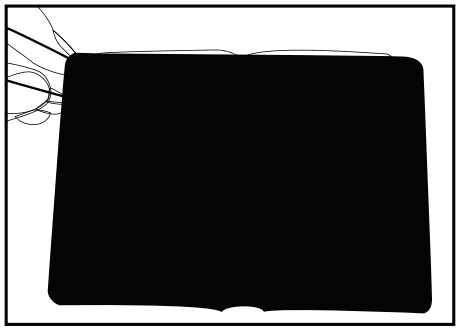
Materials/Preparation

- a copy of the activity page cut into strips – one scenario per strip

Procedures

Scenario

Read the following story to students:



John had to write a report for school. He knows a lot about Internet safety so he thought that would be the perfect thing to write about. John wrote all about the importance of not giving out personal information like names and addresses on the Internet. There was one sentence he wrote that he really liked, and he put it right at the end of his report. He wrote, "If you're cyber smart, you'll be cyber safe."

On his way home from school, John accidentally left his backpack on the bus, but his classmate, Daniel, picked it up for him. Daniel called John and told him he'd take it to school the next day. At school a couple of days later, John's teacher called him up to her desk. She had 2 reports on her desk. She said she was very sorry, but she could not give him credit for his report because it was exactly the same as another boy's report. John

couldn't believe it! He looked at the other report, and there were the words he had written, even his safety tip about being cyber smart. But it was in Daniel's handwriting. Daniel had copied his work! He tried to explain to the teacher, but she said she was sorry, both reports were the same. She didn't know if he had written it by himself or not. John was very upset.

Discuss

- Did John have a right to be upset?
- Do you think his ideas and his report were his own property?
- What do you think would be a good ending for this story?

What is Plagiarism?

- Describe intellectual property. (There is no difference between intellectual property found on the Internet and writing, or pictures you would find in a book or magazine. Someone put effort and time into their own writing and work to let other people read it and see it.)
- Ask students if they can define plagiarism. (Taking someone's words, ideas, processes, or results and using them as if they were your own.)
- Ask students to give examples of how the Internet makes it easy to use the work of other people.
- Reinforce: Intellectual property cannot be copied and pasted from ANYWHERE, including the Internet. To do so is called "plagiarism." It is cheating.

Activity

- Divide the class into six groups. The activity can be done verbally or written.
- Provide each group with one scenario.
- Each group determines if its scenario is a proper use of intellectual property or describes plagiarism. Have students give ideas on how to undo the examples of plagiarism.
- Guide the students to create a list of the rules or guidelines you would like them to use for citing sources when using material from the Internet.

Scenario Answer Key

You have an important project due for school. The teacher requires you to have pictures with it. You find all of the pictures you need on a Web site that is perfect for the project. You print them out and include them in your report. Since you do not use any text, you do not provide the sources of the pictures. This is plagiarism.

You have to write a report for school. While using the Internet, you find several sites that contain useful information. You rewrite sentences from each Web site and reorganize the information before using it. This is allowable if every source the sentences were taken from is shown as a resource.

You are swamped with homework from all of your classes. In one subject, you have a major report due tomorrow. You've been putting it off, and now there is no way you can get it done. You find a Web site that offers examples of papers on every subject, and fortunately each paper has a reference list. You pick one out and copy it so you can turn it in as your own. This is plagiarism. You cannot use someone else's work as your own, even if it is offered to you.

You have to design a presentation for your science class. The teacher has provided a folder of available clip art for students to use. However, you also want a good picture of the moon. You find many great ones online and copy and paste a few into your project without citing your sources. This is plagiarism.

You worked on a group history project. Your group does a great presentation for the class. You've included research, quotes from historical figures and your own drawings and maps. You've even created a very well-done booklet with all the information printed out for the teacher. At the back of the booklet is a list of all of the Web sites and books you got your information from, as well as the details of the authors, publishing dates, and page numbers you used. This is allowable.

You have written an original short story based on things you did last summer. You have used the first names of some of your friends as characters in the story. You post the story on your own personal Web site and turn in a written copy for a school assignment. This is legal to do and does not have anything to do with plagiarism.

Literacy Connection – Vocabulary (Crossword Puzzle)

Materials/Preparation

- a copy of the activity page for each student
- access to dictionaries

Procedures

- Instruct students to solve the crossword puzzle.
- If necessary, students can use the word bank to look up definitions to figure out clues.

Discuss

Meet back as a class to review terms.

Answer Key

Word Bank

Property: something a person owns.

Piracy: the unauthorized reproduction or use of a copyrighted book, recording, television program, patented invention, trademarked product, etc.

Copyright: legal protection fororiginal works of authorship in tangible form such as books, pictures, software, movies, songs, etc.

Patent: the legal right to exclude others from producing or using an inventor's discovery or invention.

Trademark: a word,name, symbol, or other device, or combination, identifying a product. A brand name.

Plagiarism: taking someone's words or ideas as if they were your own.

Theft: to steal something.

Invention: a discovery, finding, process, or product that is new or innovative.

Compensation: something given or received (such as money) as payment for a service or material.

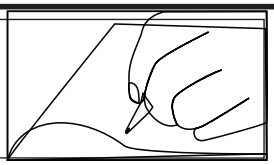
Brand: a trademark or distinctive name identifying a product or a manufacturer.

Generic: not protected by trademark – a general product name.

Infringement: the improper use of a patent or copyright by persons not authorized to do so.

Intellectual Property: property that originates from an idea in your mind.

Activity Scenarios



Directions: Provide each student group with a scenario. Students determine if the scenario is a proper use of intellectual property or describes plagiarism. Have students give ideas on how to undo the examples of plagiarism.

You have an important project due for school. The teacher requires you to have pictures with it. You find all of the pictures you need on a Web site that is perfect for the project. You print them out and include them in your report. Since you do not use any text, you do not provide the sources of the pictures.

You have to write a report for school. While using the Internet, you find several sites that contain useful information. You mix up sentences from each Web site and reorganize the information before using it.

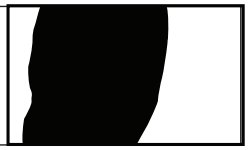
You have written an original short story based on things you did last summer. You have used the first names of some of your friends for your characters in the story. You post the story on your own personal Web site and turn in a written copy for a school assignment.

You worked on a group history project. Your group does a great presentation for the class. You've included research, pictures and maps. You've even created a very pretty booklet with all the information printed out for the teacher. At the back of the booklet is a list of all of the Web sites and books you got your information from, as well as the details of the authors, publishing dates, and page numbers you used.

You have to design a presentation for your science class. Under your clip art, there are many pictures you can use in your project. However, you also want a good picture of the moon. You find many great ones online and copy and paste a few into your project without citing your sources.

You are swamped with homework from all of your classes. In one subject, you have a major report due tomorrow. You've been putting it off, and now there is no way you can get it done. You find a Web site that offers examples of papers on every subject, and fortunately each paper has a reference list. You pick one out and copy it so you can turn it in as your own.

Who is David LaMacchia?



It's not every day that a college student makes history and is the cause for a new federal law, but David LaMacchia was just such an example. His story illustrates what can happen when the law does not keep pace with ever-changing technologies.

David was a Massachusetts Institute of Technology (MIT) student who set up a Bulletin Board Service (BBS) on MIT's computer network. This service allowed others to connect and download commercial software that was intended, and legal, for the sole use of the MIT network. David's BBS system was accessible over the Internet, and allowed people to download copyrighted programs such as WordPerfect and Excel, free of charge, without the copyright holders being any the wiser.

David's BBS was connected to the Internet from November 21, 1993 to January 5, 1994 – providing 6 weeks of active pirating. Traffic was so high that his service attracted the attention of law enforcement, who estimated he had distributed more than $1 million worth of pirated software.

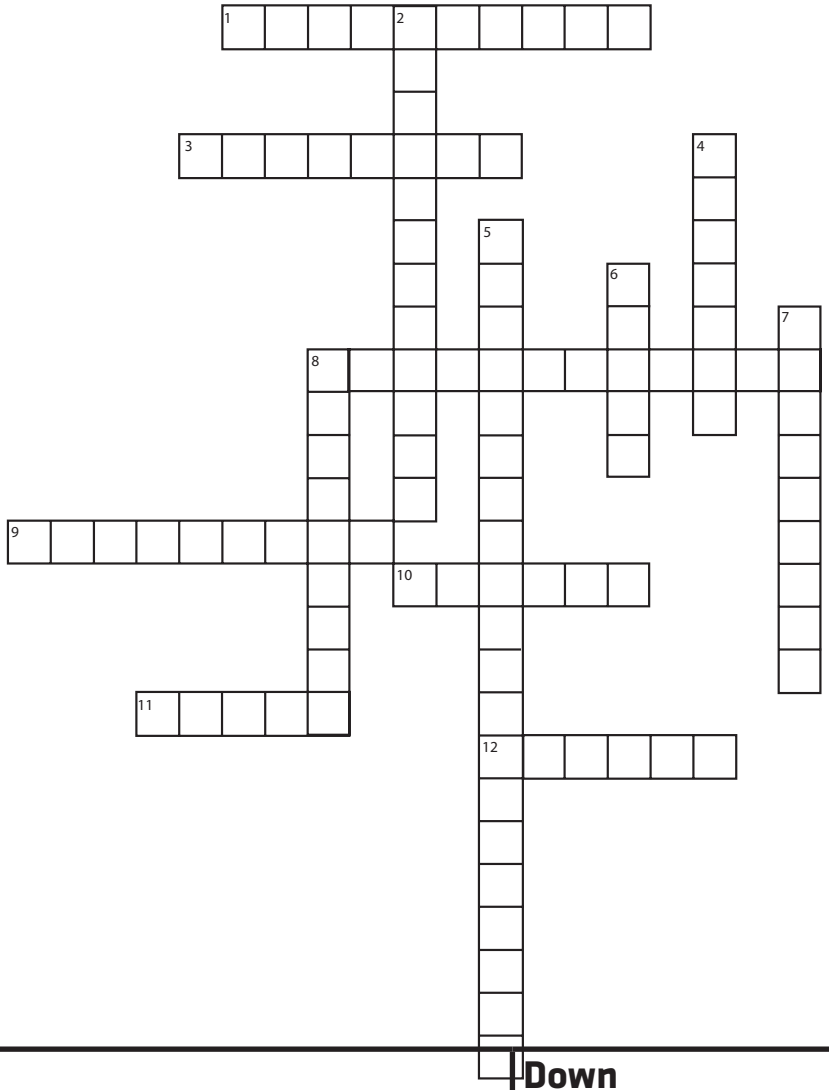
Clearly, this appeared to be a case that should be prosecuted for the illegal distribution of copyrighted materials. The federal government indicted David on April 7, 1994, for violating wire-fraud statutes. However, the case was thrown out by Judge Richard Stearns, who relied on earlier cases of Dowling vs. United States. Case law stated that wire fraud could not be applied as a gap-filler statute to cover where the Copyright Act left off.

Under the Copyright Act and the Copyright Felony Act (amending 18 U.S.C. Section 2319), to find criminal violation, the defendant must have infringed the copyright "willfully and for purpose of commercial advantage or private financial gain." While David might have willfully set up and run his pirate bulletin board, he did not intend to profit by his actions. So, although he was technically a software pirate, he was not a criminally-infringing one. Judge Stearns commented that while David had acted in a way that violated copyright, imposing penalties under wire fraud would result in making criminals of many consumers of computer software who made personal copies.

As a result, the federal government fixed this loophole with a new federal law – the No Electronic Theft Act (NET Act). This federal law, passed in 1997, provides for the criminal prosecution of individuals who engage in copyright infringement EVEN when there is no monetary profit or commercial benefit. Penalties can be 5 years in prison and up to $250,000 in fines. This law was in direct response to David's dismissed case. Prior to the Net Act, noncommercial infringers could be sued in civil action to recover damages, but could not be criminally prosecuted. This law solved that problem by closing the "LaMacchia Loophole," and is now applied not only to software sharing, but also to music and video file sharing.

So, what is David LaMacchia's "claim to fame?"

Intellectual Property



Word Bank

Property
Piracy
Copyright
Patent
Trademark
Plagiarism
Theft
Invention
Compensation
Brand
Generic
Infringement
Intellectual Property

Across

1. Taking someone's words or ideas as if they were your own
3. Something a person owns
8. Something given or received (such as money) as payment for a service or material
9. A word name, symbol, or other device , or combination, identifying a product. A brand name.
10. The legal right to exclude others from producing or using an inventor's discovery or invention
11. To steal something
12. The unauthorized reproduction or use of a copyrighted book, recording, television program, patented invention, trademarked product, etc.

Down

2. The improper use of a patent or copyright by persons not authorized to do so
4. Not protected by trademark – a general product name
5. Property that originates from an idea in your head
6. A trademark or distinctive name identifying a product or a manufacturer
7. A discovery, finding, process, or product that is new or innovative
8. Legal protection for original works of authorship in tangible form such as books, pictures, software, movies, songs, etc.

Innovation and Invention: Creative Problem Solving

Recommended learning level: Middle School

SECTION 1: Teacher-facilitated lesson/activity plans

How to use this section

This section provides **traditional lesson/activity plans** for teacher-facilitated instruction, similar to the other sections of this unit.

If you prefer to have students work in a more self-directed manner, or if students are using these materials as a resource for actual invention activities, select **Section 2: Invention Connection**

This section provides a series of facilitated lessons/activities to demonstrate organized steps in the invention process including:

- brainstorming
- logging ideas
- research
- avoiding scams and fraud

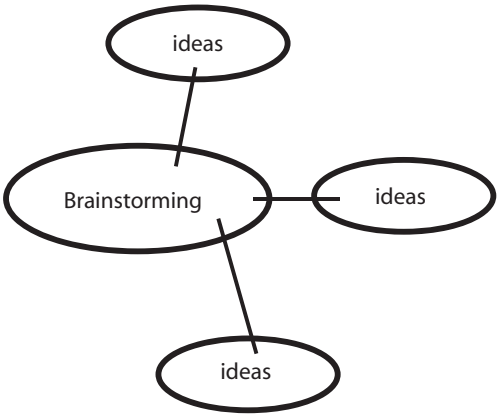
1. The Creative Process: Turning Thoughts and Ideas into Invention through Brainstorming

Learning objectives

Students will be able to demonstrate the brainstorming process as they creatively identify new uses for old items.

Materials

- copies of the reference and activity materials for each student group



Discussion

Use the following to inspire a discussion about creativity. Most of us at one time or another have had an "ah-ha" moment–when something enormously creative or brilliant just occurs to us. This spark can come at any time–after a deep sleep, while working on other work, mowing the yard, etc.

- Have you ever had a sudden creative idea?
- When do you feel most creative?
- How do you commonly solve or think out problems?
- Is there someone you feel best bouncing ideas off of? Why?
- How do you make your creative ideas a reality?
- Have you ever had an idea for an invention? What was it? Did you follow through? Why or why not?

Group activity

Have students break into small groups, read the reference material and complete the activity.

Presentation

Have groups present the results of their brainstorming process.

Evaluation

Use the student reference page as a resource in the evaluation of how well the students understand the concept of brainstorming.

- Did the group have a record of their ideas and processes?
- Were a variety of ideas included in the process?
- Were ideas obviously built upon within the group?

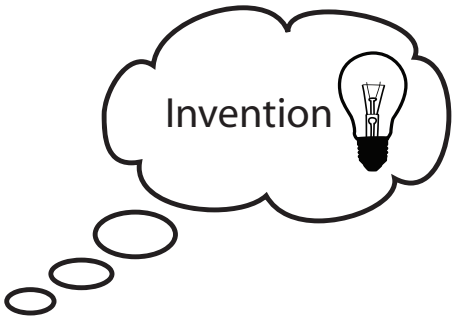
2. The Creative Process: The Inventor's Log

Learning objectives

Students will learn more about how to develop an invention from idea to product, in a careful manner to protect their intellectual property. Through the process they will understand how to utilize the inventor's log.

Materials

- copies of the reference/ activity pages for each student or student group



Discussion

Use the following to inspire a discussion about inventing. Inventions are a part of our world. They help us move forward and make progress. Inventions can come about as the result of sudden creativity, as an answer to a problem, or after long research and hard work. Think about it:

- Have you ever had an idea for an invention? What was it?
- Did you follow through on your idea? Why or why not?
- Why might some people with good ideas not follow through?
- If you had a great idea, what would you do to follow through? Do you know how to go through the inventive process?

Reference Page: Keep a Record!

Have students read through the story about Alexander Graham Bell.

Use the questions as desired. Suggestions:

- Have students create individual short presentations on the Bell story, in which they include answers to the questions.

- Discuss the questions as a class group.
- Assign the questions as individual writing work or homework.
- Have students take turns reading through the guidelines for keeping a good inventor's log:
  - > Write in ink. Do not cross out any mistakes. Instead, circle and note the problem.
  - > Do not leave any empty spaces. Never delete or add pages into your original log.
  - > Date all log notes.
  - > Record and describe your invention ideas.
  - > Explain why your invention is new and original.
  - > Write about any problems you experience and how you solved them.
  - > Make sketches of your ideas, when possible.
  - > Describe all materials, parts and costs associated with your idea.
  - > Describe the characteristics of your invention such as heat resistant, biodegradable, etc.
  - > Describe the tests you ran and their results. Use diagrams, if needed.
  - > Be sure to come up with a generic name for your invention and a name to use to market your invention (trademark name). Describe how you came up with the name.
  - > Sign and date all entries.
  - > Have another person witness your signature each time.

Activity

- Have students complete this activity in small groups or individually.
- Pass out the activity page that provides the sample inventor's log.
- Go over the student instructions:

  Student instructions – Task: As an inventor, your task is to modify an ordinary ballpoint pen with black ink into a multi-functional pen. If you are working in a group, begin by brainstorming an idea that you want to pursue – how will you engineer this pen to do something in addition to writing in ink? Use this sample inventor's log page, or make your own, to record information about this invention.
- Have students present their inventions to the rest of the class.

3. Creative Process: Researching your idea

Learning objectives

Students will:

- recognize that an important part of an inventor's process is to do research on the availability of the same or similar products
- search for patents online

Materials

- Internet access to **http://www.uspto.gov/main/profiles/acadres.htm** or **http://www.google.com/patents**

Present the idea:

To ensure an idea is patentable and marketable, an inventor needs to make sure someone else hasn't already had that idea. This involves doing a patent search. Before a person can apply for a patent, he or she must first make sure that no one else has already patented/invented the same thing.

Activity

- Select one of the patent searches for students to explore.
- Explain that there are three ways to search for a patent:
  - > Search by patent number – Each invention has its own patent number. One can do a simple straight-forward search by this number.
  - > Search by inventor name - One can also search for an invention if the inventor's name is known. It is also possible to search random names to learn what various people have invented.
  - > Search by using key words: The most challenging way to find an invention (but also quite fun) is to search for key words. One can look up any key word from dog collar to paperclip to see what the search turns up!
- Exploration may be done on a single computer as a group activity, or in an individual computer setting such as a compute lab.

Option 1:

Go to the USPTO search area at **http://www.uspto.gov/main/profiles/acadres.htm** for information about how to use the USPTO search engine. Have students review and then search for patents using a variety of key words such as "hand tool" or "pet products."

Option 2:

Try each of the three different ways of searching for patents by following these directions.

1. In your Internet browser go to **http://www.google.com/patents**.
2. Try a patent number search.
   a. Type in the number: 2262982
      i. What does the search pull up?
   b. Type in the name: Orville Wright
      i. What does the search pull up?

c. Try a key word search – some sample key words include: dog, paperclip, skateboard, etc. OR how about searching key words that have to do with the mock inventions in the last activity!

i. What does the search pull up?

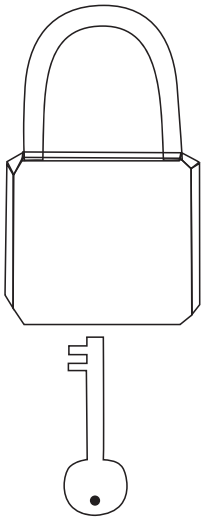
4. Safe and Savvy Inventors

Learning objectives

Students will learn to avoid frauds and scams when seeking help with the development and production of an invention.

Materials

- a copy of the reference/activity page for each student or student group
- optional: Internet access



Discussion

It's not that easy to get an idea off the ground and turned into a product that people want! So how does one do it?

- If you have an idea for an invention, what would you do to go about creating and getting it patented and marketed?
- Where would you turn for help?
- Why might some people be scammed in the development of their inventions?
- How is scamming possible?

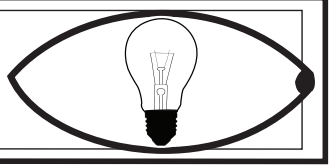
Activity

Individually or as a group, have students list their ideas about how a young person could promote an invention without spending his or her own money? (answers might include: enter invention contests, science fair projects, show invention on a personal Web site, etc.)

Extension:

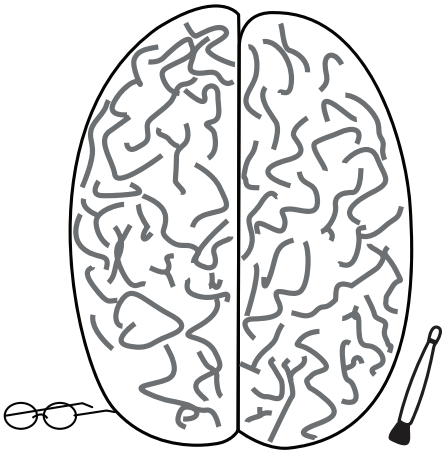
Have students do some Internet research on invention promotion companies. What types of companies did they find and what were the company promises?

The Creative Process



What is creativity? Is it something we are all born with? Do some people have more creativity then others? Is there anything we can do to help creativity emerge?

Brainstorming



Brainstorming can be one portion of a successful creative process. It is an activity used to generate many creative ideas that have no right or wrong answers and are accepted without criticism. Brainstorming can help develop highly creative solutions to a problem. The theory is that it can help one think out of the box and come up with new ways of looking at things.

There are two principles of successful brainstorming:

- deferred judgment
- quantity breeds quality

Deferred judgment – What does it mean? To defer is to put off, delay or postpone something.
To defer judgment is to creatively generate ideas without judging the merit of those ideas.
There is no criticism – Anything is a possibility.
To make it work, you must ignore what you immediately think an idea is worth. In other words don't even consider what your brain may be saying about how practical or useful the idea is. At this stage, all ideas are equal. "Defer judgment" of your ideas until you have finished generating ideas.

Quantity breeds quality – This is easier to figure out. It means, the more ideas you generate, the more likely you are to have a good one. When you have many ideas to consider, one idea may lead to another and you are more likely to turn a good idea into a better one. Additionally, sometimes you just need to clear your mind of some ideas by jotting them down, before you can even go on to any other thoughts.

Group brainstorming allows the ideas of many to be built upon in order to allow new ideas to evolve. Effective brainstorming in groups should follow the following steps/guidelines:

1. Identify the problem or goal.
2. State the rules – speak all ideas and allow no criticism. Remember: defer judgment!
3. Delegate a recorder to jot down all ideas.
4. Encourage participants to develop upon other people's ideas or to use other ideas to create new ones. Remember: quantity breeds quality!
5. Have a time limit.
6. Have a goal for time limit – aim for a minimum number of ideas.
7. Once the brainstorming session starts, participants should call out solutions to the problem while the recorder writes them down. (Ideally everyone should be able to see what is written down to expand on former ideas).
8. When time is up, evaluate ideas and select the best ones to expand upon.

Activity – Innovation through Brainstorming

Practice a brainstorming technique that inventors use.

Work in a small group to complete this activity.

1. Think of the rooms in your homes and list them. For example:

   Garage

   Living Room

   Bedroom

   Closet

   Bathroom

   Kitchen

   Game room or family room

2. Assign a person to record ideas.
3. Go around the group at least 3 times and have each person throw out ideas of how something could be added or changed to make the first room listed more functional, more fun, or more interesting, or that would solve a problem in that room.
4. Repeat with each room.
5. Review each item on the list and have group members identify what's obviously good about the idea and what's obviously bad about the idea; briefly record.
6. Review the list and select or vote for 1 idea that everyone, or most in the group, agrees would be a neat invention.
7. Have everyone make drawings of how a model might look for this invention OR work as a group to draw a single model with everyone inputting ideas.
8. Name your invention idea.

Rules for Success

1. Assign a recorder – to record ALL ideas.
2. Nothing is silly or not worthy – all ideas have merit.
3. Say any ideas that come into your head out loud to the group.
4. Build upon the ideas of each other.

Share your idea with the rest of the class including a short summary of some of the ideas you came up with and how you finally decided on the single idea.

Think About It

You can think about complicated contraptions to invent but really, some of the best inventions are very simple, like wire bent to make coat hangers, paper clips, staples and bobby pins!

Keep a Record!

Do You Know Who Invented the Telephone?

Documentation of an invention is an important step in the creative process. Without documentation, an inventor can lose his right to claim a patent if someone contests the date of creation. Throughout history, there are stories of inventors who have fought to prove that they were the first. Perhaps no story is more illustrative of this than that of the invention of the telephone.

We are taught that Alexander Graham Bell invented the telephone and the law upholds that fact. It is Bell who claimed the rights to the patent, a patent that was upheld in numerous court cases. However, a search on the Internet querying "who invented the telephone" returns a wide variety of other answers – Elisha Gray, Phillip Reis, Bourseul, Antonio Meucci, and many more.

So what is the answer? The truth lies with who holds the patent – Bell. Bell was the first to apply and complete the patent process. Meucci is credited with having applied also, but he apparently had been too poor to pursue a patent years before. Meucci died before his court case came up and the case was eventually dropped when the patent expired. A Reis machine was presented in one court case against Bell, but would transmit little more than a squeak. Elisha Gray's claim was even closer – he had filed a patent caveat the same day that Bell applied for his patent. On September 12, 1878, Bell and Gray entered lengthy patent litigation. As it usually goes in court cases, documentation is what saved Bell's case.

In all, the Bell Company fought out thirteen lawsuits that were of national interest, and five that were carried to the Supreme Court of the United States. It fought out 587 other lawsuits of various nature; and with the exception of two unrelated contract suits, IT NEVER LOST A CASE.

Bell, and the story of the invention of the telephone, is all about how multiple people can develop and work on an invention independently of each other. This story demonstrates that the one to go down in history as the inventor, is the one who gets the patent and can prove his or her case.

Questions:

1. Why did Bell's patent hold up through time?

3. What other items do you associate with their famous inventors?

4. Are they the "real" inventors?

Inventor's Log Rules

- Write in ink. Do not cross out any mistakes. Instead, circle and note the problem.
- Do not leave any empty spaces. Never delete or add pages into your original log.
- Date all log notes.
- Record and describe your invention ideas.
- Explain why your invention is new and original.
- Write about any problems you experience and how you solved them.
- Make sketches of your ideas, when possible.
- Describe all materials, parts and costs associated with your idea.
- Describe the characteristics of your invention such as heat resistant, biodegradable, etc.
- Describe the tests you ran and their results. Use diagrams, if needed.
- Be sure to come up with a generic name for your invention and a name to use to market your invention (trademark). Describe how you came up with the name.
- Sign and date all entries.
- Have another person witness your signature each time.

Keeping an Inventor's Log

Alexander Graham Bell's story shows us just how important an inventor's log can be to an inventor, and if you think about it, how an inventor's log can help to shape history! All inventors keep logs to record their work and their thoughts.

As you learned, if 2 or more inventors develop the same idea, or if someone "steals" an idea, the inventor's log serves as proof. The one that is carefully dated and has detailed notes and sketches will likely win the legal battle.

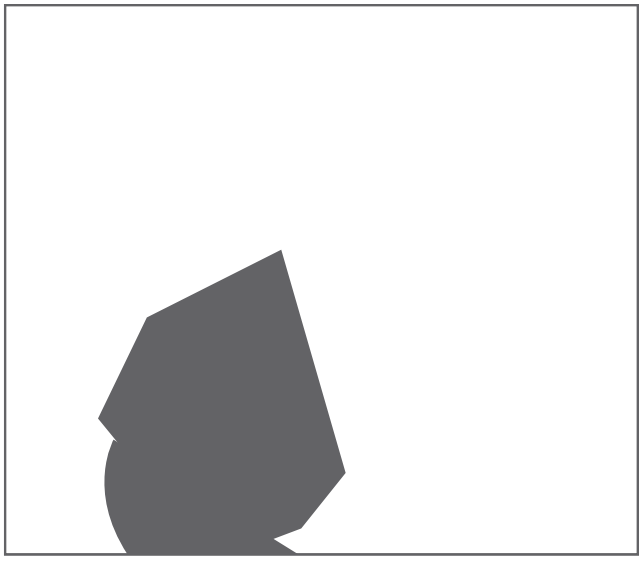
Avoiding Scams

Have you ever heard of the Patent and Trademark Institute of America (PTI)? Sounds official, doesn't it? According to the article "PTI Investigated by NY Attorney General" by the New York Daily News on September 27, 2007, a federal judge ordered the operators of PTI, an invention promotion firm, to pay $60 million for a scam that defrauded 17,000 hopeful inventors of approximately $60 million.

Companies under several different names run by PTI advertised that they would evaluate new invention ideas, and claimed that consumers would make money if they bought PTI's invention promotion services. PTI charged inventors $895 to $1,295 for a promise to evaluate the marketability and patentability of inventors' ideas. But, according to the Federal Trade Commission (FTC), it was found that their evaluations were almost always positive and were not meaningful. For a fee of $5,000 to $45,000, PTI's clients were offered legal protection and assistance to obtain commercial licenses for their inventions, and were told their inventions would earn money in royalties; but, none of it was true.

The American Inventors Protection Act of 1999 protects inventors from invention promoters by requiring that promotion companies make information available, such as how many inventions they have evaluated and how many inventors have actually profited from their inventions due to the promoter's services.

Unfortunately there are many scamsters preying upon the fact that the process can seem so overwhelming. For child and teen inventors, the scammers prey upon parental pride. Many promoters contact parents of child inventors to inform them how great the invention is. Hooked, parents pay out big bucks for evaluation, to get a patent, and to evaluate marketability. Those with deep pockets can then be fleeced for more in marketing and additional services.



These scams aren't just restricted to young inventors. Many inventors are targeted by many companies looking to make money to do the research, or hoping to buy valid ideas for bare-bones prices. Legitimate and successful promoters do exist and can be found with some work. If you are at this point with an invention, get a parent or a trusted adult to help you. Don't just call a number you see online or in a television advertisement. Check out companies to see if they are listed with the Better Business Bureau. For tips to avoid these kinds of scams, go to **http://www.uspto.gov/web/offices/com/iip/index.htm** and download the brochure titled, "Scam Prevention."

Activity

List your ideas on how a young person could promote an invention without spending his or her own money?

Innovation and Invention: Creative Problem Solving

Recommended learning level: Middle School

SECTION 2: Invention Connection

How to use this section

This section provides a workbook-style resource to enable students to learn about the creative process of inventing and to practice skills associated with that process. This option is appropriate for teachers who:

- expect students to work in a more self-directed manner
- work with students who are engaged in working on their own inventions
- want a group-guided experience for special needs students with less developed reading comprehension skills

If you prefer more teacher-student engagement and class discussion, and students are not participating in actual inventive activities, select

Understanding the Invention Connection

This Invention Connection booklet provides a series of activities and resources to promote understanding of organized steps that facilitate the invention process, and to enable mastery of a selection of basic skills dealing with the creation of a final product. Sections include:

1. Getting Thoughts and Ideas
2. Idea Evolution
3. Idea Development and The Inventor's Log
4. Researching Your Idea
5. Safe and Savvy Inventors
6. Enrichment

Additional Resources

You may elect to provide additional online and/or offline resources to complete the activities provided in this booklet.

CONNECT IT! These sections enable students to apply what they have practiced to their own inventive ideas.

i-SAFE Assessments

Pre-Assessment

- If beginning the i-SAFE program with this unit, administer the pre-assessment online at **http://www.isafe.org** by clicking on the link, Assessments, prior to the lesson.
- To verify School ID#, login at **http://www.isafe.org**, go to the "My Info" page and select "Find your school ID."

Post-Assessment

- If you will end the i-SAFE program with this unit, have students complete the post-assessment online at **http://www.isafe.org**.
- Students complete the outcomes assessment 3-6 weeks after completion of the last i-SAFE lesson implemented.

Plan Your Format

1. The unit is designed to enable transition from traditional class lessons to a more self-guided format, depending on student reading abilities.
2. Arrange for students to take the online pre-assessment.
3. Review the Invention Connection booklet and determine how you will assign and/or implement the unit.
4. Optional: Prepare any additional reference material of your choice, including Internet access.
5. Provide each student with a copy of the Invention Connection booklet and review the first page with them.

Implementation Options

The following are suggested options for implementing the unit.

Self-guided

- Have students complete the online pre-assessment prior to engaging in the i-SAFE program.
- Introduce the unit by going over the first page of the Invention Connection booklet.
- Students complete their assignments.
- Review student invention progress, if applicable.
- Have students complete the suggested Enrichment Activity – Wrap It Up!
- Have students complete the online post-assessment.

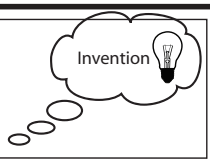
Small groups: Students work in small student work-groups or pairs to complete the Invention Connection booklet. This may be done in several sessions.

- Have students complete the online pre-assessment prior to engaging in the i-SAFE program.
- Introduce the unit by going over the first page of the challenge book.
- Create small work-groups of 3 to 4 students or have students work in invention-activity groups.
- Student groups complete the assigned pages for each session, and discuss their answers within the group.
- Review invention progress of each group if applicable.
- Have students complete the suggested Enrichment Activity – Wrap It Up!
- Have students complete the online post-assessment.

Group-guided: Use the activities as short lessons over a period of time (1–2 weeks to complete). This option is especially recommended for special needs students with less developed reading comprehension skills.

- If possible, have students complete the online pre-assessment prior to engaging in the i-SAFE program.
- Assign and go over each activity page as a large group and have students complete the material as instructed. You may want to have students read over text parts together to reinforce meaning.
- Go over completed pages with the group as they finish.
- Have students complete the suggested Enrichment Activity – Wrap It Up!
- If possible, have students complete the online post-assessment.

Invention Connection



Everyone is creative. Although, we tend to associate that trait with certain people—those who demonstrate it in surprising bursts or those who dedicate their lives to artistic enterprises. How we nurture or develop creativity makes a difference in its potential and outcome. This nurturing or channeling of creativity into finished products occurs for a variety of reasons—the good of society, to solve problems, to answer questions, and of course to make money. The creative process, however, can be difficult to navigate. This workbook will help guide you through the creative process.

Understanding the Invention Connection

This Invention Connection booklet provides a series of activities and resources to promote understanding of organized steps that facilitate the invention process, and to enable mastery of a selection of basic skills dealing with the creation of a final product. Sections include:

1. Getting Thoughts and Ideas
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Your instructor may provide you with additional online and/or offline resources to complete the activities provided in this booklet.

CONNECT IT! These sections enable you to apply what you practice to your own inventive ideas.

Terms to Know

Before beginning the activities, make sure you have an understanding of the meanings of the following terms. Look up the ones you aren't sure of and write the meanings here for reference.

- **creativity**

- **brainstorm**

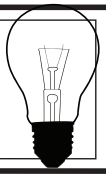
- **intellectual property**

- **evaluate**

- **patent**

- **scam**

1. The Beginning: Getting Thoughts and Ideas



Think About It – Talk About It

Most of us at one time or another have had an "ah-ha" moment–when something enormously creative or brilliant just occurs to us. This spark can come at any time – after a deep sleep, while working on other work, mowing the yard, etc.

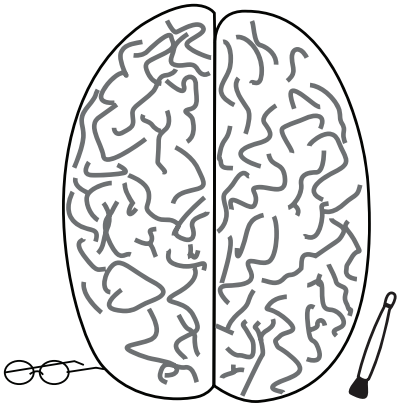
- Have you ever had a sudden creative idea?
- When do you feel most creative?
- How do you commonly solve or think out problems?
- Is there someone you feel best bouncing ideas off of? Why?
- How do you make your creative ideas a reality?
- Have you ever had an idea for an invention? What was it? Did you follow through? Why or why not?

Write About It

Use a separate page to write about the following:

Think about a time when you've had a great idea or thought of a solution to a problem. How did you get your idea? When did it come to you?

The Creative Process and Brainstorming



What is creativity? Is it something we are all born with? Do some people have more creativity than others? Is there anything we can do to help creativity emerge? Brainstorming can be one portion of a successful creative process. It is an activity used to generate many creative ideas that have no right or wrong answers and are accepted without criticism. Brainstorming can help develop highly creative solutions to a problem. The theory is that it can help one think out of the box and come up with new ways of looking at things.

There are two principles of successful brainstorming:

- deferred judgment
- quantity breeds quality

Deferred judgment – What does it mean? To defer is to put off, delay or postpone something.To defer judgment is to creatively generate ideas without judging the merit of those ideas. There is no criticism - Anything is a possibility. To make it work, you must ignore what you immediately think an idea is worth. In other words don't even consider what your brain may be saying about how practical or useful the idea is. At this stage, all ideas are equal. "Defer judgment" of your ideas until you have finished generating ideas.

Quantity breeds quality – This is easier to figure out. It means, the more ideas you generate, the more likely you are to have a good one. When you have many ideas to consider, one idea may lead to another and you are more likely to turn a good idea into a better one. Additionally, sometimes you just need to clear your mind of some ideas by jotting them down, before you can even go on to any other thoughts.

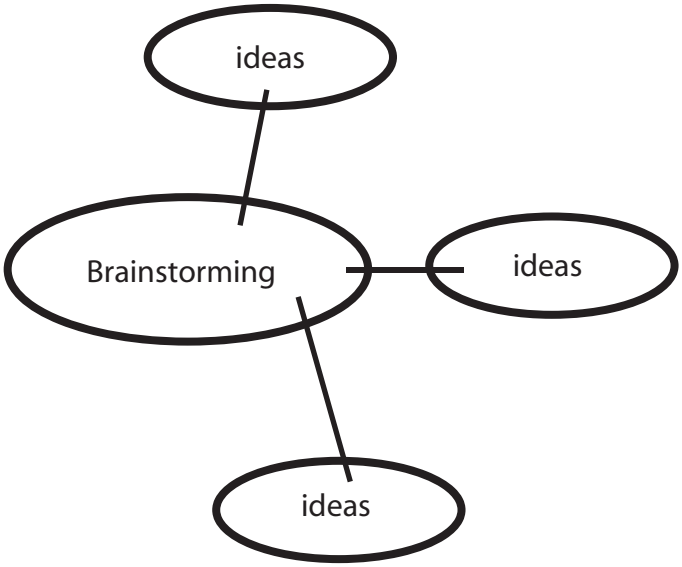
Group Brainstorming

Group brainstorming allows the ideas of many to be built upon in order to allow new ideas to evolve. It is important that everyone defer judgment. Remember, each participant is challenged to come up with ideas, no matter how absurd or crazy any idea may seem. A quantity of ideas will enable the group to produce something of quality (quantity breeds quality).

One key component in brainstorming is [redacted].

Effective brainstorming in groups should follow the following steps/guidelines:

1. Identify the problem or goal.
2. State the rules – speak all ideas and allow no criticism.
   Remember: defer judgment!
3. Delegate a recorder to jot down all ideas.
4. Encourage participants to develop upon other people's ideas or to use other ideas to create new ones.
   Remember: quantity breeds quality!
5. Have a time limit.
6. Set a goal – aim for a minimum number of ideas.
7. Once the brainstorming session starts, participants should call out solutions to the problem while the recorder writes them down. (Ideally everyone should be able to see what is written down to expand on former ideas,)
8. When time is up, evaluate ideas and select the best ones to expand upon.



Alternatives to group brainstorming

Group brainstorming is just one way to develop ideas. Although not for everyone, brainstorming can also work for an individual by jotting down ideas randomly. These ideas may help individual brainstorming:

1. Keep a notebook by the bed to jot down ideas at night or in the morning – many people say this is when things come to them.
2. Write a journal. You never know when things will come to you.
3. Identify a problem and look for solutions.

Use what you have learned: group activity

Practice a brainstorming technique that inventors use.

Work in a small group to complete this activity.

1. Think of the rooms in your home, and list them. For example:
   - garage
   - living room
   - bedroom
   - closet
   - bathroom
   - kitchen
   - game room or family room
2. Assign a person to record ideas.
3. Go around the group at least 3 times and have each person throw out ideas about how something could be added or changed to make the first room listed more functional, more fun, or more interesting. Include ways that could solve a problem in that room.
4. Repeat with each room.
5. Review each item on the list and have group members identify what's obviously good about the idea and what's obviously bad about the idea; briefly record.
6. Review the list and select or vote for 1 idea that everyone or most in the group agrees would be a neat invention.
7. Have everyone make drawings of how a model might look for this invention OR work as a group to draw a single model with everyone inputting ideas.
8. Name your invention.

Rules for Success

1. Assign a recorder – his or her job is to record ALL ideas.
2. Nothing is silly or not worthy – all ideas have merit.
3. Toss any ideas that come into your head out to the group.
4. Build upon the ideas of each other.

Conclusion

Option 1

Share your idea with the rest of the class, including a short summary of some of the ideas you came up with and how you finally decided on the single idea.

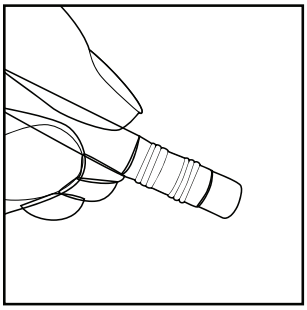
Option 2

Create a poster that demonstrates the process you went through to achieve your goal.

Think About It

You can think about complicated contraptions to invent, but really, some of the best inventions are very simple, like wire bent to make coat hangers, paper clips, staples and bobby pins!

Write About It



Have you heard the one about the eraser and the pencil?

Both items originally existed individually, however Hymen Lipman of Philadelphia thought to attach an eraser to the end of a pencil. For his innovation, he applied for a patent and received it on March 30, 1858. Unfortunately, this patent was later invalidated because it was determined his "invention" was really just a composite of two devices rather than an entirely new product.

What do you think? Should he have had his own patent? Explain.

Evaluation – What did you learn?

- Did your group have a record of your ideas and processes?
- Were a variety of ideas included in the process?
- Were ideas obviously built upon within the group?
- What are the ways that people can jump start their thinking to come up with new ideas?

What could the group have done better?

List your suggestions for improvement below.

CONNECT IT!

Use what you have learned in this section to come up with an idea for an invention (in groups or individually). You can take off with ideas that you've had before on how to make something easier to do, or brainstorm from scratch. Look around and decide what the world needs to make it a better place!

Brainstorm: Jot down some ideas for problems, solutions, new inventions, etc. Use another page if needed.

They used their brains!

Frustration over not being able to see her homework paper in the dark sparked 10 year old Becky Schroeder to come up with a great idea! She put phosphorescent paint on a clipboard, placed her writing paper on it and found that she could write in the dark. She called it the Glo-Sheet and obtained a patent for the invention two years later. The New York Times wrote an article about Becky's invention and the inquiries and orders for the Glo-Sheet flooded in by those who wanted to use it for a wide variety of purposes. She didn't even need to actively market it! This invention has been used in hospitals to read patients' charts at night without waking them, by astronauts when their electrical systems are turned down for recharging and by critics who take notes in darkened theaters, just to name a few. Several large companies offered to buy the patent rights from Becky, but she and her father decided to go into business and sell the Glo-Sheet on their own. Becky's idea eventually turned her into the president of a successful company.

Another fourteen-year-old, Pamela Sica, invented a push-button device that raises the floor of a car so that cargo can be raised and easily removed. Her invention won a grand prize for her age group in the Weekly Reader National Invention Contest. She wanted to patent her invention but found that it was too expensive.

Resource: Fact Monster at **http://www.factmonster.com/ipka/A0768091.html**

2. Idea Evolution

It's important to understand how to decide which ideas to pursue, and this can be done based upon various concepts for evaluating and grading ideas.

Think About It – Talk About It

In the previous section, you divided into groups to brainstorm ideas. You were then told to narrow down the list to the best ideas.

- How did your group decide which ideas were the best?
- How did you eliminate ideas?
- Did you utilize a process?
- Were other ideas workable?
- Did the class agree that your final ideas were valid and useful? Why or why not?

Using "criteria"

Criteria is a standard, rule or principle for evaluating or testing something. For an invention, it defines the outcome of what you want the invention to accomplish.
Establishing the criteria is important when you are ready to develop an idea. It will guide you to create a successful invention.

Check It Out

Patent number **3,771,192**, issued in 1973 covers a combination toy dog and vacuum cleaner.

Try to put yourself in this inventor's mind:

- This device is designed to be used on a dog, to vacuum up hair after grooming.
- The patent states, "In the past, vacuum cleaners have been devised for use on dogs for cleaning clipped hair and the like. These have not met with success because of the fear instilled in a dog at the sight of a vacuum cleaner and because of its very loud noise."

From this information, we can suppose that the inventor included the following criteria to develop an idea that addressed the problem of fear of vacuums in dogs:

1. The appearance of the invention had to be something that a dog would not be afraid of.
2. There was a need to reduce the loud sound of a vacuum, when used on or near a dog.

Practice: Brainstorm another idea that might have been suggested to meet the criteria above and solve the problems.

_____

_____

You can read the complete patent documentation at the USPTO Web site patent number search engine at **http://patft.uspto.gov/netahtml/PTO/srchnum.htm**

Type in patent number: **3,771,192**.

Go Online (optional)

Do an online search for funny or unusual patents. You might find information about patented items such as a fruit cake powered Christmas tree, an indoor sundial, a sleep sponge, or a Fish 'n Flush.

- Choose an item that you find to be an unlikely invention.
- Think about how this idea might have come to be. Why do you think the inventor wanted to provide this invention to the world, or what problem was being addressed with the invention?

The Know-How

So you've got ideas, maybe even lots of them. How do you know which is the right idea to develop? There are many ways to identify better or more viable ideas.

This section will present 3 ways to evaluate ideas. Which method would work best for you?

Method 1. Feedback

One great way to figure out which idea is the best, or to get help in idea selection, is to get feedback from others. For obvious reasons this solution isn't the right one for every situation. For example, you don't want to get feedback when you risk losing your idea to an opponent, when you would need an expert to evaluate your idea, or when a disinterested party isn't available. Also, you can never be sure if the person offering feedback is representative of the market you would want, if they are biased (you never know, your parent might tell you ALL your ideas are great!), or other reasons for not offering effective feedback.

If you do want to get feedback on an idea, don't just say, "Hey, is this a good idea?" Provide guidance for specific feedback.

Apply It:

What are some questions you might need to ask in order to get detailed feedback on an idea? We'll get you started with one question. You think up 4 more!

1. Is the idea something that would be marketable (that would sell)? Why do you think so?

2.

3.

4.

5.

Method 2. Pro/Con

You know your idea the best, so you may be the best one to evaluate it. One simple way to do this is to look at the pros and cons for the idea.

Apply It:

Select one of your ideas from your group brainstorming. List all of the pros and cons you can think of for this product. It may help to address the ideas for issues you developed in the feedback section.

Pros	Cons

Method 3. Ratings Systems

A rubric is a document that lists the criteria for a specific assignment and describes varying levels of quality from excellent to poor. For example, a teacher often uses a rubric to provide guidelines in the evaluation of student work in order to assign a grade.

For an inventor, a rubric can be a valuable tool to identify and evaluate separate ideas on a valid scale. It is important to realize that this type of evaluation is not something that you can just fill out in a few minutes. You may need test results and/or feedback from others to fully evaluate an invention.

Method 3 Sample Rubric

As an example, take the idea of developing shoes that cool the feet as they are worn. To begin, a chart is created to show the ideas and several criteria for evaluating those ideas.

In this example, the ideas of how this might be accomplished are listed in the row across the top to create headings. Each criteria is listed in the first column, and is evaluated for each idea under its heading.

After each possibility is evaluated according to the criteria, assign an evaluation number from 1–5 to compare the possibilities, with 5 being the best possibility (most doable) and 1 being the least.

Three rating criteria are included. Think of other criteria that would be useful and list in the chart.

Ideas:	Small fans built in around the edges of the shoe	Pocket in the shoe sole to hold a reusable "blue ice" packet	Heat-exchange coils built into the shoe sole
Criteria 1: Customer appeal – looks, feel, etc.	Not likely	Cold element would warm up quickly	Might be uncomfortable
Criteria 2: Maintains shoe function	OK	Shoe might lose stability	OK
Criteria 3: Practical use	Impractical: fans could get caught on things; break off	Impractical: cool temp would not last long enough to be useful	Might be practical

CONNECT IT!

Options – Use the space on this page to take your ideas from the Brainstorming section OR use the ideas for your own developing invention and evaluate them using one or more of the 3 evaluation methods presented.

3. Idea Development and The Inventor's Log

Think About It – Talk About It

Inventions are a part of our world, they help us move forward and make progress. Inventions can come about as the result of sudden creativity, as an answer to a problem, or after long research and hard work. Think about it:

- Why might some people with good ideas not follow through?
- If you had a great idea, what would you do to follow through? How would you go through the process to create an invention?

True Story

Do You Know Who Invented the Telephone?

Documentation of an invention is an important step in the creative process. Without documentation, an inventor can lose his right to claim a patent if someone contests the date of creation. Throughout history, there are stories of inventors who have fought to prove that they were the first. No story is perhaps more illustrative of this than that of the invention of the telephone.

We are taught that Alexander Graham Bell invented the telephone and the law upholds that fact. It is Bell who claimed the rights to the patent, a patent that was upheld in numerous court cases. However, a search on the Internet querying "who invented the telephone" returns a wide variety of other answers – Elisha Gray, Phillip Reis, Bourseul, Antonio Meucci, and many more.

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Bell, and the story of the invention of the telephone, is all about how multiple people can develop and work on an invention independently of each other. This story demonstrates that the one to go down in history is the one who gets the patent and can prove his or her case.

Answer It!

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Keeping an Inventor's Log

Alexander Graham Bell's story shows us just how important an inventor's log can be to an inventor, and if you think about it, how an inventor's log can help to shape history! All inventors keep logs to record their work and their thoughts.

As you learned, if 2 or more inventors develop the same idea or if someone "steals" an idea, the inventor's log serves as proof of process. The one that is carefully dated, and has detailed notes and sketches will have a better chance to win the legal battle.

Inventor's Log & Guidelines

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- Be sure to come up with a generic name for your invention and a name to use to market your invention (trademark name). Describe how you came up with the name.
- Sign and date all entries.
- Have another person witness your signature each time.

Apply It:
Activity – Using the Inventor's Log

Task: As an inventor, your task is to modify an ordinary ballpoint pen with black ink into a multi-functional pen. If you are working in a group, begin by brainstorming an idea that you want to pursue—how will you engineer this pen to do something in addition to writing in ink?

After you brainstorm a list of ideas, make sure you select the best one!

Think about what makes a good invention. Ask yourself:

1. Is my idea really **NEW**?
2. Is my idea **USEFUL**?
3. Is my idea something that will be **HELPFUL** to me or others?
4. Can I make my invention so that others can **AFFORD** to buy it?
5. Is it possible to **MAKE A MODEL** of my invention with easy-to-find materials?

If you can answer "yes" to these questions, you've got a good idea!

Another way to determine if you have a GREAT idea for an invention is to ask your family, friends, teachers, fellow students, and people in your community. (Make sure they won't steal your idea though!) Some questions you can ask them:

1. Is my invention useful/practical?
2. Would you use my invention?
3. Do you know someone who would use my invention?

Use this sample inventor's log page, or make your own, to record information about this mock (pretend) invention.

SAMPLE INVENTOR'S LOG			
Place:	**Time:**	**Date:**	**Witness Initials:**

Now share your ideas with your classmates!

CONNECT IT!

Select one of your ideas for an invention and begin documentation as you proceed forward.

4. Researching Your Idea

To ensure an idea is patentable and marketable, an inventor needs to make sure someone else hasn't already had that idea. This involves doing a patent search before applying for a patent.

Patent Searches

- There are three ways to search for a patent:
  - > Search by patent number – Each invention has its own patent number. One can do a simple straightforward search by this number.
  - > Search by inventor name – One can also search for an invention if the inventor's name is known. Random names can also be searched to see what others have invented.
  - > Search by using key words – The most challenging way to find an invention (but also quite fun) is to search for key words. One can look up any key word from dog collar to paperclip to see what the search turns up!

Apply It:

Option 1:
Go to the USPTO search area at **http://www.uspto.gov/main/profiles/acadres.htm** for information on how to use the USPTO search engine.
Brainstorm a few key word items to search for:
Ex. Dog collar

1.

2.

3.

4.

5.

Type in each of your items and see what turns up.

What did you find that was interesting, unique, surprising, etc.?

Option 2

Try each of the three different ways of searching for patents by following these directions.

1. In your Internet browser go to www.google.com/patents.
2. Try a patent number search.
    a. Type in the number: 2262982

        What does the search pull up?

b. Type in the name: Orville Wright

    What does the search pull up?

c. Try a key word search – some sample key words include: dog, paperclip, skateboard, etc., OR how about searching key words that have to do with the mock inventions in the last activity!

    What does the search pull up?

CONNECT IT!

As part of your continuing efforts to create your invention, do a patent search to see what else is out there similar to your invention, and/or to see if someone has already had your idea! List examples of what you find here. When applying for a patent, this type of list needs to be included on the application.

5. Safe and Savvy Inventors

It's important to be smart and savvy when seeking help with the development and production of an invention, in order to avoid frauds and scams.

Think About It!

It's not that easy to get an idea up off the ground and turned into a product that people want! So how does one do it? Write short answers to the following:

- If you have an idea for an invention, do you know how to go about creating it, and getting it patented and marketed? How would you start?

- Where would you turn for help?

- Why might some people be scammed in the development of their inventions?

- How is scamming possible?

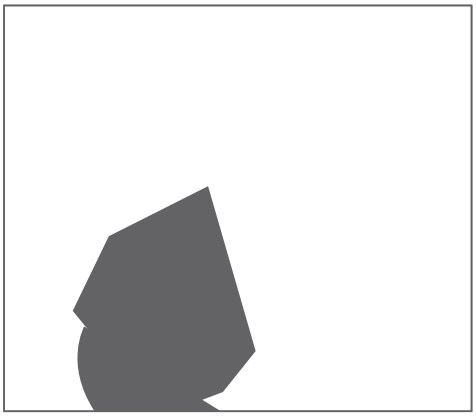
Be Alert to Scams

Have you ever heard of the Patent and Trademark Institute of America (PTI)? Sounds official, doesn't it? According to the article "PTI Investigated by NY Attorney General" by the New York Daily News on September 27, 2007, a federal judge ordered the operators of PTI, an invention promotion firm, to pay $60 million for a scam that defrauded 17,000 hopeful inventors of approximately $60 million.

Companies under several different names run by PTI advertised that they would evaluate new invention ideas, and claimed that consumers would make money if they bought PTI's invention promotion services. PTI charged inventors $895 to $1,295 for a promise to evaluate the marketability and patentability of inventors' ideas. But, according to the Federal Trade Commission (FTC), it was found that their evaluations were almost always positive and were not meaningful. For a fee of $5,000 to $45,000, PTI's clients were offered legal protection and assistance to obtain commercial licenses for their inventions, and were told their inventions would earn money in royalties; but, none of it was true.

The American Inventors Protection Act of 1999 protects inventors from invention promoters by requiring that promotion companies make information available, such as how many inventions they have evaluated and how many inventors have actually profited from their inventions due to the promoter's services.

Unfortunately there are many scamsters preying upon the fact that the process can seem so overwhelming. For child and teen inventors, the scammers prey upon parental pride. Many promoters contact parents of child inventors to inform them how great the invention is. Hooked, parents pay out big bucks for an evaluation, to get a patent and to evaluate marketability. Those with deep pockets can then be fleeced for more in marketing and additional services.



These scams aren't just restricted to young inventors. Many inventors are targeted by many companies looking to make money to do the research, or hoping to buy valid ideas for bare bones prices. Legitimate and successful promoters do exist and can be found with some work. If you are at this point with an invention, get a parent or a trusted adult to help you. Don't just call a number you see online or in a television advertisement. Check out companies to see if they are listed with the Better Business Bureau. For tips to avoid these kinds of scams, go to **http://www.uspto.gov/web/offices/com/iip/index.htm** and download the brochure titled, "Scam Prevention."

Apply It:

List some ideas on how you could promote your invention without spending your own money.

1. _____

2. _____

3. _____

4. _____

5. _____

Optional: Internet Research

Research invention promotion companies. Complete the chart:

Example companies	Examples of company promises	Examples of costs
1.		
2.		
3.		
4.		
5.		

CONNECT IT!

How will you get your invention off the ground?

One way that really works is to take advantage of the numerous young inventors' contests that are available. Take some time to research contests you can enter your invention in.

Do an Internet search on contests for young inventors and check out the links you find.

Look for contests from nationally-known organizations and stay away from any contest that requires you to pay large up-front fee.

List available contests and specific information such as entry dates, etc., here.

6. Enrichment Activity – Wrap it Up!

Inventing is fun and exciting and it can ultimately lead to the betterment of society. As you have learned, however, even though someone may have an idea for something, the whole process may seem overwhelming, leading the young inventor to.....nothing!

This section will lead you through the steps to create an informative poster to help others get involved in the creative process. This is especially valuable information for you to share with younger children – perhaps at an elementary school or a club meeting. Empower them to create!

Step 1 – Identify your target audience.

Who will benefit the most from the information you can provide – parents, students, public at large (or even all three!)?

Step 2 – Gather information.

With your target audience in mind, review this Invention Connection booklet and other lessons you may have completed in this unit. You can use reference information and activities you have completed in the previous pages to create content for your poster. Use a separate page to collect the information.

Step 3 – Organize the information into a poster format. For example:

- What is the most important information you want to display?
- How will you catch the attention of the audience?
- Can you tie this information into the promotion of a school event such as a science or art fair, or a contest?
- Will you create graphics/artwork for the poster, or will it be mostly text?
- What will the title be?

Step 4 – Use materials of choice to design and create posters.

Step 5 – Make plans to display the poster.

- Figure out where the poster will have the most impact (i.e., cafeteria, science room, media center, etc.)
- Make sure you have permission for your display.
- Check with your teacher for ideas, too.

Step 6 – Display posters.