

# iC@Rea™



UNITED STATES PATENT AND TRADEMARK OFFICE

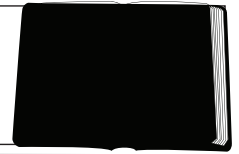


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# Teacher's Guide

Recommended learning level: High School



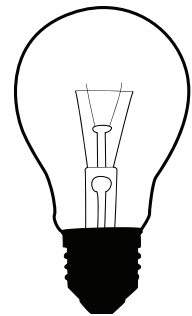
## Overview

The i-©®ea™ 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 high 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. Completely read the Teacher's Guide section.
2. Review the lessons, activities, Invention Connection and other resources, and make your selections.
3. [redacted] it into your schedule.
4. [redacted] access, etc.
5. [redacted]
6. [redacted] survey assessments at [redacted].

## 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](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)

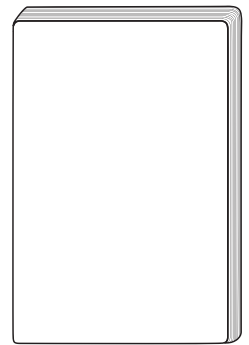
In the United States, the concept of protection for property rights is as old as the ideas of the founding fathers, who wrote the U.S. Constitution as the supreme law of the United States of America. When the delegates from various states met in Philadelphia in 1787 to frame the U.S. Constitution, one 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](http://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 high 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 Web site of the USPTO at **<http://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.html>** 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 will be 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.html>** 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://www.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/web/offices/pac/doc/general/index.html>**
- Curriculum Connections: Inventor's Hall of Fame Inventor Profile Charles Goodyear at **[http://www.invent.org/hall\\_of\\_fame/68.html](http://www.invent.org/hall_of_fame/68.html)**
- The Charles Goodyear Story: The Strange Story of Rubber at **[http://www.goodyear.com/corporate/history/history\\_story.html](http://www.goodyear.com/corporate/history/history_story.html)**

### Trademarks

- Main lesson: Basic Facts about Trademarks at **<http://www.uspto.gov/web/offices/tac/doc/basic/>**

## Copyright

- Main lesson: Copyright Basics at <http://www.uspto.gov/web/offices/dcom/olia/copyright/basics.htm>
- Registering Copyright at [www.loc.gov/copyright](http://www.loc.gov/copyright)
- Curriculum Connections: Literary History: Child Authors at [http://vava.essortment.com/childauthors\\_rbdz.htm](http://vava.essortment.com/childauthors_rbdz.htm)

## Intellectual Property Theft

- i-SAFE Curriculum “Learn B 4 U Burn” for Grades 9-12 available via Implementation Plan at [www.isafe.org](http://www.isafe.org)
- Curriculum Connections: Trade Secrets at [http://inventors.about.com/od/tradesecrets/Trade\\_Secrets.htm](http://inventors.about.com/od/tradesecrets/Trade_Secrets.htm)

## 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](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 [www.google.com/patents](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

<b>National Science Standards 9-12</b>	<b>American Library Association (ALA/ACRL) Information Literacy Standards for Science and Engineering/Technology</b>	<b>National Council for the Social Studies (NCSS) Curriculum Standards for Social Studies: II</b>	<b>National Language Arts Standards K-1</b>
NS.9-12.1: Science as Inquiry	Standard One: 1.2/1.3/1.4 I	Strand II: Time, Continuity and Change	NL-ENG.K-12.1 Reading for Perspective
NS.9-12.5: Science and Technology	Standard Two: 2.1/2.2/2.3	Strand V: Individuals, Groups, and Institutions	NL-ENG.K-12.4 Communication Skills
NS.9-12.7: History and Nature of Science	Standard Three: 3.3/3.5	Strand VI: Power, Authority, and Governance	NL-ENG.K-12.7 Evaluating Data
	Standard Five: 5.1	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

<b>National Science Standards 9-12</b>	<b>American Library Association (ALA/ACRL) Information Literacy Standards for Science and Engineering/Technology</b>	<b>National Council for the Social Studies (NCSS) Curriculum Standards for Social Studies: II</b>	<b>National Language Arts Standards K-12</b>
NS.9-12.1: Science as Inquiry	Standard One: 1.2/1.3/1.4 I	Strand V: Individuals, Groups, and Institutions	NL-ENG.K-12.1 Reading for Perspective
NS.9-12.5: Science and Technology	Standard Two: 2.1/2.2/2.3	Strand VI: Power, Authority, and Governance	NL-ENG.K-12.4 Communication Skills
	Standard Three: 3.3/3.5	Strand VII: Production, Distribution, and Consumption	
	Standard Five: 5.1	Strand VIII: Science, Technology, and Society	

## Lesson Topic: Copyright

<b>National Educational Technology Standards (NETS-S)</b>	<b>American Library Association (ALA/ACRL)</b> Information Literacy Standards for Science and Engineering/Technology	<b>National Council for the Social Studies (NCSS)</b> Curriculum Standards for Social Studies: II	<b>National Language Arts Standards K-12</b>
Standard 3: Research and Information Fluency	Standard One: 1.2/1.3/1.4 I	Strand IV: Individual Development and Identity	NL-ENG.K-12.1 Reading for Perspective
Standard 5: Digital Citizenship	Standard Two: 2.1/2.2/2.3	Strand V: Individuals, Groups, and Institutions	NL-ENG.K-12.4 Communication Skills
	Standard Three: 3.3/3.5	Strand VI: Power, Authority, and Governance	
	Standard Five: 5.1	Strand VII: Production, Distribution, and Consumption	
		Strand X: Civic Ideals and Practices	

## Lesson Topic: Intellectual Property Theft and Other IP Protections

<b>National Educational Technology Standards (NETS-S)</b>	<b>American Library Association (ALA/ACRL)</b> Information Literacy Standards for Science and Engineering/Technology	<b>National Council for the Social Studies (NCSS)</b> Curriculum Standards for Social Studies: II	<b>National Language Arts Standards K-12</b>
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 Institutions	
	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

<b>National Educational Technology Standards (NETS-S)</b>	<b>National Science Standards 9-12</b>	<b>American Library Association (ALA/ACRL)</b> Information Literacy Standards for Science and Engineering/Technology	<b>National Council for the Social Studies (NCSS)</b> Curriculum Standards for Social Studies: II	<b>National Language Arts Standards K-12</b>
Standard 1. Creativity and Innovation	NS.9-12.1: Science as Inquiry	NS.9-12.1: Science as Inquiry	Strand IV: Individual Development and Identity	NL-ENG.K-12.1 Reading for Perspective
Standard 2. Communication and Collaboration	NS.9-12.5: Science and Technology	Standard Two: 2.1/2.2/2.4/2.5	Strand V: Individuals, Groups, and Institutions	NL-ENG.K-12.4 Communication Skills
Standard 3. Research and Information Fluency	NS.9-12.7: History and Nature of Science	Standard Three: 3.1/3.2/3.3/3.4/3.5	Strand VI: Power, Authority, and Governance	NL-ENG.K-12.7 Evaluating Data
Standard 4. Critical Thinking, Problem-Solving & Decision-Making		Standard Four: 4.1/4.2/4.4/4.5/4.6	Strand VII: Production, Distribution, and Consumption	NL-ENG.K-12.12 Applying Language Skills
		Standard Five: 5.2	Strand X: Civic Ideals and Practices	



# LESSON PLAN—Intellectual Property and Patents

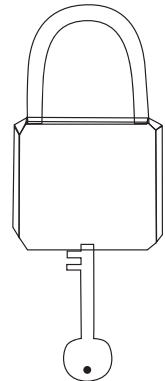
Recommended learning level: High School

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

## Learning Objectives

Students will:

- understand how a patent relates to an invention
- understand the purpose of a patent in protecting an invention
- understand steps in the process of applying for a U.S. patent
- be able to explain what can be protected by a patent
- identify the value of a patent to an inventor



## Materials

- a copy of reference pages for each student or student group
- a copy of the activity page for each student or student group
- Internet access to research patents (optional)



## Procedures Discussion

- Introduce the topic – Inventions and Patents.
- Ask students to define the term “invention.”
- Discuss why inventions originate (as the response to problems, as a result of innovation, etc.).
- Ask students if they have ever had an idea for an invention or a new design for an every-day item.
- Discuss: What their ideas were and why?



## Reference Page

- Pass out the reference page: “What is an Invention?” to each student, or break students into groups to review the material.
- Discuss the information as a class.
- Proceed with the activity. Note: You may want to assign the activity as homework, and provide class time for presentation and evaluation.

## Activity

Decide if students will complete the activity individually or in small groups. Pass out the activity pages.

- Review the task: Students will engage in a creative activity that will simulate steps in the creation of an item that could be protected by a design patent.
- Note: An optional section requires that students go to <http://www.uspto.gov/patft/index.html> to research patents.

## Presentation and Evaluation

Select one of the following options:

### Option 1

- Allow students or groups to showcase their inventions. Have them explain how they came up with the ideas for their designs, and present the information they have completed on the activity pages.
- Following each presentation, discuss the descriptions provided. Have the class analyze the following:
  - > Do the drawings and explanation clearly describe how this new design differs from others?
  - > If a patent search was completed, does the new design provide a significant difference from previous designs?
- Discuss the answers to the Apply It section as a group.

### Option 2

Collect the completed activity pages and evaluate without presentation to the group.

## 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 through independent investigation, experimentation, and basic brain power something which is useful and which is not previously in existence. 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. To protect the invention and maintain rights to prevent others from producing and selling the product, the inventor must protect his or her invention.

## 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 your property in the United States, United States territories, and United States Possessions. To quote the United States Patent and Trademark Office a patent gives “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.



### 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 for manufactured items. Examples are the design of 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.

### Patent Application

A patent application is typically submitted with several forms and a fee. Components of the application include basic information such as applicant name and design title, cross reference to related applications, summary of the invention, drawings with explanations, and a detailed description.

# Be the Inventor!

## What it Takes to Get a Patent



**Directions:** You will be creating a new invention for a useful item, and will complete some of the steps that would be necessary if you were going to apply for a patent for this new product. The lesson reference page and independent research may be useful resources.

Think about items you use every day to get your ideas going: the ballpoint pen, scissors, adhesive tape, cell phone. What would you like to invent that would improve everyday life? Finish the activity by answering the questions at the end.

**Think of a common name** for the item that is descriptive of the item's purpose. For example, "flying machine" was once used to describe the airplane. \_\_\_\_\_

**Optional:** Create a trademark – a brand name that you will use to market this product.



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**What type of patent** will you be applying for?

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**Briefly describe** the nature of your invention and its intended use.

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**Cross reference the invention:** Do a patent search at the United States Patent and Trademark Office Web site at <http://www.uspto.gov/paft/index.html> to see if there are prior patents for your invention. Provide reference information about these patents by providing the name and patent number of each. For example, if you have a new and improved nail clipper, you would reference any prior patents for other types of nail clippers.

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**Summary of the Invention:** Give a summary of what the invention will do and any problems it solves. Include explanations of how this creation differs from other inventions (use an additional page if necessary).

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**Drawings and Explanations of Drawings:** Provide black and white drawings of the invention from various views with explanations of each view.

## Apply It!

If this product is developed, what advantages will a patent provide for you, the inventor(s)?

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Is there any downside to applying for this patent? Are there any other ways to protect this product other than a patent? Explain:

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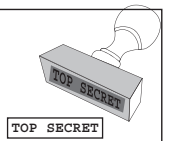
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# Curriculum Connections



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

## Historical Connection – Trade Secrets



### Materials

- a copy of the reference “What are Trade Secrets?” for each student
- a copy of the activity page for each student
- Internet access
- optional: student Internet access

### Preparation

- Decide if you want to prepare printed informational material or if students will access information online.
- To prepare printed reference material, conduct an Internet Search for: Mike’s Train House Inc. v. Lionel, L.L.C.



### Procedures

- Pass out the reference page and have students read through the information and write down answers to the Think About It questions.
  - Provide students with printed reference information you have selected , such as the PDF of the United States Court of Appeals for the Sixth Circuit ruling on the case
- OR
- Have students access applicable Web sites to research the case.
  - Have students complete the activity page and discuss as a class.

### Teacher’s reference for discussion – Synopsis of Mike’s Train House, Inc. v. Lionel LLC et al

This case involves Mike’s Train House, Inc (MTH)’s claim that Lionel misappropriated MTH’s trade secrets and was unjustly enriched by that misappropriation.

Lionel and MTH are both distributors of O-gauge model trains. The model trains they distribute are scale replicas of actual trains. Both Lionel and MTH contract with third parties for the manufacture of their trains and then release the trains for distribution under their own names. “Gauge” refers to the width of the track; collectors tend to collect trains of only one gauge (in this case “O gauge”), so that all their trains can operate on the same track. The trains are manufactured by a process known as zinc die-casting, which is a precise method of construction in which molten metal is injected into pre-shaped molds. This method requires extensive design work for the construction of a single train; accordingly, designers produce “design drawings,” which contain all the information necessary to build a die-cast train. About 200 to 300 design drawings are required to produce each scale engine.

In June, 2004, following an 18 day trial, a jury in Detroit, Michigan, awarded MTH approximately \$40 million from defendant Lionel. The plaintiff, MTH, proved that defendants in this case had stolen more than 3,300 blueprints, and used those to make numerous models of knock-off trains, which defendants manufactured, imported, and sold in the U.S. in competition with plaintiff. The award forced Lionel into bankruptcy and they appealed the decision.

- On appeal in December of 2006, the 6th Circuit Court of Appeal reversed the 40 million dollar award, granted Lionel a new trial and lifted an injunction preventing Lionel from using the designs involved.
- In late October of 2007, Lionel reached a tentative deal with MTH to settle the long-running trade-secrets battle and to put the 107-year model train maker on track to exit bankruptcy.

## Evaluation

Understanding will be demonstrated if answers include reference to the following:

- How can trade secrets be beneficial for a company?  
Trade secrets keep information secret. When you apply for a utility patent, you reveal the “secret” as part of the patent process, and after the patent expires – 20 years from the date the application is filed, others can make and market the product. By keeping it secret there is the potential to make more money – if the secret can be kept for longer than the 20 year patent term.
- What are the pros of utilizing a trade secret rather than applying for a patent or trademark?  
The potential to make money long term and not lose the corner on the market when the patent expires. To “corner the market” is important because it means to control the supply or sale of a particular product by becoming so successful at selling or making a particular product that almost no one else sells or makes it.
- What are the negatives to trade secrets?  
An item could be reverse manufactured or independently “discovered.” If this happened, it would no longer be protected by trade secrets or other means, and open market would apply, which would mean a freely competitive market operating without the restrictions of intellectual property protections.

## 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 Web site: <http://www.uspto.gov/ptft/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 anywhere. There are three basic ways to search for a patent:

1. Search by Patent Number – Each invention has its own patent 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 the Internet has impacted applying for a patent:

- 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.
- Are there any negative effects? Possible responses might include – The Internet enables scam artists with ways to advertise and get money for fake 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.

## Exploration Connection

### Design Patents

#### Learning Objectives

Students will:

- understand how a patent relates to a design for an article of manufacture
- understand the purpose of a patent in protecting a design
- understand steps in the process of applying for a U.S. patent
- be able to explain what can be protected by a design patent
- identify the value of a design patent to an inventor



#### Materials

- a copy of reference page for each student or student group
- a copy of the activity page for each student or student group
- Internet access to research patents (optional)



#### Procedures Discussion

- Introduce the topic – Inventions and Design Patents.
- Ask students to define the terms “invention,” and “article of manufacture”
- Discuss why inventions originate (as the response to problems, as a result of innovation, etc.).
- Ask students if they have ever had an idea for an invention or a new design.
- Discuss: What their ideas were and why?



## Reference Page

- Refer to the reference page: “What is an Invention?” from the main lesson on patents.
- Review the information as a class, with emphasis on discussing what a design patent is vs. a utility patent.
- Proceed with the activity. Note: You may want to assign the activity as homework, and provide class time for presentation and evaluation.

## Activity

Decide if students will complete the activity individually or in small groups. Pass out the activity pages.

- Review the task: Students will engage in a creative activity that will simulate steps in the creation of an item that could be protected by a design patent.
- Note: The optional Part 2 requires that students go to <http://www.uspto.gov/patft/index.html> to research patents.
- If Option 1 is selected below, inform students that upon completion, they will present their invention ideas to the class for review.

## Presentation and Evaluation

Select one of the following options:

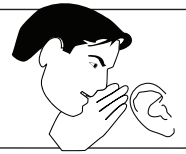
### Option 1

- Allow students or groups to showcase their inventions. Have them explain how they came up with their ideas for their redesigns, and present the information they have completed on the activity pages.
- Following each presentation, discuss the descriptions provided. Have the class analyze the following:
  - > Do the drawings and explanation clearly describe how this new design differs from others?
  - > If a patent search was completed, does the new design provide a significant difference from previous designs?

### Option 2

Collect the completed activity pages and evaluate without presentation to the group.

# What are Trade Secrets?



A trade secret is information that a company keeps to give them an advantage over their competitors. Trade secrets can include formulas, patterns, plans, designs, physical devices, processes, software, and “know-how.”

**A formula can be a trade secret.** A well-known example of this type of trade secret is the Coca-Cola formula. This formula gives the Coca-Cola Company a significant business advantage in the soda market, as there is no other soda that tastes the same. Other common formulas that are kept as trade secrets are found in the food, drug, and cosmetics industries, and include formulas for the seasoning for KFC chicken, butter flavoring, special diet rations for dogs, lipstick, and hair conditioner.

**A pattern, plan or design can be a trade secret.** For example, courts have found color TV circuitry, schematics for an analog circuit, molds for the manufacture of street markers, and a design for a grating all to be trade secrets:

**A physical device used in manufacturing can be a trade secret.** Examples of these devices found to be trade secrets include: a device for manufacturing radio parts, a machine for inking carbon paper and ribbons, and an adhesive-tape machine.

**A process, method or technique used to make the final end product can be a trade secret.** These types of trade secrets include: a process to treat metal, a process to manufacture fiberglass and a process for an environmentally sound method to manufacture coated paper.

**“Know-how” can be a trade secret.** A method or technique might fall into the “process” category, but many methods and techniques can be better described as “know-how.” This is information and experiential expertise related to using formulas or processes. Examples include methods to manufacture typewriters and the know-how to identify malfunctions in CAT scanning equipment and components.


## What Makes it a Trade Secret?

Although it varies from field to field and among jurisdictions, there are three general guidelines as to what defines a trade secret:

1. It must not be generally known to the relevant portion of the public. That means that people who are familiar with, or actually work in, the field in which the invention has meaning or significance for, do not know the content of the trade secret.
2. It has economic benefit for the holder (economic benefit comes FROM it not being known).
3. The holder makes reasonable attempts to maintain its secrecy.

Trade secrets are not protected by law in the same manner as patents. Probably one of the most significant differences is that a trade secret is protected without disclosure of the secret. Instead, holders protect the secret by taking steps such as making employees sign agreements not to reveal information or by keeping information known to only a handful of employees.





**TOP SECRET**

Use the bottom of this page to record your answers to the following:

[illegible]

## Trade Secret Case: Mikes Train House, Inc., v. Lionel L.L.C., et al.

Research the case of Mike's Train House, Inc., v. Lionel L.L.C., et al. according to your teacher's instructions. Complete the following questions and be prepared to discuss.

1. What was the basic premise of the claim by Mike's Train House (MTH) against Lionel that involved trade secrets?

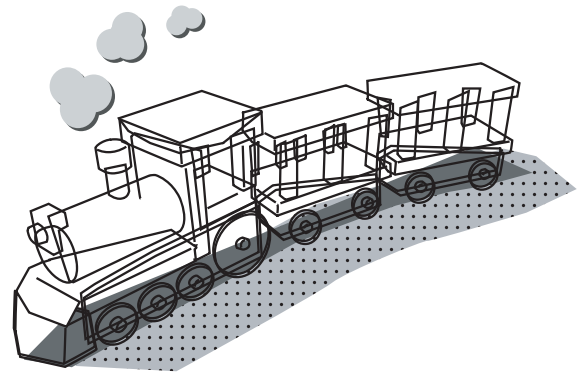
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2. In your opinion, why would toy train manufacturers choose to use intellectual property protection under trade secrets laws, rather than apply for patents?

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3. Do you think the original court judgment in 2004 was fair? Explain why or why not.

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4. What was the decision by the sixth Circuit Court of Appeal in December of 2006? Do you think this decision was fair? Explain why or why not.

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# Be the Inventor!

## Design Patents



### Task

You are to simulate steps in the creation of an item that could be protected by a design patent.

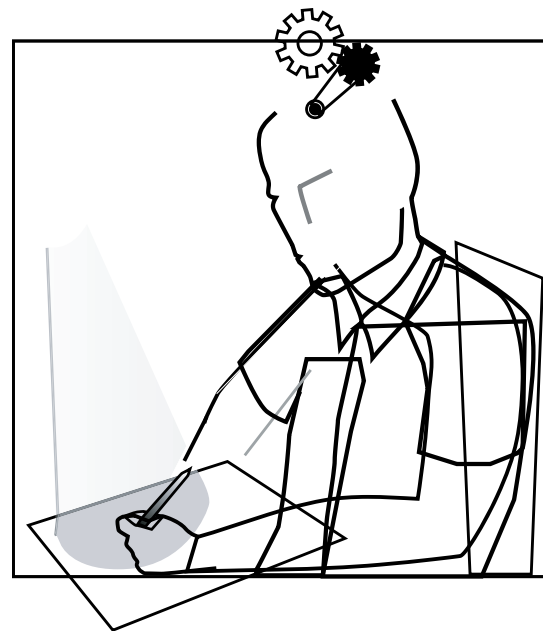
Complete this activity to guide you through some of the actual steps that would be a part of the patent application process.

### Considerations

The emphasis of this type of patent is on the design of the invention, its overall visual appearance, not on its functionality. In other words, the important aspects protected by this type of patent are the invention's unique, ornamentation on the article, aesthetic properties or both. Examples of items that can be protected by design patents include ornamental designs of jewelry, furniture, beverage containers and computer icons.

Remember that a patent is a legal document. The better written your application, the better the protection your patent will produce.

**Part 1** – Select a type of item that you will redesign and give it a title. Provide a brief description of the item and its intended use.



**Part 2 (optional – requires Internet access)** – Cross reference related patent applications.

A patent application requires evidence of any patents that the new design is based off of. For example, if you want to create a new design for a nail clipper you would reference prior patents for nail clippers that are similar to your product.

**There are three basic ways to search for a patent:**

- 1. By Patent Number** – Each invention has its own patent number. One can do a simple straightforward search by this number.
- 2. By Inventor Name** – One can also search for an invention if the inventor's name is known.
- 3. By Using Key words** – One can look up any key word from dog collar to paperclip to see what the search turns up.

Use the official United States Patent and Trademark site at <http://www.uspto.gov/patft/index.html> to conduct your search and list your findings below:

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**Part 3** – Provide drawings of at least two different views of your new design. Include a brief explanation of each drawing.

**Part 4** – Write a detailed explanation of how this new design differs from others.

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# LESSON PLAN—Intellectual Property and Trademarks

Recommended learning level: High 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



## Materials

- a copy of the reference page for each student
- a copy of the activity page for each student
- for Activity Option 1: completed materials from lesson on patents
- for Activity Option 2: 1 sample object for each student group such as stapler, eraser, ballpoint pen, rubber band, glue stick, paperclip, scissors, etc.



## Procedures Discussion

- Ask students if they have heard of the term “trademark.”
- Ask students to define the terms “brand” name and “generic” name in their own words.
- Discuss their perception of items that are brand name vs. what they consider generic.
- Tie discussion into the definition of trademark.
- Proceed to the reference page.



## Reference

- Read through the reference page as a class and discuss.
- Option for “Your Turn”: Make it a contest. Give students 2 minutes to think up as many as they can and compare with classmates.
- Have students complete the brainstorming activity as well as the Think About It questions, and discuss.

## Group Activity

Select Option 1 or 2 to proceed with the group activity.

**Option 1** is designed to be used as a continuation of the activity from the previous lesson on developing a mock patent.

- Have students return to the groups from the lesson on patents.
- Return materials associated with their “inventions.”



- Instruct students that their job today is to create a “generic” name, as well as a “brand” name or trademark name for their invention. If time permits have students create a logo for their brand.
- Inform students that their “brand” name should meet the guidelines that would be applicable if they actually used the mark – meaning it cannot imitate or too closely look like other trademarks. Search the USPTO’s trademark database <http://www.uspto.gov/web/trademarks/workflow/start.htm> for same or similar marks.

**Option 2** is a stand-alone activity.

- Break students into small groups.
- Provide each group with an invention - one of the following products:  
stapler, eraser, ballpoint pen, rubber band, glue stick, paperclip, or scissors.  
Each group is to give the invention a new brand name or trademark name for “their” invention.
- If time permits, have students create a logo for their brand.
- Inform students that their “brand” name should meet the guidelines that would be applicable if they actually used the mark – meaning it cannot imitate or too closely look like other trademarks for the same or similar products or services.

## **Presentation, Discussion and Evaluation**

Use this discussion to determine understanding of the concepts presented.

- Have students present their generic name, brand name, and logo. (Evaluation: do the created names properly represent generic vs. brand names?)
- As a class, rate the names and discuss what made good “generic” names and what made good “brand” names.
- Discuss the purpose of why trademarks exist, and its benefits for the inventor/owner. Have students explain the importance of trademarks in their own words.  
(Evaluation: Examples – The more people know and recognize a brand, the better the opportunity to make money from it; a trademark makes it stand out from other competitors; a trademark can bring associated fame to the trademark owner.)

## **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 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 the 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. 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 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.

# Developing a “Brand” Name



Developing a brand name isn't as easy as it sounds. There are guidelines to consider to make sure your name is fully protected under trademark law. Trademarks must do more than merely describe the goods or services. Remember, the main purpose of a trademark is to serve as a source indicator. Take a look at the scale below.

Fanciful/Arbitrary	Suggestive	Descriptive	Generic
Very Protectable	<< << <<	>> >> >>	Not Protectable

The farther to the left of the scale the name is, the more it can be protected and guaranteed under law. So what do we mean by each of these terms?

**Fanciful:** New words that had no meaning before their use as a trademark. Example: Starbucks, Verizon, Cingular, Exxon.

Name Origins: Starbucks is a name from the novel Moby Dick. Starbuck was the name of the coffee guzzling first mate on the crew. The company registered Starbucks in 1978 to identify their corporation.

**Arbitrary:** Common words used so that their original meaning has no relationship to the goods or services to which they are applied. Example: The trademark Apple for computer products – an apple has nothing to do with computer products.

Name Origins: The symbol for the Goodyear Corporation – the Wingfoot logo – was based upon a newel post on the household stairs of the company founder, Frank Seiberling. This newel post held a statue of Mercury, the swift messenger of the Gods. The word WINGFOOT was registered with the USPTO in 1919, but the actual design wasn't registered until 1933 for use in connection with storage batteries and spark plugs.

**Suggestive:** These trademarks allude to a quality or characteristic of the product or service. For example, the name Jaguar implies speed – a quality that is desirable in high end cars also named Jaguar.

Name Origins: The Nike swoosh is a logo designed by a young graphic design student in 1971 for the Nike Corporation to help them identify their company – named for the winged goddess of victory.

**Descriptive:** These names describe the service or product such as Autoway – a store for autos, or Frosted Flakes to describe flakes of frosted cereal. Descriptive names may be easier to market but harder to register. A merely descriptive name is not entitled to federal registration. Therefore, to register a trademark, the company must show that consumers identify it as a particular brand from a specific source.

Name Origins: Oral-B Laboratories first registered the name Oral-B in 1951. The name is a combination of oral hygiene and the letter B which stands for better.

**Generic:** A generic term identifies a type of product or service, without indicating any particular manufacturer or source. For example, cola and soda are generic terms, PEPSI® and COKE® are trademarks used to identify types of cola and soda. Trademarks can lose their ability to identify the source of specific products when the public begins using them as generic names of products. For example, escalator was once a trademark in the United States for the product known as a moving stairway. At one time, aspirin also was a trademark in the United States.

Can you think of others?

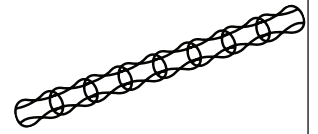
Directions: In your groups, develop a trademark name for your invention. Select a category, from those listed, above for your trademark. Do you want to go completely new and original, or suggestive, or descriptive? Remember, the more new and original, the more difficult to market to consumers. Also develop a generic name to describe your product. Finish up by designing a logo (or slogan, or jingle) to market your product.

Trademark Name:

Generic Name:

Logo (or slogan, or jingle):

# 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?

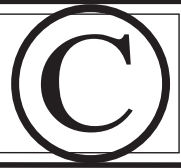
**In a computer lab or as homework:**

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?

# LESSON PLAN–Intellectual Property and Copyright

Recommended learning level: High School



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

## Learning Objectives

Students will:

- understand how copyright laws apply to creative works of authorship
- create a work to be registered
- define the terms: copyright, public domain and plagiarism



## Materials

- a copy of the reference page for each student
- blank paper
- optional: online access
- Group Activity option 1: completed materials from the lesson on patents
- Group Activity option 2: 1 sample object for each student group such as a stapler, eraser, ballpoint pen, rubber band, glue stick, paper clip, scissors, etc.



## Procedures Discussion

Guide a brief introductory discussion about copyright.

- Ask students to self-define the term “copyright” and discuss what rights a copyright owner has. Copyright provides legal protection to original works of authorship fixed in any tangible medium of expression other than ideas, procedures, and systems, which may be protected by patents or trade secrets.
- Ask students to identify the copyrighted works that they encounter in their daily lives.
- Ask if they have ever downloaded videos or music, traded software, etc., that may have been in violation of copyright. Ask for their ideas on why this is a trend today more than ever.
- Explain that another type of theft is plagiarism. This occurs when one presents another’s work as their own. Cutting and pasting into a research document without giving credit is an example of plagiarism and may be a copyright violation depending on various factors.



## Reference Page

- Hand out the reference page, read and discuss as a class.
- What have students learned from the reference page?
- What types of items are protected by copyright?
- What is the need for this protection?
- Review the final information presented. The copyright in a work created by a single individual author on or after January 1, 1978, lasts for the life of the author plus an additional 70 years. The copyright in a work created by an employee as part of his or her job, or a work that is specially commissioned pursuant to a



written “work for hire” contract, lasts for 95 years from the date of its first publication, or 120 years from the date of its creation, whichever comes first.

- Almost all new technology and online works will not be available to the public domain for many years. Have students brainstorm why this might be so.

## Online Experience Option

- Have students go online to hunt for the copyright symbol at <http://www.isafe.org/>.
- Add any additional Web sites you have prescreened and would like them to search.
- Have students look for the copyright notice (“circle C” – ©, the year of publication, and the name of the copyright holder) on these sample Web sites. Have students record how and where the notices of copyright are shown. Look for terms and conditions of usage, and discuss what can be done with material on a Web page with or without a copyright notice.

## Group Activity

Select Option 1 or 2 to proceed with the group activity.

Note: You may want to list advertisement options and short instructions on the board.

**Option 1** is designed to be used as a continuation of the activity from the previous lesson on developing a mock patent.

- Have students return to their small groups from prior lessons.
- Inform students that each group will be continuing with their invention. They have “patented” it, developed a generic name as well as a brand name, and now will be marketing the invention.
- Explain that they will be creating an advertisement for their invention. Tell them to think outside of the box – some options include a print ad, radio jingle, or news article to announce the item.
- Explain that each advertisement should show use of a copyright notice.

**Option 2** is a stand-alone activity

- Break out students into small groups.
- Provide each group with an invention - one of the following products: stapler, eraser, ballpoint pen, rubber band, glue stick, paper clip, or scissors. Each group is to give the invention a new brand name.
- Explain that they will be creating an advertisement for this invention. Tell them to think outside of the box – some options include a print ad, radio jingle, or news article to announce the item.
- Explain that each advertisement should show use of copyright notice.
- Have students document the creative process they go through, by keeping any notes and final drafts of their advertisements.

## Presentation and Discussion

Preparation: Provide a space on the board to record evaluation information.

- Have each student group present their advertisement and explain how their copyright is demonstrated.
- Tally responses on the board. For example, some may have displayed a copyright symbol – ©; some may have used the word copyright or abbreviation copr.
- Ask: If any of the advertisements did not show the copyright notice, was it still protected by copyright? Reinforce that all original work is protected by copyright once it is set in tangible form.

- Discuss how any group could “prove” their right to ownership (copyright) of the advertisement. (The records/documented notes, journal, or worksheets used during creation, publication, etc.).
- Stress that a certificate of registration from the U.S. Copyright Office, when it is obtained within 5 years of the work’s first publication, will constitute prima facie evidence of the validity of the copyright and of the author’s claim to ownership.

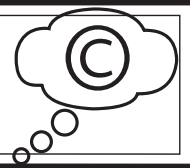
## **Wrap up**

- Discuss: Is a student’s work for class, such as an essay, a drawing, or a webpage protected by copyright?
- Expand on the concept that ALL of their original work is protected by copyright when written down or provided in any other tangible format, even if it does not display a notice of copyright.
- Review the copyright symbol (from the reference page) and the purpose for it.

## **Lesson Extensions**

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

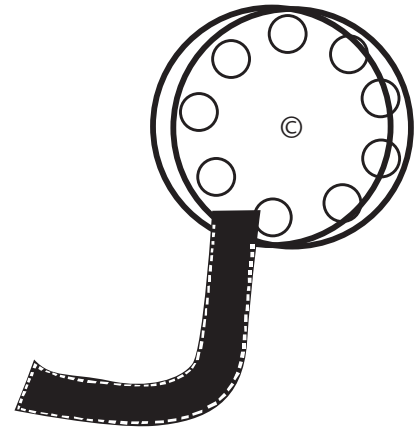
# Understanding Copyright



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.

Think about the word itself – “copy” with “right.” The owner has the right to decide how or if the creation is going to be copied.

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 in the United States until it's written down or recorded. Similarly, other creations, such as an ice sculpture or sand castle, would be too transient (disappears quickly) to meet the requirement of tangibility. In addition, for something to be classified 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.



## Why Have Copyright?

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.

## Showing Copyright

Under the 1976 Copyright Act, notice of copyright consists of three elements: (1) the symbol “©” or the abbreviation “Copr.,” or the word “Copyright” (2) the date of first publication; and (3) the name of the owner of the copyright.

Copyright in a 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.

## What Isn't Protected by Copyright

Sometimes it is easier to look at what is NOT protected by copyright to get a full understanding of the concept. The following is a list of items that are excluded according to the U.S. Copyright Office:

Copyrighted work does not have to be registered, or protected by a notice (although, copyright lawyers recommend this). Creators have the rights of copyright for their work even if the copyright notice is not shown.

Copyright does NOT protect:

- works that have not been fixed in a tangible form of expression
- titles, names, short phrases, and slogans; familiar symbols or designs; mere variations of typographic ornamentation, lettering, or coloring; mere listings of ingredients or contents
- ideas, procedures, methods, systems, processes, concepts, principles, discoveries, or devices -- as distinguished from a description, an explanation, or an illustration
- works consisting entirely of information that is common property containing no original authorship, such as: standard calendars, height and weight charts, tape measures and rulers, and lists or tables taken from public documents or other common sources

**Note: Some of these items may be covered under other forms of intellectual property protection such as patents.**

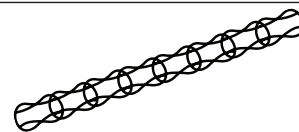
## Know about Public Domain

A work of authorship is in the “public domain” if it is no longer under copyright protection or if it failed to meet the requirements for copyright protection. Works in the public domain may be used freely without the permission of the former copyright owner. For a complete explanation of how to determine what is in the Public Domain, refer to the chart, Copyright Term and the Public Domain in the United States, developed by Peter B. Hirtle at [www.copyright.cornell.edu/public\\_domain/](http://www.copyright.cornell.edu/public_domain/).

The copyright in works created on or after January 1, 1978 by individuals lasts for the life of the author plus an additional 70 years. The copyright in works created by employees for their employers belongs to their employers and lasts for 95 years from the date of publication, or 120 years from the date of creation, whichever occurs first. Books, movies, sound recordings and online works will not fall into the public domain for many years. Why do you think that is so?



# Curriculum Connections



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

## Be Inspired – Age Doesn't Measure Talent!

**Goal:** Students will learn about young authors and explore how digital technologies can facilitate their own creative expression.



### Material/Procedures

- Pass out the reference and activity pages titled, “Age Doesn’t Measure Talent!”
- Students read the story and answer the questions at the end.

**“Taking the Mystery out of Copyright”:** Library of Congress online seminar for learning about copyright registration

The Library of Congress provides an easy-to-use resource for teachers and students to learn about the steps of copyright registration at <http://www.loc.gov/teachers/copyrightmystery/#/steps/>.

The site links to the U.S. Copyright Office to provide detailed information, necessary forms and filing information.

**Goal:** Students will:

- understand how to apply for copyright registration with the U.S. Copyright Office
- complete a real or mock copyright registration application for a selected creative work



### Materials/Preparation

- online access
- ability to print from the Internet

## Procedures

**For students with online access:**

- Go to <http://www.loc.gov/teachers/copyrightmystery/#/steps/>.
- Click on “Print Steps” and review the steps for copyright registration. Close file.
- Click on the link “Include the correct fee” and review the costs of applying for copyright registration. Close file.
- Click on “complete an application” and proceed as desired.

Suggestions:

**Option 1:** Select one category, access a form with instructions, go over the material as a group and discuss.

**Option 2:** Have students work in small groups to select a category and actually go through the steps of filling out an application.

**For students without online access:**

- Prior to class, go to <http://www.loc.gov/teachers/copyrightmystery/#/steps/>.
- Click on “Print Steps” and print out a copy of the steps. Close file.
- Review steps with the class.
- Click on “complete an application” and proceed as desired.

Suggestion:

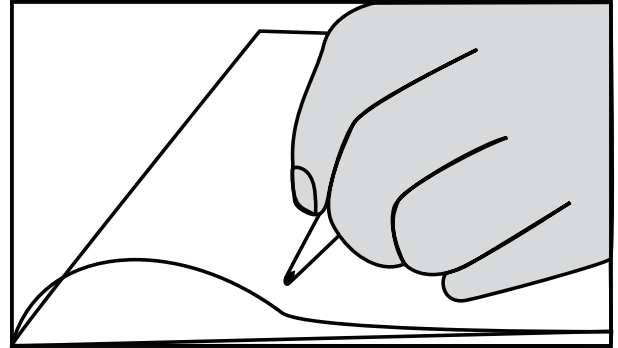
Select a category, access a form with instructions, print it out, make copies, and distribute to students to fill out as a mock example.

# Age Doesn't Measure Talent!



## Time Well Spent

Have you ever thought that something you have jotted down in a journal, or written on your personal webpage might someday be published? It could happen! Although her diary was not written as a work of fiction, or even to be published, one of the most widely read titles worldwide is actually the diary of a young Jewish girl, whose family was forced into hiding during World War II by the Nazis. They were eventually found and sent to a concentration camp. The direct translation of Anne Frank's diary has been made available in over 50 languages, and she died without knowing about her fame. Anne's father was the only one of his family to survive. Upon returning to the attic where they had hidden for two years, he found the diary and had it published for the first time in 1947. This simple book is still a must read for teenagers all over the world.



Anne hasn't been the only young person to become an acclaimed writer. In 1937, 2 teenage girls, Katherine Hull and Pamela Whitlock, in England were forced to seek shelter from a rainstorm. That gave them the opportunity to think about writing a book. The result of their efforts was a novel for children titled, "The Far Distant Oxus." It was published a year later and critics in the U.S. and overseas immediately labeled it as a classic.

Gordon Korman turned a 7th grade English assignment into his first book. Wanting to see if it could be published, he mailed it to the address on the bottom of an Arrow Book Club order form. One thing led to another, and Gordon's book, "This Can't Be Happening" was published. During his high school years, he wrote and published 5 more books for Scholastic, including "Beware the Fish" and "Go Jump in the Pool." That 7 of New York University's Dramatic Writing Program, he has published over twenty books for young adults and travels around the world to speak at schools and conventions.

In 1965 at the age of 15, Susan Eloise Hinton started work on a book that has become popular reading for many high school students. It took her 2 years to write, "The Outsiders," a story of youth gang life. Today, with more than 8 million copies in print, "The Outsiders" is the 2 adult book in publishing history. It has also been made into a film, directed by Francis Ford Coppola. Hinton went on to earn a B.S. degree at the University of Tulsa in 1970 and continued her career as an author. She has received many honors over the years, including selection by the American Library Association and School Library Journal as the recipient of the first Margaret A. Edwards Award, which honors authors whose "book or books, over a period of time, have been accepted by young people as an authentic voice that continues to illuminate their experiences and emotions, giving insight into their lives."

Contests can be a platform for launching young authors into the world of published works. In 1984, the Raintree Publish-a-Book contest produced a young author named Jamie DeWitt, a 12 year old with a learning disability. His story about an accident that occurred on his family's farm in Wisconsin was published as "Jamie's Turn." David Klein won the Raintree Publish-a-Book contest in 1988 with a story about matching argyle socks named Irwin and Irwina. The book, "Irwin the Sock" was published

that same year. David's experience illustrates that creativity in writing can lead to creative pursuits in other areas. He used his talents to study marketing and computer information systems at Kent State University and has channeled his creative talents into a career involving the administration of computing environments.

Time spent on the Internet may hold the most promise nowadays for young authors. Kids can publish their writings online at no cost, either on their own Web sites or on commercial sites such as [writersarea.com](http://writersarea.com) or [kidpub.com](http://kidpub.com). A simple search can turn up many opportunities; so give it some thought the next time you are stuck doing a writing assignment for school, or find yourself blogging on a topic of interest. That might be your ticket to literary fame.

## It's Your World

Name some of the ways young people have to express their ideas and creativity in today's age of digital technology (don't limit your list to ways of writing only—think of other creative outlets as well). For each, list how a creator would be able to indicate copyright on his/her work.

[illegible]

In your opinion, what is the best way that digital technologies can help you or any young person develop and potentially publish his or her intellectual property? Explain why, and then list the steps that one would take to protect his or her work on the Internet.



# LESSON PLAN—Intellectual Property Theft

Recommended learning level: High School

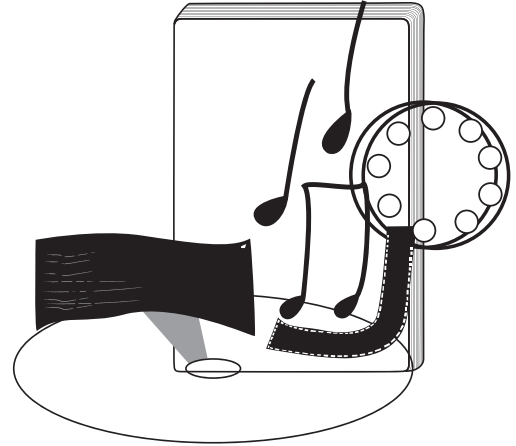


Estimated Lesson Time – allow 45 minutes or more to adequately complete activities.

## Learning Objectives

Students will:

- identify different types of media as intellectual property: writings, music, videos, computer games, etc.
- understand that intellectual property laws protect online and offline materials
- 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



## Materials

- a copy of the reference page for each student
- any or all materials created in previous lessons from this unit

## Procedures

\*Teacher Note: this lesson plan builds upon activities in the patent, trademark, and copyright lessons in this unit.

## Introductory Activity

- Have students assemble in the groups they have used in any or all of the patent, trademark, and copyright lessons.
- Have the groups display any or all of the materials they have created in prior lessons.
- Explain to students that they will be starting a new project in their groups.
- To begin this project they have 5 minutes to look around at the work of other groups and select 2 things that they feel are the best to build upon. For example, they could copy down a logo created by group 4 and use a jingle group 6 created for their advertisement.
- At the end of 5 minutes, have each group share what they “borrowed or took” to use.
- As groups present what they “borrowed,” create a tally sheet on the board. Example below:  
Discuss to clarify when something is merely use of an idea for further creativity, when something is copied but within fair use, and when something is illegally copied.

Group #	1	2	3	4	5	6	7	8
# of times items/ideas stolen								



## Activity Discussion Discuss Chart:

- Discuss chart:
- Ask students how it made them feel to learn that others liked their work and wanted to use it.
- Explain to student groups that the value of their work has a beginning value of Grade A. Every time an idea of theirs was “taken” by another group, their grade was reduced by 10% in grade points. For example, if a group had 10 things taken or a single item borrowed 10 times, etc. – their grade is a D – F
- Explain that if nothing was taken, they would have the grade they originally earned.

### Discuss:

- Is this a fair way of giving value to each group’s work?
- How does the ending grade given to any given group reflect the value of their work?

Introduce the concept of intellectual property theft.

- Explain that the material they originally created was intellectual property.
- In the “real” world when we take intellectual property – for example by downloading music online, “sharing” games, copying and pasting pictures into school reports without citing sources, etc – we are “taking” or stealing from the creator. That hurts them in some way – just as they were hurt when they realized their grade could go down if stolen from.

### Brainstorm

- Have students take out a sheet of paper.
- Tell them to brainstorm a list of ways intellectual property theft ‘regularly’ occurs in their world (by friends, themselves, family, general community, etc). Focus on what is taken and whether it is licensed, public domain, fair use or infringement to determine which of these things constitutes intellectual property theft.
- Give 3 minutes to brainstorm.
- Inform students they have another 2 minutes to brainstorm how the creators of those items are hurt by that theft.
- Give 2 minutes for brainstorm.
- Discuss lists.

### Discuss

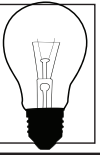
- As a class read part 1 of the reference page including the scenarios and discuss.
- Go over the second part of the page to review terminology relevant to intellectual property protections.

**Note: this section provides an introduction to specific activities presented in the Curriculum Connections section. It is recommended that at least one activity be used to follow up this lesson.**

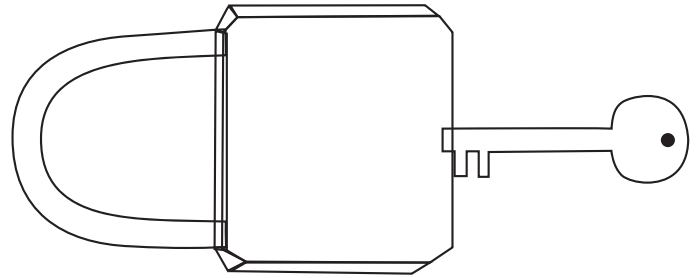
### Lesson Extensions

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

# Understanding 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.



## 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. This patent would allow her to charge a fee for its use by anyone else. 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 even creating a television series from it. This right can make money for Mike – 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 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, or software. It protects the actual words in a novel but not the topic or plot of that novel.

**Patents:** \_\_\_\_\_  
and plant patent.

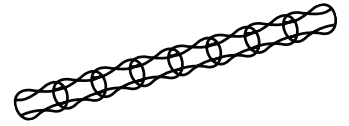
**Trademarks:** \_\_\_\_\_  
scents, packaging, and sounds that are used to identify products in a marketplace.

**Trade Secrets:** \_\_\_\_\_  
tected information, or “secret” provides the company with a competitive edge in their field.

**Intellectual Property Theft:** \_\_\_\_\_ inadvertently \_\_\_\_\_

While there are some exceptions, such as when items fall into the public domain, patents expire, or fair use applies, these are the exceptions – not the rule.

# Curriculum Connections



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

## Technology Connection – Peer-to-Peer (P2P) Networking



### Materials/Procedures

- a copy of the reference page “Understanding Peer-to-Peer Networking” for each student



### Discussion

1. Guide a brief introductory discussion about peer-to-peer (P2P) networks.
  - Ask students if they have ever heard of, or used, peer-to-peer networks. Some examples of “former” networks include Napster, Blubster, Grokster, and others.
  - Ask students who have used these networks to explain what they are commonly used for (i.e., illegally downloading music, movies, software, etc.).
  - Ask students to define the term “peer-to-peer networks.” Have students think about what the name means in relation to how computers interact with others. (Typically users download software from a P2P site, which creates a shared folder on the hard drive that can be accessed by any other member of the network. That means anybody, in any country, anywhere in the world who has a computer and Internet access, can access the computer in any P2P user’s home, and make illegal unauthorized copies of the music, and anything else contained in that location – thus, the peer-to-peer name.) The software program simply allows the user to search and find a particular computer with which to connect.
  - Ask students to brainstorm some of the obvious risks associated with using peer-to-peer networks (e.g., viruses, spyware, civil/criminal prosecution, and inadvertent mass distribution of family’s private financial and other information).
2. Pass out a copy of the reference page “Understanding Peer-to-Peer Networking” to each student.
3. Have students read the reference page and then discuss as a class.
  - Was any of the information new to you? What haven’t you previously considered in association with peer-to-peer networks?
  - As a student, what do you need to know to act legally regarding the use of peer-to-peer networks?
  - What are legal and valid uses of peer-to-peer networks that are age-appropriate?

## Historical Connection – Famous Cases of Trade Secret Theft



### Materials/Preparation

- research resource: the library or Internet access

### Procedures

- Discuss: What famous cases revolving around the theft of trade secrets, if any, are you familiar with?
- Provide example: As recently as 2006, people were prosecuted for trying to steal the formula for Coca-Cola and trying to sell it to Coke's rival, Pepsi.

### Research

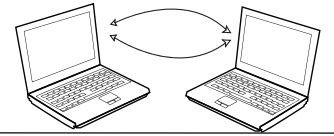
Choose 1 of 2 options.

1. Have each student or small group of students research a famous trade secret case and create a short demonstration to tell others in the class about it (oral, PowerPoint slide presentation, dramatic reenactment, etc.).
2. Have all students research the story of the attempted theft of Coca-Cola's trade secret.
  - Use the following guidelines to go over the story as a class, having students insert the information they found. Discuss if anyone has differing information.

#### Guidelines:

1. When did the theft or attempted theft occur (date)?
2. Who was involved and how were they associated with Coca-Cola?
3. How much money did the thieves expect to raise?
4. What were the incidents that led to the final arrest of the suspects?
5. How did Pepsi react?
6. What happened to the secret formula?
7. What was the eventual sentence for the criminals?

# Understanding Peer-to-Peer Networking



Downloading music from the Internet became popular when millions used Napster to download their favorite songs rather than buy CDs in a store. Although Napster has now transitioned into a legal download service, many peer-to-peer networks are primarily used to illegally download music, movies, and software.

So just what is peer-to-peer networking (P2P)? P2P software running on individual machines allows these computers to communicate directly with one another, rather than through a central server like a Web site. With P2P software, one can allow anyone in the world to copy files directly from his or her computer. This could be a single file, a whole folder, or even an entire hard drive. Unknowingly and easily, more may be shared than is originally intended.

While P2P can be neat and fun to use, there are definite dangers associated with it. P2P networks have been the centerpieces of intellectual property lawsuits, especially those involving unauthorized downloaded music. Numerous P2P users have been sued by record companies for illegally downloading copyrighted music. Although one may feel anonymous on a P2P network, IP addresses for individual computers are not difficult to track. File-sharing across a P2P network can lead one to inadvertently break copyright laws.



## Peer to Peer: Know the Dangers

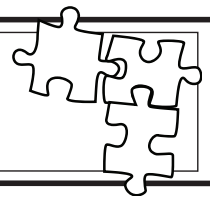
There are a number of reasons why downloading music or any other copyrighted material from unauthorized P2P sites is so dangerous.

- **Viruses**—When downloading a shared file, there is the danger of downloading a computer virus or Trojan horse onto your computer. These viruses can cause all kinds of problems, such as erasing all the files on the hard drive or the automatic sending of irritating e-mails to all of your friends in your mail directory. The worst part is that virus-protection software works on the Internet and e-mail but doesn't protect while running P2P software.
- **Spyware** – Many of the P2P programs automatically install spyware on your computer as part of the installation process. These spyware programs can range from a simple nuisance to a true invasion of privacy. They can cause numerous pop-up ads and banners to appear, or install tracking programs that view your usage patterns and more. If you notice that you are getting numerous annoying pop-up messages, the odds are that you may have a P2P file-sharing program installed on your computer.
- **Unwanted materials** – P2P exchange can provide illegal, unethical and/or immoral materials, such as pornographic materials, bundled with legitimate downloads.
- **Piracy** – Perhaps the most common use of P2P networks is the illegal copying and exchanging of digital material – piracy. As we move towards integration of electronic processes as a significant way of life, the ease with which pirated materials are illegally shared must be recognized not only as a dangerous threat to the economic well-being of creative artists, but also as an undermining of moral and ethical values of our society as a whole. Piracy hurts real people and is not acceptable practice in a lawful society.

Currently, intellectual property theft is rampant with the advent of the online world. Music sharing, movie downloading, software trading, copying/pasting, graphics 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?**

# Innovation and Invention: Creative Problem Solving

Recommended learning level: High School



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

## 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

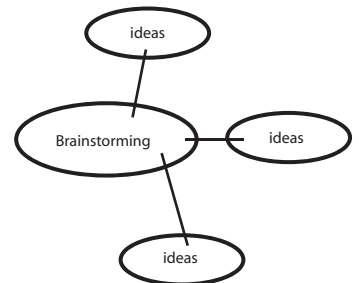
### Learning objectives

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 material 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: From Ah-Ha to Implementation

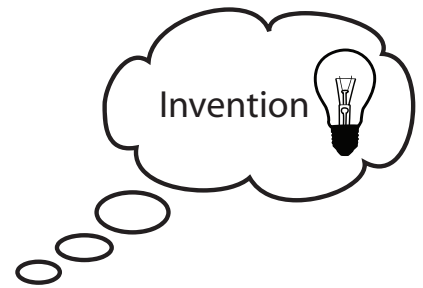
### Learning objectives

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 page 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 what the process would be like to make an invention?

### Reference/Activity Page

Have students read through the reference and 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.



### 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.
- Students will search for patents online.



#### Materials

- Internet access to <http://www.uspto.gov/main/profiles/acadres.htm>

#### Present the idea

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. This involves doing a patent search.

#### 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 computer lab.

**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.

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.
    - i. What does the search pull up?

## 4. Safe and Savvy Inventors

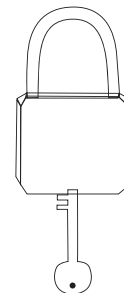
### Learning objectives

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 Page

Have students complete the activity page.

# The Creative Process

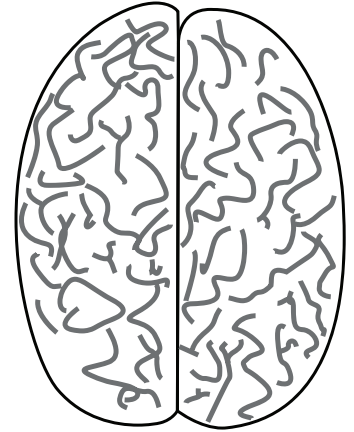


## Brainstorming

Brainstorming can be one element 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.

Brainstorming is a lateral thinking process. One is challenged to come up with ideas and thoughts that may seem shocking or crazy. However, shocking or crazy can then be worked on and improved into useful and valid ideas.

There are TWO key conceptual components in brainstorming: deferred judgment and quantity breeds quality. Deferred judgment is the concept that one needs to not judge ideas that are generated, but to just allow the ideas to flow. This leads into the second component – that quantity breeds quality. By allowing ALL ideas through, bad and good alike, one is more likely to get great quality ideas.



To brainstorm in a group calls upon the experience and creativity of all members allowing them to build upon other ideas and let new ideas evolve. Effective brainstorming in groups must follow the following steps/guidelines:

1. Identify the problem or goal.
2. State the rules – speak all ideas and allow no criticism.
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.
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.

### 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 that 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?

## Activity

The goal of this activity is not to create a new product, but to provide you with practice in the brainstorming techniques and creativity that inventors use.

### Innovation through Brainstorming

Your group will be given a common everyday item. Your goal is to brainstorm alternative uses for the item. Remember these rules:

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. Say any ideas that come into your head out loud to the group.
4. Build upon the ideas of each other.

You have 5 minutes to brainstorm. You will then be given another 5 minutes to narrow your list down to the 2 or 3 best ideas. As a group, expand upon these ideas and try to make them better.

Prepare to share your results with the rest of the class, including what you started with and highlights of how you arrived at your final idea(s).

# Going from “Ah-Ha” to Implementation



## Documentation: The Inventor's Log

Ideally in the creative process, once one has an idea the result will be a new product or invention. Every inventor needs to know that documentation of this process is very important. Documentation may be necessary to provide legal protection for the invention, and just as importantly, it can also serve as a record, reminder, source of ideas, means of ensuring project continuity, and a way to communicate with others.

Just what is an inventor's log? It is a bound, page-numbered book or an electronic document in which the inventor should date and document all new ideas, and all actions that are taken in the development of those ideas (a diary). If written, it should be completed in ink with no blank areas, erasures, etc. The book should be signed and dated, or noted and saved in the electronic file by a witness who has no personal interest in the project.

The book's purpose is to serve as evidence in case the ownership of the invention is ever challenged. It is a legal document to prove when the invention was discovered and developed.

If two 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 the most detailed notes and sketches will likely win the legal battle.



## The Story

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?

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

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3. Are they the “real” inventors?

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# Avoiding Scams

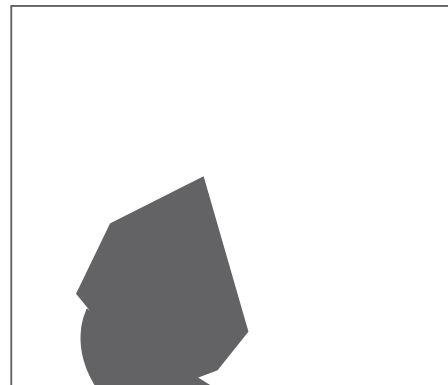


Getting an idea can seem like the easy part. What does an inventor do once the idea is on its way to being developed and produced? The patent process can seem overwhelming, and most experts advise getting help navigating through it. Getting a patent is only the first of many more steps. How does one obtain financing? What does one do to market the product? How can money be made off of it?

Many of us first think—Online Search! It's true, the Internet might be a great help, but then again it might bring disaster!

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. Don't just choose from the first television advertisement seen—do some legwork. Look for a company charging minimal fees (a few hundred dollars) to evaluate the invention. If they choose to take on your invention it should be on a contingency basis where they get a percentage of the profits. See Scam Prevention brochure on the USPTO's Web site: <http://www.uspto.gov/web/offices/com/iip/index.htm>



## Activity

Come up with some questions you would want to ask a potential company before having them help with your patent process. We'll help you out with the first one – then you come up with at least four more.

1. What is the total fee for you to help me obtain a patent for my idea?

2. \_\_\_\_\_  
\_\_\_\_\_

3. \_\_\_\_\_  
\_\_\_\_\_

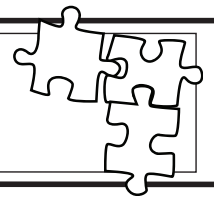
4. \_\_\_\_\_  
\_\_\_\_\_

5. \_\_\_\_\_  
\_\_\_\_\_

6. \_\_\_\_\_  
\_\_\_\_\_

# Innovation and Invention: Creative Problem Solving

Recommended learning level: High School



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

## 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 an Idea
2. Idea Evolution
3. Idea Development
4. Researching a Patent
5. Patent and Production
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.

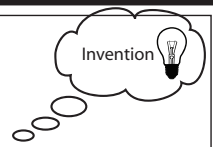
**Small groups:** Students work in small student work-groups or pairs to complete the Invention Connection booklet. This may be done in several sessions.

- 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 an Idea
2. Idea Evolution
3. Idea Development
4. Researching a Patent
5. Patent and Production
6. Enrichment



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**

- **pro**

- **con**

- **rubric**

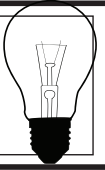
- **evaluate**

- **patent**

- **prototype**

- **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

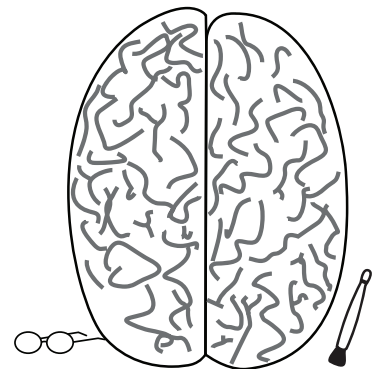
Use a separate page to write about the following:

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?

## Brainstorming

Group brainstorming can be one element 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.

In brainstorming, each participant is challenged to come up with ideas that may seem absurd or crazy. Then, even the craziest ideas can be worked on in an effort to improve it, hopefully into a valid and useful idea.



One key component in brainstorming is

## Effective brainstorming in groups must follow the following steps/guidelines:

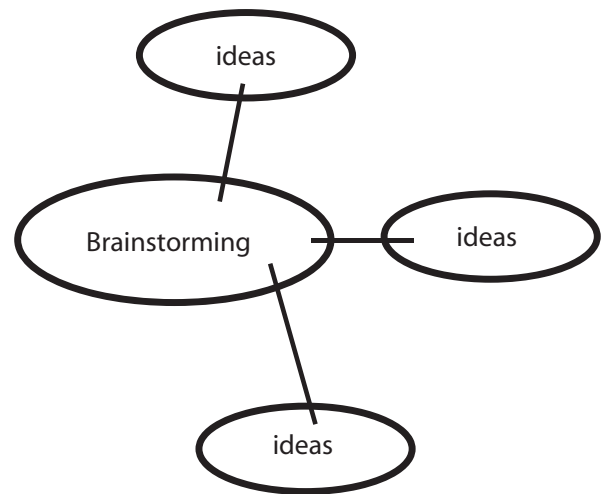
1. Identify the problem or goal.
2. State the rules—speak all ideas and allow no criticism.
3. Delegate a recorder to jot down all ideas.
4. Encourage participants to build upon other people’s ideas, or to use other ideas to create new ones.
5. Have a time limit.
6. Set a goal –aim for a minimum number 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 the 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 suggestions 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

The goal of this activity is not to create a new product, but to provide you with practice in the brainstorming techniques and creativity that inventors and other creators use.

### Innovation through brainstorming

As part of a small group, select a common everyday item; for example: a ruler, paperclip, pencil, etc. Your goal is to brainstorm alternate uses for the item. Remember these rules:

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.

Brainstorm for 5 minutes. You will then be given another 5 minutes to narrow your list down to the 2 or 3 best ideas. As a group, expand upon these ideas and try to make them better.

Prepare to share your results with the rest of the class, including what you started with and highlights of how you arrived at your final idea(s).

### Bring it Together

Present the results of your brainstorming process to the class.

### 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.

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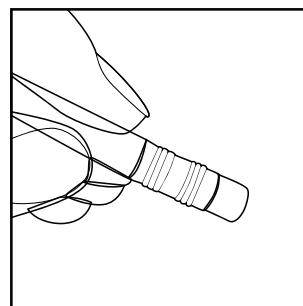
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### Evaluation – What did you learn?

- 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?

### 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 use ideas that you've had before about 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.

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*Continue on next page*

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

Frustration over not being able to see her homework paper in the dark sparked ten-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.

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?

### 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.

<b>Ideas:</b>	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
<b>Criteria 1:</b> Customer appeal – looks, feel, etc.	Not likely	Cold element would warm up quickly	Might be uncomfortable
<b>Criteria 2:</b> Maintains shoe function	OK	Shoe might lose stability	OK
<b>Criteria 3:</b> 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 invention and evaluate them using one or more of the 3 evaluation methods presented.

### 3. From “Ah-Ha” to Implementation



#### 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:

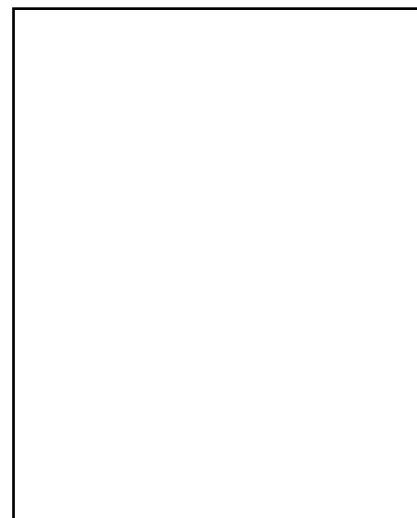
- Have you ever had an idea for an invention? What was it?
- Did you follow through on your idea? Why or why not?
- Why might some people with good ideas not follow through?
- If you had a great idea, what would you do to follow through? Do you know how to go through the inventive process?

#### The Know-How

##### Documentation: The Inventor's Log

In the simplest of terms, an inventor takes a creative, original concept through development into a final product or new invention. One critical component is documentation of the process. Documentation may be necessary to provide legal protection for the invention, but it can also serve as a valuable resource to the inventor, providing the source of ideas, record of details, reminders, means of ensuring project continuity, and a way to communicate with others.

**What is an inventor's log?** It is a page-numbered book, preferably bound, in which the inventor dates and documents all new ideas and all actions taken in the development of those ideas (a diary), in ink with no blank areas, erasures, etc. It is important to note that the inventor's log needs to be kept right from the beginning. The book should be signed and dated by a witness who has no personal interest in the invention.



The book's legal purpose is to serve as evidence in case of a debate on the validity of the property is ever challenged. It is a legal document to prove when the invention was discovered and developed. In most countries, the one who applies first gets the patent, but in the United States, the first to invent an item gets priority for the patent.

If two 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 have a better chance to win a legal battle.

#### History Tells the Story

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.

So what is the answer? The truth is all relative to who holds the patent—Bell. Bell was the first to apply and complete the patent process. Meucci is credited with having applied 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 often 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 U.S. Supreme Court in Washington. It fought out 587 other lawsuits of various natures; 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 is the one who gets the patent and can prove his or her case.

### **Answer It:**

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

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

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3. Are they the "real" inventors? How do you know?

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### **Go Online**

Select an invention to research. Who invented it? Did they benefit from their invention or did someone else profit?

### **CONNECT IT!**

You have narrowed your ideas into a concept for an invention. If you haven't started a log already, do it now.

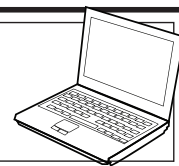
## Begin Your Own Inventor's Log

First, write down your basic idea. Include what the invention is intended to do and how it is different from other similar products.

Use your teacher and one other party to witness the document as you go through the process. The more details you include, the better. **Remember these key points:**

- 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. Record all changes as they occur over time.
- Give thorough explanations of your invention and how it works.
- 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's materials, 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.

## 4. Researching a Patent



There exists a patent for nearly every invention out there. To ensure your idea is patentable and marketable you need to make sure someone else hasn't already had that idea! This involves doing a patent search. Searching for patents is kind of like being a detective. There are three ways to search for a patent:

1. **Search by patent number:** Each invention has its own patent 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 or if someone wants 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!

### Apply It

**(Optional) Try A Search:** For this activity you must have access to a computer with Internet access.

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 did your search pull up?
  - b. Type in the name: Orville Wright
    - i. What did your search pull up?
  - c. Try a key word search – some sample key words include: dog, paperclip, skateboard, etc.
    - i. What did you find?

### CONNECT IT!

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. Search for patents that are similar to your invention. Try key word searches. Has someone already patented your idea?

Use the space below to list and briefly describe similar inventions that you find. How is your invention different? Look for gaps in the list of products you found. How does your idea improve upon what is already out there?

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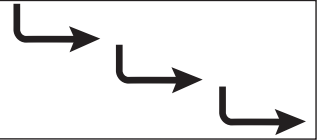
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## 5. Patent to Production



Once an inventor has developed his or her idea, the product may be ready for production. At this point the inventor has most likely created the actual invention, or is working on the prototype, or model, of the invention. There are many inventions that get put on the shelf at this point. Getting a product out to the public may seem overwhelming. It is usually recommended that serious inventors get the help of a patent attorney or other expert to guide them through the patenting process, but it is important that inventors of any age become familiar with what is involved.

### These kids didn't get discouraged!

- Six-year-old (6 years old!) Suzanna Goodin got tired of cleaning the cat food spoon and came up with the idea of a spoon-shaped cracker that the cat could eat. She won a grand prize for her invention in the Weekly Reader National Invention Contest.
- The youngest sisters to receive a U.S. patent were eight-year-old [redacted] old sister [redacted]

## Think About It – Talk About It

- If you have an idea for an invention, do you know how to go about creating and getting it patented and marketed?
- Where can you turn for help and/or advice?

### The USPTO can help

A logical place to start with questions is with the United States Patent and Trademark Office.

Contact information is provided on the Internet at:

<http://www.uspto.gov/web/offices/pac/dapp/pacmain.html>.

## Getting Help – Avoiding Scams

The Internet might be a great help, but then again it might bring disaster!

Getting a patent is only the first of many more steps. What does one do to market the product? How can money be made from it?

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. All inventors are targeted, with 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. Don't just choose from the first television advertisement seen – do some legwork. Look for a company charging minimal fees (a few hundred dollars) to evaluate the invention. If they choose to take on your invention it should be on a contingency basis where they get a percentage of profits.





## Apply It:

Come up with some questions you would want to ask a potential company before having them help with your patent process. We'll help you out with the first one – then you come up with at least four more.

1. What is the total fee for you to help me patent and/or market my idea?
- 2.
- 3.
- 4.
- 5.
- 6.

### **(Optional) Going Online – Research It:**

Take time to do some research on companies that provide patent services. After reviewing their Web sites, what questions are you inspired to ask?

## 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 in which you can enter your invention.

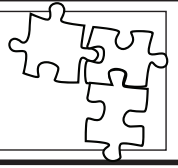
Do an Internet search on contests for young inventors and check out the links you find.

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

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

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

## 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 brochure or flyer 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 brochure. Use a separate page to collect the information.

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

- Will it be a one-page flyer, a folded brochure?
- Will you create graphics/artwork?
- What will the title be?

### **Step 4** – Use materials of choice (handwritten/designed or with the use of desktop publishing) to design and create brochures.

### **Step 5** – Make plans to copy the brochure(s) and distribute.

- Figure out where the brochure will have the most impact – plan distribution there (i.e., distribute in a cafeteria at lunch, at a club meeting, after a Parent Open House, during a faculty meeting, etc.)
- Make sure you have permission for your distribution.
- Check with your teacher for ideas too.

### **Step 6** – Copy, brochures.

### **Step 7** – Plan a distribution day.

### **Step 8** – Distribute the brochures.