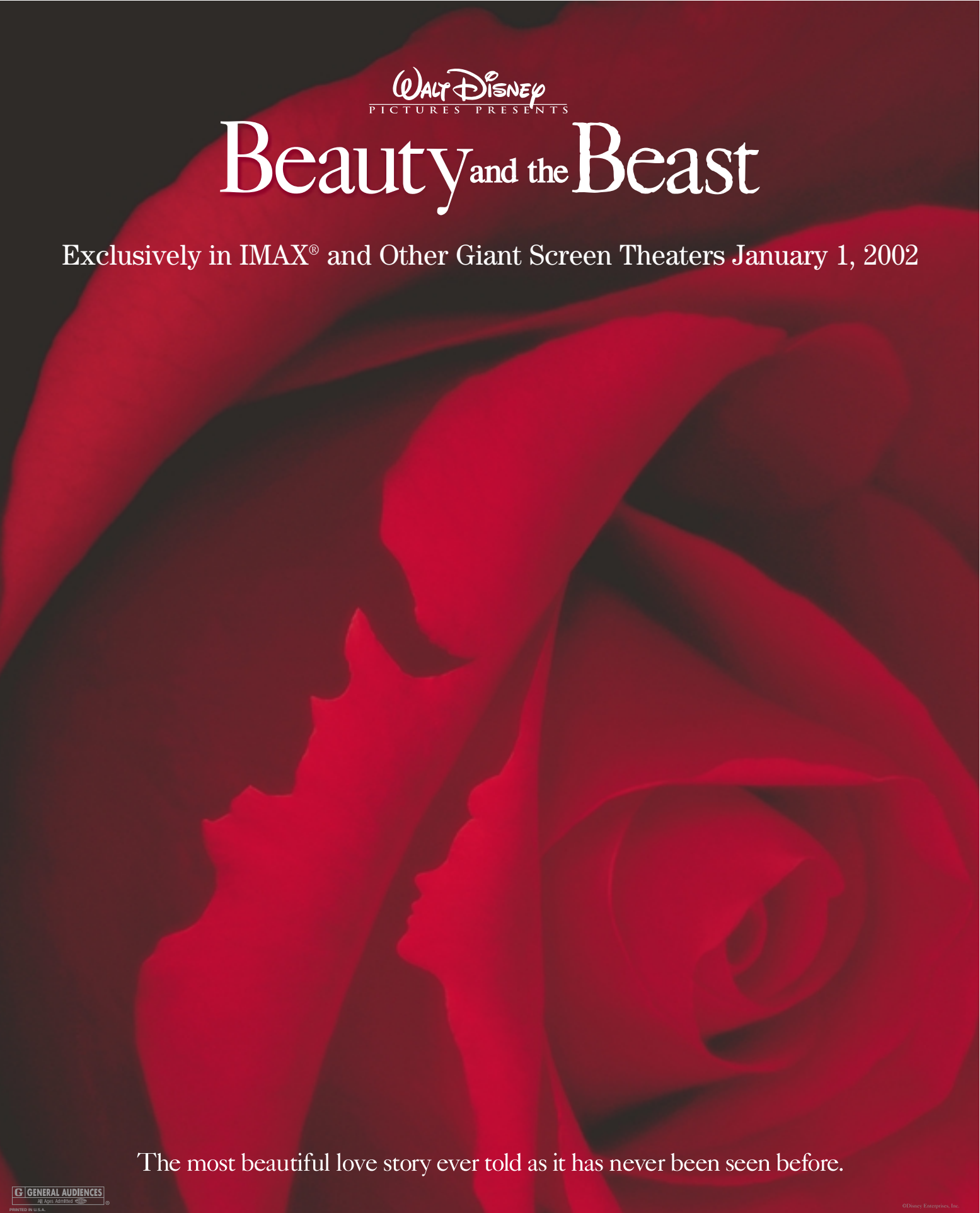


Educational Resource Guide: Middle School

Teacher's Resource Guide

We are pleased to provide you with this curriculum resource guide for a newly enhanced and expanded version of *Beauty and the Beast.* Opening exclusively January 1, 2002 in IMAX® and other Giant Screen Theaters, *Beauty and the Beast* is set in France during the late 18th century and follows the adventures of Belle, a bright and beautiful young woman. When her lovable but bumbling father, an inventor, stumbles onto the castle of a hideous beast and is taken prisoner, Belle comes to the rescue and volunteers to take her father's place. With the help of the castle's enchanted staff, Belle learns to see beneath the Beast's frightening exterior and recognize his gentle soul.

Target Audience

This program is designed for middle school students. The activities span the entire curriculum with emphasis on science, language arts and social studies.

Guide Components

This guide was developed with the help of a panel of elite educators, designed to engage middle school students in a wide variety of stimulating activities.

- Pages 1-7 feature teaching tips for the activities.
- Pages 8-11 contain the corresponding reproducible student activity sheets.

How To Use This Guide

- Look at the teacher's guide for curriculum focus, special materials required and teaching tips for each activity. Use the "Now Try This!" section for further ideas and discussion. Modify the activity on each sheet to suit the needs of your students.
- Select the appropriate activities for your classroom.
- Schedule the material into your classroom lesson plan.
- Duplicate one activity sheet for each student.
- Go to www.disney.com/beauty to access additional educational links.

Activity 1 A Tale as Old as Time

Curriculum Focus

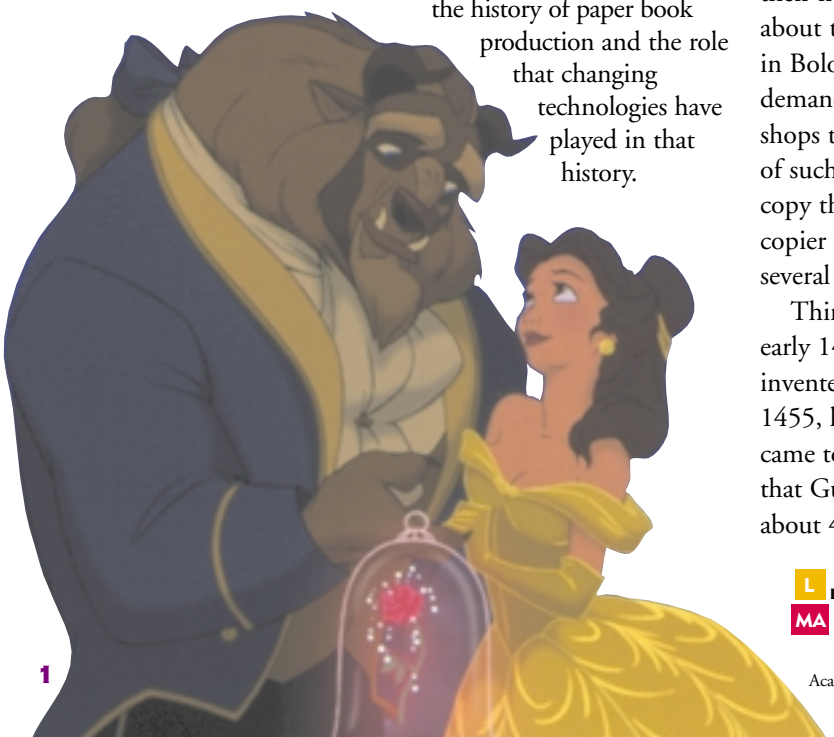
History, technology, social studies

Special Materials Required

Encyclopedias, Internet, resources from school library

Teaching Tips

Part A. H Walt Disney's *Beauty and the Beast* stars Belle, a heroine who adores books and reading. The story of *Beauty and the Beast* is at least 250 years old! That's not old at all when compared to the history of books! Here is a brief overview of the history of paper book production and the role that changing technologies have played in that history.



Of course, before there could be books there was a need for paper. The Chinese spent several centuries experimenting with this process, culminating with the development of rag paper in about 105 A.D.

Some of the earliest books, the illuminated manuscripts produced by monks during the 7th through the 9th centuries, remained in the monasteries where they were created, not only because they were so valuable, but also because there was no reason to make them available to the public—the average person at that time could not read.

By the 12th century, travel and foreign trade were increasing. The growing merchant class—those who made their living by trade—had a desire (and a need) to learn more about the world. Universities were established—the first one in Bologna, Italy, in 1119. And, with universities came a demand for books on a variety of topics. Stationers, whose shops typically were located near the universities, had libraries of such books. Students would visit the stationers and hand-copy the books they needed. Or, they could pay a book copier to do the job for them. That's the way it continued for several hundred years.

Things began to change by the middle of the 1400s. In the early 1450s, a German goldsmith named Johannes Gutenberg invented a method of printing using moveable type. Around 1455, he produced the first complete printed book, which came to be known as the *Gutenberg Bible.* (While it is believed that Gutenberg printed some 300 copies of his Bible, only about 40 of them still exist today.) The technology that

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Gutenberg developed did not change significantly until the 20th century.

Here are some dates your students might want to include on their book production timeline:

- 1822 – William Church invents the first mechanical type-casting machine.
- 1827 – Robert Hoe introduces the first wrought-iron framed printing press, replacing the wooden framed press.
- 1863 – William Bullock develops the first web-fed printing press—a press that uses rolls of paper rather than sheets of paper.
- 1884 – Ottmar Mergenthaler invents the linotype, the first practical mechanical type-casting machine.
- 1949 – The Fotosetter, the first practical photo-typesetting machine, is introduced.
- The 1970s – Computers begin to be used in publishing.
- 1971 – Michael Hart conceives the idea for Project Gutenberg, which would make e-texts of books available to the public online at no cost.

Part B. T *Beauty and the Beast* uses very exciting new technologies. It was one of the first films to be stored using the Academy® Award-winning CAPS (Computer Animated Production System) software. It allows animated images to be stored and protected digitally. After your students have made their predictions about the technology of book production, lead a class discussion about other possible technological innovations. For example, what do your students think will be the next major technological breakthrough in transportation? In the classroom? In entertainment?

Part C. SS In the opening sequence of Walt Disney's *Beauty and the Beast,* Belle goes to town despite the ridicule of some townspeople, just to get a book. In this version, she goes to a bookseller's store as public libraries were rare then. As a follow-up to this activity, talk with your students about the role of libraries in making books available to everyone. Explain that libraries are not a new idea: The earliest known library was a collection of clay tablets in Babylon in the 21st century B.C. The first public library in the American colonies opened in Boston in about 1653. If possible, have someone from your local library system visit your class to talk about the history of libraries in your community and your state.

Now Try This!

- S H Have your students research the history of paper making, beginning with the ancient Chinese.
- T H Ask students to find out which historical milestones represent advances that are still in use today.
- S Have your students do experiments with paper. You can find directions online at http://www.tappi.org/paperu/welcome.com.
- H Have students learn more about life in the monasteries of a millennium ago. Have them view examples of illuminated manuscripts the monks created and then create their own modern-day variations either by hand or on a computer. (Note: Pictures of medieval illuminated manuscripts can be found in libraries and online.)
- L Ask students to write Belle's story as if it were taking place in the 21st century.
- L Discuss with your class the fact that books were not always available for girls, and that there are places around the world even today where girls are still not allowed to learn to read. Have them think about how their lives would be different if they could not read.
- T Have students compare the technologies used in the story of *Beauty and the Beast* with those that the children use today. Ask them to think about how these technological advancements have changed lives.
- T Ask students to think about what new jobs might be created in the future and which jobs will become unnecessary because of technology.
- L Visit your school or community library and have students see what services libraries provide other than lending books.

Activity 2 A Colorful, Musical Tale

Curriculum Focus

Science

Special Materials Required

Tuning forks, clear plastic containers for water, prisms (Metal spring tongs can serve as tuning forks.)

Teaching Tips

Part A. S The larger-than-life images in Walt Disney Pictures' giant-screen version of *Beauty and the Beast* have an amazing sharpness and clarity that make for an incredible viewing experience. But without our eyes there wouldn't be much to appreciate! Provide your students with a brief explanation of how the eye works: Light passes through the cornea (the clear tissue that covers the front of the eye), the pupil (the hole in the center of the eye), and the lens (the

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tissue that focuses the light) before it reaches the retina. The iris (the colored part of the eye) is actually a band of muscles. The iris controls the size of the pupil and regulates the amount of light that enters the eye. In very bright light, the pupil contracts, and in very dim light the pupil expands to allow more light to hit the retina. The retina is a layer of tissue located at the back of the eye. The retina contains receptors called rods and cones. Rods allow us to see images in low light, and cones allow us to see colors in bright light. The rods and cones react to light by generating electrical impulses, which are sent to the brain via the optic nerve. The brain interprets those impulses and—simply put—translates them into the images we see.

If you are unable to darken your classroom sufficiently to allow your students to experience the transition from color vision to colorless vision (overhead lights on and windows uncovered, lights off but the windows uncovered, lights off and the windows partially covered and the windows completely covered), choose an alternative location where students can experience the transition. Be sure to allow several minutes for your students' eyes to adjust to each change in lighting.

Part B. S After your students have completed the rainbow exercise, talk with them about the visible color spectrum. Explain that each beam of light has a certain frequency (the number of waves that pass a given point in a set amount of time) and wavelength (the distance between light waves). Wavelength is measured in nanometers (a billionth of a meter). The human eye can see a range of light from about 400 nanometers to about 700 nanometers. This is called the visible spectrum. The speed of light in empty space is approximately 186,300 miles per second.

What we know about the visible spectrum is founded in the work of Sir Isaac Newton. In 1666, he conducted a series of experiments with a prism. Newton showed that when light passes through a prism it is bent (refracted) and broken into a range of visible colors. He called these colors the spectrum. And, while the spectrum is continuous and the colors blend into one another, Newton did identify seven distinct colors: red, orange, yellow, green, blue, indigo and violet. These are the colors that we see in the rainbow, which is actually sunlight refracted by raindrops.

Part C. S Music, or sound, plays an important role in *Beauty and the Beast*, too. Tell your students that just like light waves, sound waves vary in terms of frequency, length and strength. And, just as we can see only a small spectrum of light waves, we can hear only a small range of sound waves (about 20Hz, or waves per second, to 20KHz). The loudness of sound is measured in decibels—a measure of energy named after Alexander Graham Bell.

Talk with your students about the three different parts of the ear. Explain that the outer ear is the part you can see. It collects the sound waves. The sound waves travel through the outer ear canal to the middle ear, where they strike the eardrum. The eardrum begins to vibrate, and the vibrations pass through three tiny bones—the hammer, the anvil and the stirrup—which transfer the vibrations to the inner ear. There they enter a small curled tube known as the cochlea, where they are turned into nerve signals that allow the brain to understand the sound.

Strike a tuning fork so the students can hear the sine wave it produces. Explain that the sound was caused by vibrations. Then, have students take turns dipping the tuning fork in a broad plastic dish or bowl or other unbreakable container of water. The vibrating fork sets up little waves in the water, just as it sets up waves of molecules in the air. Then, have them touch different objects in the room with the vibrating tuning fork and compare the resonance of different structures and materials.

Now Try This!

- S Have your students do research about the color receptors in the retina and about the different kinds of color blindness and what causes this condition.
- S Have your students experiment with different width rubber bands stretched across the length of an open shoebox. Tell your students that if they look carefully when they pluck the bands, they can see that the thinner

rubber bands vibrate faster than the thicker ones. The faster vibration causes those bands to have a higher pitch. Pitch is dependent on thickness as well as tension. Explain that the frequency (number of vibrations per second of a sound wave) determines the pitch (highness or lowness) of the sound. When they touch the vibrating rubber bands, the vibrations stop, and the sound stops. [Note: It is advisable for students to wear safety glasses when doing this experiment.]

- L A Discuss the importance color played in setting the mood in Walt Disney Pictures' *Beauty and the Beast.* Explain that the manipulation of color, shadows, exaggerated points of view and the contrasts of light and dark in the film all are intended to evoke an emotional response on the part of the viewer. Ask your students how changes in color and mood evoked different emotions.
- L A Have your students write color poems.
- M Have students work as a group to "produce" a music video that depicts a contemporary version of *Beauty and the Beast.* Color should play an important role, just as in the Walt Disney version of the story. Assign students to work on sets, costumes and music as well as to script the scenes and perform them. Videotape the final production and hold a "premiere screening" for students from other classes.
- L Talk with your students about the costumes the characters wore in *Beauty and the Beast.* How did the costuming add to the overall effect of the story? Then, have your students do some research to learn about clothing styles during the 18th century. Why do they think clothing was designed the way it was? What kinds of materials were used? How was clothing made? How has the technology of clothing manufacture changed over the centuries?

- A Ask students to look at the Web sites of famous museums such as the Museum of Modern Art in New York (www.moma.org) or the Metropolitan Museum of Art in New York (www.metmuseum.org), the Louvre in Paris (www.louvre.fr/louvrea.htm), and The Tate Gallery in London (www.tate.org.uk) to match colors and moods of paintings in those museums to the colors and moods in *Beauty and the Beast.*

3 Activity Weaving a Common Thread

Curriculum Focus

Language arts, social studies, science

Special Materials Required

None

Teaching Tips

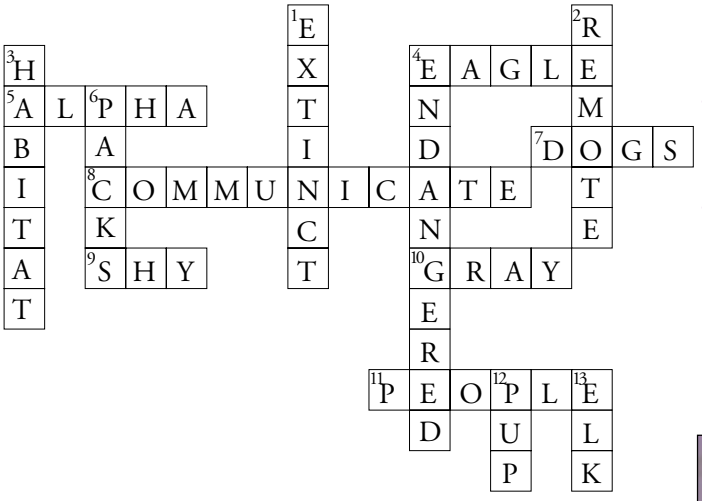
Part A. L SS Ask students to talk about the themes found in *Beauty and the Beast.* On the surface, it is the story of a handsome prince who is put under a magic spell and turned into a horrible beast. The prince is returned to his original form through the love of a beautiful girl. On another level, the story deals with the theme of appearance versus reality. The Beast is not at all what he appears to be, and the magic occurs when Belle is able to recognize that. Explain that these same themes can be found in stories from all around the world. Tell your students that—just as archaeologists do—they can look for clues about the cultures and customs of different countries as they read the fairy tales. For example, where do the characters live? How do they dress? What kinds of foods do they eat? What occupations do they have? If the stories are illustrated, students can look for details in the pictures that might help. What do the houses look like? How are they constructed? (For example, do the houses have thatched roofs?) Taken separately, each clue may be very small but—put together—they can help to paint a complete picture.

Here are some Web sites that contain fairy tales:

- Hans Christian Andersen Fairy Tales and Stories (Denmark): http://HCA.Gilead.org.il/
- Grimm's Fairy Tales (Germany): http://www.cs.cmu.edu/~spok/grimmtmp/
- Russian Fairy Tales: http://www.lacquerbox.com/tales.htm
- Folk Legends of Japan: http://www.jinjapan.org/kidsweb/folk.html
- Fairy Gifts (fairy tales from many different countries): http://www.pitt.edu/~dash/type0503.html
- Folktales from Indonesia: http://www.geocities.com/kesumawijaya/folktales.html
- Romanian Fairy Tales: http://www.dragonrest.net/romanian/fairytales.html

Part B. S Other fairy tales that feature wolves include *The Three Little Pigs* and *Little Red Riding Hood.*

Solution to the crossword puzzle:



Part C. L Talk with your students about anthropomorphism — assigning human qualities or characteristics to things that are not human, including animals. For example, Lumiere, the candlestick in *Beauty and the Beast*, speaks English with a French accent. And Chip, the teacup, not only talks, but he walks, sings and dances, too.

Now Try This!

- L *Beauty and the Beast, Snow White and the Seven Dwarfs* and *Sleeping Beauty* are among some of the most beloved American and Western European fairy tales. Plan a classroom fairy-tale festival where students can present original stories they have written. If your classroom is culturally diverse, you might ask students to share traditional fairy tales from their native countries.
- S Have your students do some reading to learn more about the wolf and what is being done to re-establish it in the wild.
- S Have your students research other endangered species. What has caused them to become endangered? What, if anything, is being done to save them? Have students create displays about the different species and hold a classroom environmental forum. If possible, invite speakers from local environmental groups to talk about what can be done in your community to improve habitats for wildlife. Consider qualifying your school to become a National Wildlife Federation Schoolyard Habitat. (To learn more, visit the National Wildlife Federation Web site at http://www.nwf.org.)
- L Have your students work in groups to find other examples of anthropomorphism in literature. Then, have them create and illustrate profiles of several animals and objects that they might include in a fictional story. How would your students attribute human characteristics to each one? What would they look like? How would they sound? Would they wear clothes?
- L Have your students collect examples of how anthropomorphism is used in print and television advertising.
- T Challenge your students to find examples of things in the film that are different today because of changes in technology. For example: Horses were used for transportation in the film. We use cars today. Chip, the china teacup, had a big chip in his rim. Today, most everyday dishes are made of plastic or other unbreakable materials.

- L As a follow-up activity to looking up various countries' fairy tales on the Web, ask students to form groups and identify similar themes from the Web sites. Are all folk stories the same? Which themes overlap? Which are unique? What do folktales tell them about the culture? Why are there so many stories with wolves in them?
- L While looking at stories from other countries, or the same storyline from different perspectives, have students survey which jobs are given to boys and which to girls.
- L Have students write new versions of old tales from a different perspective, i.e., what if the beast were female? What if Mrs. Potts were male and Chip were female?
- L Compare the characteristics of the humans in the film with the object into which they were transformed. Ask students to think what object they might become if they had a spell placed on them.

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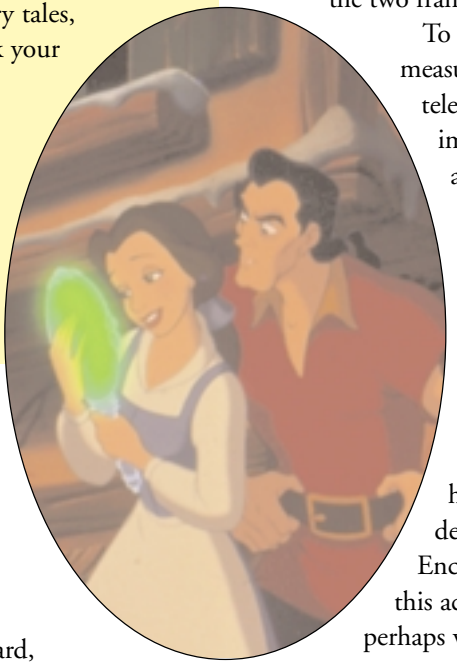
- L Ask your students to keep a journal of the similarities and differences they find in the various versions of *Beauty and the Beast* as they read similar stories from other cultures. Then have them read other fairy tales, such as *Cinderella*, and do the same. Ask your students to read the English story *Tattercoats*, the African story *Mufaro's Beautiful Daughters*, the Native American story *The Rough-Face Girl*, the Caribbean story *Cendrillan*, the Chinese story *Yeh-Shen* or the Middle Eastern story *The Golden Sandal* for variations to *Cinderella*.



ACTIVITY 4 Put It in Perspective

CURRICULUM FOCUS

Mathematics, technology, science

SPECIAL MATERIALS REQUIRED

Heavy construction paper or shirt cardboard, empty cylindrical potato chip tubes with lids and duct tape for making pinhole cameras, scissors and thumbtacks

TEACHING TIPS

Part A. MA After students have done their research and completed their strength fact-charts, combine the facts into a master list. Then, have students create graphs that depict in different ways the relative strengths of the various species. (Please note that there are no "correct" answers—encourage your students to be creative.)

Part B. T MA Talk with your students about the giant-screen version of *Beauty and the Beast*. Explain that the images on the screen are almost 10 times larger than the images in a regular film. Tell them that giant-screen technology uses special cameras and special film that is 10 times larger than the 35mm film that is used for normal films. And, giant-screen films also require special projectors and special screens that can be as big as 80' high and 100' wide. Of course, that means they must be shown in a special theater, too. Have your students create 35mm and 70mm "viewfinders" by tracing the film outlines on the activity master onto heavy construction paper or shirt cardboard. They should carefully cut along the lines to create the openings. Provide time for your students to practice "framing" different settings through the two viewfinders to get a visual sense of the difference in proportion between the two. Divide your students into small groups. Using their "viewfinders," each group should select an area in the classroom or (preferably) on the school grounds that they could include in one 70mm "frame." Then, they should determine what could be included in one 35mm frame. Finally, each group should create several graphs, charts, illustrations, or models that show the relative proportion of the two frames.

To conclude the activity, have your students measure the screen on a standard-size television set in their home. Explain that the images projected in a giant-screen theater are some 4,500 times bigger than the images on that television set. Challenge your students to develop a second set of charts, graphs or models that illustrate the relationship of the home television screen to the standard movie screen to the giant screen which, again, is 10 times bigger than the standard screen. You may need to use classroom walls, hallways or even outdoor areas to demonstrate these size relationships. Encourage your students to have fun with this activity and to be as creative as they can, perhaps videotaping their results.

Part C. S Explain to your students that still photography, which laid the foundation for motion picture photography, had its birth in 1839, when a Frenchman named Louis Daguerre introduced an innovation that became known as the daguerreotype. Daguerre treated a silver-coated sheet with iodine vapor, forming a coating of light-sensitive silver iodide. This treated plate was then exposed to light in a camera and developed in mercury fumes.

Daguerre's innovation built on the *camera obscura* (Latin for "darkened room") that had been used since ancient times. The *camera obscura* was originally a room that was sealed from light except for a small hole in one wall. This arrangement allowed an upside-down image of the outside world to be projected onto a white wall or screen placed opposite the hole. The upside-down, reversed images created by the simple *camera obscura* illustrate the principle behind any camera—including the motion-picture camera.

Have your students follow these directions to create their own *camera obscura* (also known as a pinhole camera) using a cylindrical potato chip tube with a translucent plastic lid:

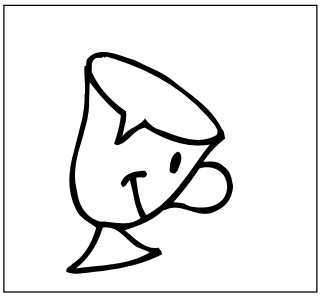
1. Clean the inside of the tube.
2. Draw a line around the can, about two inches from the bottom, and cut along the line so the tube is in two pieces.
3. Use a thumbtack to make a hole in the center of the metal end of the shorter section of the tube.
4. Put the plastic lid on the opposite end of the shorter

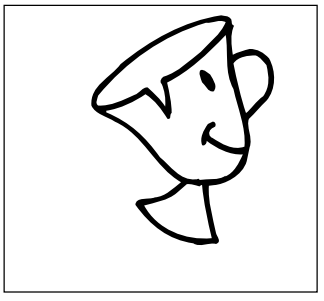
section. Use duct tape to tape the end with the plastic lid to one end of the longer section of tube.

5. Tape heavy construction paper around the sides of the entire tube to keep any light out.

Now Try This!

- S Explain to your students that animated figures are actually a series of still photos that are combined and projected at just the right speed (24 frames per second). Our eyes see each image for a fraction of a second after it has disappeared. This is called *persistence of vision*, and it explains how we connect the separate images into one continuous motion. To see how it works, have your students follow these directions to complete a simple flipbook animation project: Cut several sheets of plain paper into 1½- by 3-inch strips. You will need 30 to 40 pieces of paper. Stack the strips neatly and staple them along the bottom. Trace the first teacup on the bottom sheet. On the next sheet, trace the teacup but move it just a tiny bit. Continue this process, using each sheet in your stack, until your teacup is in the same position as the second teacup. Hold the bottom of the stack tightly in one hand. With the other hand, bend back the tops of the strips and let them flip forward.





- T Have your students do some research to learn about the history of animation and the role that technology has played in the evolution of animated films.
- T Have your students research some of the more important technological inventions of the last 100 years. What can they learn about the inventors and their discoveries? Ask them to think about how these inventions have changed the world since their grandparents were their age.
- T Lead a class discussion where students practice "thinking outside of the box" to come up with possible new inventions that could solve everyday problems (a better backpack or microwave popcorn that would never burn, for example).
- MA S Have students look at size and scale from a number of perspectives. For example, how do the various planets in our solar system compare to one another in terms of size and distance apart? How do the continents compare in terms of size and population? How does the combined area of the continents compare to the combined area of the oceans and seas?
- S Have your students research how light they cannot see—infrared and ultraviolet—is used in today's technologies.
- T S Create a class bulletin board illustrating the capture, transmission and reception of television images.

- S Have students think "outside the box." Have them form small groups to come up with an invention they could use in the classroom or in their school. If you have video equipment, tape some of their creations.
- S Have each student come up with his or her own set of Top 10 Inventions of the 20th Century and then have them compare with classmates.
- L Ask students to consider Belle's size and strength. Where did her true strengths lie? Discuss the concept of strength in personality and conviction.

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ACTIVITY 1

Reproducible Master

A Tale as Old as Time

Beauty and the Beast as a work of literature has been around a long time.

PART A. The first published version of *Beauty and the Beast*, written by Madame Gabrielle de Villenueve, appeared in 1740. It was 187 pages long! In 1757, another French woman, Madame Jeanne-Marie LePrince de Beaumont, shortened that story and introduced a much more popular version. The Walt Disney Pictures' version, first introduced in 1991, is different from the one Madame de Beaumont wrote.

Just as the story of *Beauty and the Beast* has changed over time, so has the story of books. The very first books were made entirely by hand. More than a thousand years ago, monks in monasteries scattered across Europe created books known as illuminated manuscripts. They contained very elaborate illustrations. These books stayed in the monasteries—they were considered far too valuable to share with the public. Books continued to be produced entirely by hand until the 1450s, when a German goldsmith named Johannes Gutenberg invented moveable type and the first printing press. He printed the first book, known as the *Gutenberg Bible*, in 1455. Imagine how far we've come since Gutenberg's days. Today, there aren't just printed books. There are books on tape, on CD and even on the Internet.

Do some research to find milestones in the history of bookmaking. Then, add them to the timeline below. (Copy the timeline onto a larger sheet of paper before you begin.)

1455

Johannes Gutenberg prints the first book.

2000

Stephen King uploads the first chapters of his e-book *The Plant.*

PART C. When home computers became an ever-increasing part of daily life, many people thought the computer would create a paperless age. But they were wrong. Books are selling better than ever, and libraries are still important centers of learning. In the space below, write your ideas about what makes real books so desirable.

Do some reading to find out who had access to books in different parts of the world in 1740, the year that *Beauty and the Beast* was first published. Use the space below to make notes about what you learn. If you need more space, you can use the back of this sheet.

PART B. You've traced the history of bookmaking from ancient times to the Internet. And you've followed *Beauty and the Beast* from a 1740 book to a 2001 large-screen animated feature with state-of-the-art sound. Now it's your turn to make some history. In the space below, write several sentences that describe what you think will be the next major breakthrough in the history of books.

A Colorful, Musical Tale

ACTIVITY 2

Reproducible Master

Color, along with music, played an important part in creating the wide variety of moods in Walt Disney's *Beauty and the Beast.*

PART A. You probably guessed when watching *Beauty and the Beast* that Belle's favorite color was blue. And, you probably don't have any trouble naming your favorite color. But have you ever thought about how you actually *see* that color?

The retina is the part of the eye that contains cells—called photoreceptors—that respond to light. There are two kinds of photoreceptors—rods and cones. Rods are sensitive to light and dark. Different kinds of cones are sensitive to one of three different colors—red, green or blue. Those three kinds of cones provide the foundation that lets us see all the colors. But the cones only work well in the light. It's the rods that help us see in the dark.

Let's try an experiment to see how those rods and cones do their jobs. Write a sentence that describes what you can see and how that changes as your teacher gradually darkens the room. Your first sentence should describe what you see when the room is brightly lit, and your final sentence should describe what you see when the room is very dark.

- _____
_____
- _____
_____
- _____
_____
- _____
_____

PART C. Music plays an important role in *Beauty and the Beast*, too. From the bright and cheery "Be Our Guest" to the beautiful "Something There," each song contributes to the storytelling process. Can you explain scientifically how you were able to hear each song?

Sound is a form of energy similar to light. The sound source causes vibrations, which in turn cause air molecules to move, setting up sound waves. Those vibrations go from your outer ear into your inner ear and then on to your brain, where the vibrations are interpreted as sounds.

Put your fingers to your throat and say, "My name is _____,"in a high voice. Then say it again in a low voice. Describe what it felt like as you spoke. How did they differ?

_____
_____
_____
_____
_____

What you felt were the vibrations from the sound waves your vocal chords were creating.

Now, follow your teacher's instructions as you experiment with a tuning fork and a bowl of water to see what a sound wave looks like.

Do some research to find out about the length of sound waves and how they affect the pitch of the sound. For example, how did the sound waves produced by the Beast differ from those produced by Belle? Share your information with the class.

PART B. How would you describe the light you see as you look out the window? If you're like most people, you would say "white." But that's really not true. That "white" light is actually a combination of all the colors of the visible spectrum. Those are the colors you see in a rainbow.

Experiment with a prism. If held correctly, it can throw a "rainbow" against a wall or sheet of white paper. How many of the rainbow colors can you list?

_____ _____ _____
_____ _____ _____
_____

Still photography and motion pictures use lenses to collect and project images. Research how lenses and prisms work, and then illustrate what you've learned on the other side of this sheet. Or, if you like, illustrate the difference between 35mm and 70mm projection (as was used in this giant-screen format production of *Beauty and the Beast*).

ACTIVITY 3

Reproducible Master

Weaving a Common Thread

Fairy tales are an important part of the culture of countries around the world. And, while the settings and characters reflect national differences, many of the themes remain the same.

PART A. Find fairy tales from other countries that have a theme similar to that of *Beauty and the Beast*.

After you have read several of these stories, find out more about the culture and customs of the country in which your favorite story is set. How do the people live? What do they do for fun? You can make your notes in the space below. If you need more space you can use the back of this paper.

_____

_____

_____

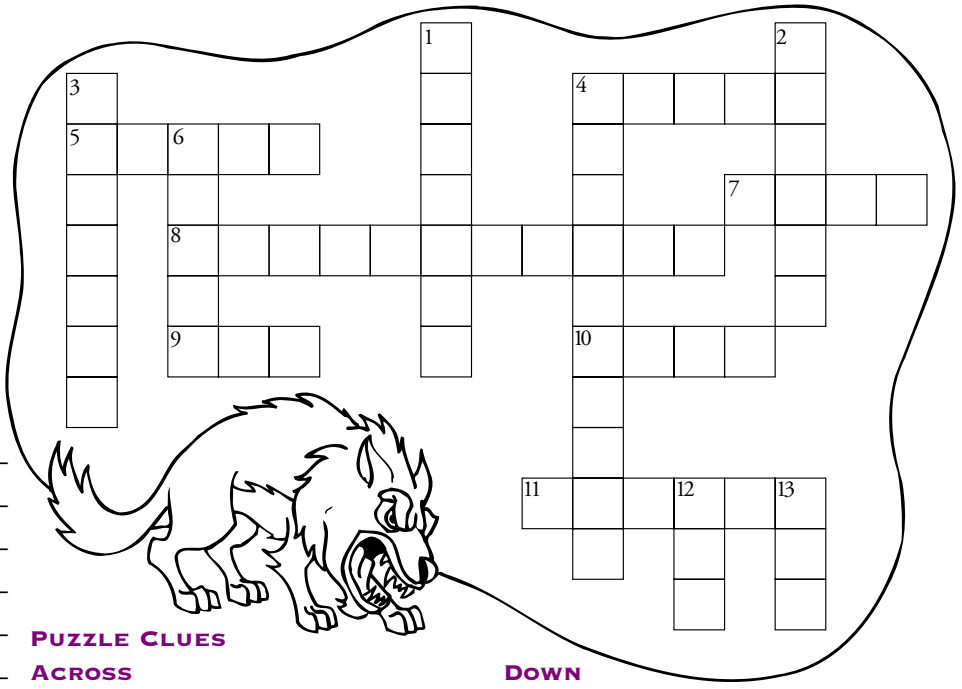
_____

_____

_____

PART C. Giving human qualities or characteristics to things that are not human is known as anthropomorphism. How many examples of anthropomorphism can you find in *Beauty and the Beast*? List your examples on a separate sheet of paper.

PART B. Another thing that many fairy tales have in common is the type of animals that are featured. Wolves play an important part in *Beauty and the Beast*. You can probably think of at least one or two more fairy tales that feature wolves, but how much do you really know about real wolves? Complete the puzzle to find out.



PUZZLE CLUES

ACROSS

4. One environmental success story is the bald _____. This beautiful bird, known as the national symbol of the United States, was once an endangered species, too.
5. The dominant wolf—the one in charge of the other wolves—is called the _____ wolf.
7. Wolves and _____ are descended from the same species. You could say they are distant relatives.
8. Wolves howl to _____ with one another.
9. There are no documented cases of wolves attacking people in North America. Wolves are _____ animals and they try to avoid people.
10. There are two main species of wolves living in the United States—red wolves and _____ wolves.
11. A healthy environment is good for animals and _____.

DOWN

1. If an animal is _____, it means it's gone forever.
2. Some environmentalists today are trying to save the wolf in the wild. They are reintroducing them in _____, unpopulated areas of the American West.
3. The loss of an animal's natural home, also known as its _____, is the biggest threat to its survival.
4. The wolf is considered an _____ species in most of the United States. That means it could become extinct unless we do something to help it survive.
6. Wolves are social animals. They live in groups called _____.
12. A young wolf is called a _____.
13. Wolves in the wild hunt large animals like moose and _____.

ACTIVITY 4

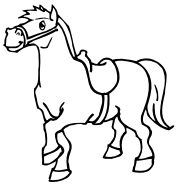
Reproducible Master

Put It in Perspective

Science and technology play a large part in making complicated tasks look easy.

PART A. While it's certainly an amazing experience to view a giant-screen film like *Beauty and the Beast*, size isn't everything in the real-life world of animals. Consider the amazing little ant, for example. You might think of a horse as being strong—after all, a horse can carry several hundred pounds on its back. But an ant can top that, because an ant can carry objects up to 50 times its weight. It can even climb trees with those heavy objects still in tow.

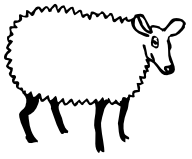
Let's put size and strength in perspective. You already know what the ant can do. Now, do some research and find several interesting, strength-related facts about each of the other species below.



Horse

Human

Bird

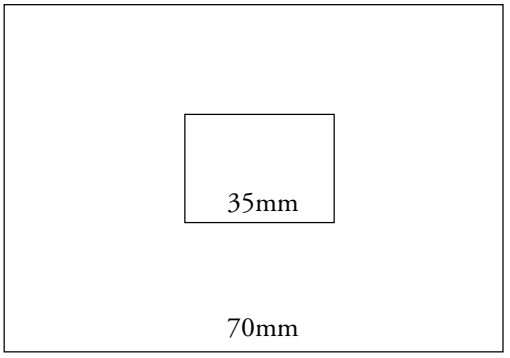


Sheep

Wolf

PART B. The people at Walt Disney used the very latest technology to create the giant-screen version of *Beauty and the Beast*. They used special projectors, special cameras, and special film. The images you see on the screen are almost 10 times bigger than the images you see in a regular film and some 4,500 times bigger than the images on your television screen. Those images are so big they fill your peripheral vision and make you feel like you are actually part of the action.

The small box below is the size of regular 35mm film—the film that is used to make a regular movie. The larger box below shows how large the 70mm film image-size can be. 70mm film is the film type used for all giant-screen movies. Follow your teacher's directions to make 35mm and 70mm "viewfinders" and complete a few experiments that will help you understand more about the images that 70mm film can create.



PART C. While giant-format films use state-of-the-art technology, all cameras—even those little disposable ones you can buy in the grocery store—rely on the same basic principles. Follow your teacher's directions to make your own simple pinhole camera.

When your camera is completed, hold the open end of the tube up to one eye. (Your camera will work best in a brightly lit room or outside on a sunny day.) Close your other eye to help you view the images on the screen created by the translucent plastic lid. Describe what you saw in the space below.

Web Sites

Walt Disney Pictures' *Beauty and the Beast* Web site: http://www.disney.com/beauty

Credits

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