

## History Detectives

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**Lesson Description:** Students will become ‘history detectives’ by analyzing characteristics of products of the post-reconstruction era. Students will be able to place products in chronological order and identify cause and effect relationships of changing technology. In this lesson students will analyze telephones, skyscrapers and cameras.

**Grade:** Grade 4-5

**Time Required:** 3 days

**Benchmark[s] Addressed:** History Standard 1 for grades 4-5: Students will study historical events and persons within a given time-frame in order to create a chronology and identify related cause-and-effect factors.

**Essential Question Addressed:** To what extent does one event *always* lead to another event?

**Enduring Understanding:** History is often messy, yet a historian must logically organize events, recognize patterns and trends, explain cause and effect, make inferences, and draw conclusions from those sources which are available at the time.

#### Materials:

Visual 1 – Timeline of Telephones

Handout 1 – Characteristics of Changing Technology

Make 1 copy of this handout to use as a visual with Procedure 1.

Handout 2 – Famous Buildings in the United States (one copy per student or pair of students)

Assessment – History Detectives Assessment

Text - Horizons - United States History: Civil War to Present, “The Rise of New Industries”, Unit 2, Lesson 4 pages 158-165

Scissors

#### Procedures:

##### Introduction

1. Introduce students to how to use characteristics of changing technology to make connections between cause and effect factors by using the telephone as an example. Use Visual 1 - Timeline of Telephones. Ask, “What differences do you see in these telephones?” Record the student’s answers on Handout 1 – Characteristics of Changing Technology. Student’s responses should include: size, color, dial, cords, materials, etc..

Have students brainstorm about how each characteristic helps to determine the age of each phone. For example, “Does *size* help you to determine the age of the phone? How does *size* help you to determine the age?” Repeat the questioning for each response recorded on Handout 1.

Ask students why they think the telephone was invented. A brief discussion of why the telephone was invented will encourage cause-effect understanding.

Explain that the characteristics of an object can often help to determine the age of the object and also show a cause-effect pattern over time. For example, as plastic became available for making telephones, the telephones were made with more plastic and were more colorful.

Discuss with students how telephones today are different. For example, telephones today can take pictures, send text messages, are wireless, have Internet capabilities, etc..

- (Optional) Distribute the Characteristics of Changing Technology graphic organizer. Have students record the characteristics of one industry while reading through Lesson 4 of textbook. Students should focus on one of the following industries:

Railroads

Steel Production

Oil Production

Electricity

Characteristics may include: resources used, place, length, time, etc.. For example students may analyze the oil industry by identifying an increase in the number of wells, capital resources purchased, introduction of the automobile as characteristics that support changes over time in the oil industry.

Be sure students demonstrate an understanding of the reasons for change and cause-effect factors of those changes.

#### **Activity**

- Pair students for this activity. Distribute both pages of Handout 2 – Famous Buildings in the United States. Tell students that they will become ‘**History Detectives**’ by using the data found on the handout to determine when the buildings were built from oldest to newest. Tell students that the date of completion has been left off intentionally, but they are to look at the appearance, name, location, height, number of floors, cost and materials as clues.

Have students cut out the building information cards so they can then physically place the building cards in order, which will become a time-line of the buildings. While students cut out the cards, distribute a copy of Handout 1 – Characteristics of Changing Technology to use as a guide.

Students should try to place the cards in order by each characteristic at a time to see if patterns emerge.

Ask “How might knowing the location help you to determine how old a building might be?” Continue asking similar questions about each characteristic.

Students should complete the activity by writing a summary for their conclusions. Evidence of student understanding is measured by how well they relate the changes of buildings to the changes in technology and evidence of a cause-effect relationship in the summary.

#### **Debrief:**

The buildings should be placed in the following order:

1885 – Home Insurance Building

1901 – City Hall

1902 – Flatiron Building

1930 – Chrysler Building

1931 – Empire State Building

1972 – Transamerica Pyramid

1973 – Sears Tower

1990 – First Interstate World Center

Ask how well the students did and what characteristics helped them to place the buildings in order. Most students will report that height was a key characteristic. Ask, “Does an increase in size (height) always indicate improved technology?” Have students think about when a decrease in size indicates the age of a product. For example, many electronic goods like calculators, computers, etc. tend to be smaller over time.

See Attachment 1 for additional comments to share with students.

**Assessment:**

The assessment for this lesson is designed on the same processes that were used in the Introduction and Activity segments of this lesson. For this assessment students will examine and analyze the changes to six different cameras that were produced between 1910 and 2005.

Distribute Assessment pages 1 and 2. Also distribute a Characteristics of Changing Technology. For *struggling* students, it may be necessary to have them cut the camera graphics and characteristics out in order to place in chronological order. To further *challenge* students, see if they can match the characteristics of the cameras to the graphic. To do this, have students cut the camera graphics and characteristics apart.

Note: If the cameras are placed in order from least expensive to most expensive, then the chronology can easily be found. Be sure students relate cause-effect factors (i.e. technology changes) to the characteristic changes of the cameras over time.

The dates of productions:	The chronological order:
Camera A – 1936	Camera C – 1910
Camera B – 1995	Camera A – 1936
Camera C – 1910	Camera E – 1954
Camera D – 2005	Camera F – 1972
Camera E – 1954	Camera B – 1995
Camera F – 1972	Camera D – 2005

**Scoring Rubric:**

	<u>Score 4</u>	<u>Score 3</u>	<u>Score 2</u>	<u>Score 1</u>
<u>Identification and Justification of Characteristics</u>	<u>Correct identification and justification of 9-8 characteristics</u>	<u>Correct identification and justification of 7-5 characteristics</u>	<u>Correct identification and justification of 4-3 characteristics</u>	<u>Correct identification and justification of 2-1 characteristics</u>
<u>Summary Cause – Effect Relationship</u>	<u>2 or more cause-effect relationships are correctly identified and justified</u>	<u>1 cause-effect relationship is correctly identified and justified</u>	<u>Cause and effect relationships were identified but justification is vague</u>	<u>Cause and effect relationships attempted but without justification</u>
<u>Chronological Order</u>	<u>All products are place in the correct chronological order</u>	<u>All products are place in the correct chronological order</u>	<u>All products are place in the correct chronological order</u>	<u>All products are place in the correct chronological order</u>

**Resources/References:****Text:**

Berson, Michael J., editor, *Harcourt Horizons, United States History: Civil War to Present*, Harcourt School Publishers, 2005.

Davidson, James West [et al.], *Nation of Nations: A Narrative History of the United States*, McGraw-Hill Companies, Inc., 5<sup>th</sup> Edition, 2004.

McGerr, Michael, *A Fierce Discontent: The Rise and Fall of the Progressive Movement in America*, Oxford University Press, paperback, 2005.

**Telephones:**

Bell System Memorial, [http://www.bellsystemmemorial.com/the\\_bell\\_system\\_telephone\\_story.html](http://www.bellsystemmemorial.com/the_bell_system_telephone_story.html)

**Buildings:**

Building Big, PBS.org, <http://www.pbs.org/wgbh/buildingbig/skyscraper/>

Welcome to Philadelphia City Hall, <http://www.geocities.com/Athens/Delphi/2115/Mainframeset.html>

**Cameras:**

Hewlett-Packard, <http://www.shopping.hp.com>

History of the Camera, Wikipedia, [http://en.wikipedia.org/wiki/History\\_of\\_the\\_camera](http://en.wikipedia.org/wiki/History_of_the_camera)

Ritz Camera, <http://www.ritzcamera.com/film-cameras.htm>

**Currency Value Calculator:**

Economic Historian, <http://eh.net/hmit/compare/>

Visual 1 – Timeline of Telephones



**1876** **BELL'S CENTENNIAL MODEL**  
 “My word! It talks!” exclaimed Emperor Dom Pedro of Brazil on June 25, 1876, when he listened to the receiver of this early telephone at the Philadelphia Centennial Exposition. One of the judges, Sir William Thomson (later Lord Kelvin) called Bell’s invention “the most wonderful thing in America.”



**1919** **DIAL TELEPHONE**  
 The first dial telephone exchange is credited to Almon B. Strowger who introduced it in LaPorte, Indiana, in 1892. It was many years, however, before switching equipment was sufficiently developed to permit dial installation in larger cities. New York City, for instance, began to get the dial in 1922.



**1937** **“300” TYPE DESK SET**  
 An innovation in desk set design was the placing of the bell in the base of this model. Earlier versions had housings made of metal but plastic was substituted in the early '40s. The “300” served throughout World War II while the energies of most telephone people were devoted to defense work.



**1964** **TOUCH-TONE® TELEPHONE**  
 Heralding a new era in communications, the dial is replaced by pushbuttons. As each button is pressed, two simultaneous musical tones are generated and transmitted to a central switching office, then translated into a series of pulses similar to those made by the standard telephone dial. It is now in production by Western Electric.

Source: Bell System Memorial website [http://www.bellsystemmemorial.com/the\\_bell\\_system\\_telephone\\_story.html](http://www.bellsystemmemorial.com/the_bell_system_telephone_story.html)

### Handout 1 – Characteristics of Changing Technology

Name \_\_\_\_\_

Use the chart below to help you identify changes in technology. Think about what characteristics changed over time for the products of the industry. Then write a summary about the changes. Include how you were able to tell an older product from a newer product.

**Industry:**

Characteristic	Was this information helpful?		Why or why not?
	Yes	No	

Summary: (How did the characteristics help you in determining the age of each artifact? Describe any cause-effect factors that you noticed in your examination of the artifacts.)

**Handout 1 – Characteristics of Changing Technology****Name ANSWER KEY**

Use the chart below to help you identify changes in technology. Think about what characteristics changed over time for the products of the industry. Then write a summary about the changes. Include how you were able to tell an older product from a newer product.

**Product: Telephone**

<u>Characteristic</u>	<u>Was this information helpful?</u>		<u>Why or why not?</u>
	<u>Yes</u>	<u>No</u>	
<u>Size</u>		<u>X</u>	<u>The size of these phones does not seem change over time.</u>
<u>Color</u>	<u>X</u>		<u>Last phone is more colorful than the early phones.</u>
<u>Cord</u>	<u>X</u>		<u>The cord is more flexible and coils.</u>
<u>Number of Pieces</u>	<u>X</u>		<u>The first phone is one piece, then the earpiece and mouthpiece are separate pieces to a separate piece with both earpiece and mouthpiece.</u>
<u>Materials</u>	<u>X</u>		<u>Early phone has wood and the last phone is plastic.</u>
<u>Dial</u>	<u>X</u>		<u>There is no dial on the early phone, then a rotary dial and finally a push button dial.</u>
<u>Other?</u>			

Order of Product: \_\_\_\_\_

Summary: (How did the characteristics help you in determining the age of each artifact? Describe any cause-effect factors that you noticed in your examination of the artifacts.)

As telephones developed over time, the quality and quantity of the pictures taken become better. The cameras become more expensive over time. As camera technology improved, so did the pictures. As camera technology improved and more features were added, the price increased. Perhaps as cameras developed and features were added, the new individual features became more compact, but the addition of features caused the camera size to stay almost the same.

**Handout 1 – Characteristics of Changing Technology**Name **ASSESSMENT ANSWER KEY**

Use the chart below to help you identify changes in technology. Think about what characteristics changed over time for the products of the industry. Then write a summary about the changes. Include how you were able to tell an older product from a newer product.

**Product: Cameras**

<u>Characteristic</u>	<u>Was this information helpful?</u>		<u>Why or why not?</u>
	<u>Yes</u>	<u>No</u>	
<u>Resolution</u>	<u>X</u>		<u>Even if students don't know what resolution is, they should be able to determine that the resolution is better with time.</u>
<u>Zoom</u>	<u>X</u>		<u>Even if students don't know what zoom is, they should be able to determine that the zoom is better with time.</u>
<u>Focus</u>	<u>X</u>		<u>Even if students don't know what focus is, they should be able to determine that the focus is better with time.</u>
<u>Prints</u>	<u>X</u>		<u>Prints are only black and white, then color pictures are possible.</u>
<u>Other</u>		<u>X</u>	<u>This information is not available on all cameras.</u>
<u>Number of Pictures</u>	<u>X</u>		<u>The number of prints increases over time from 10 to 300.</u>
<u>Weight</u>		<u>X</u>	<u>The early cameras weigh about the same. The newest camera is very light.</u>
<u>Size</u>		<u>X</u>	<u>The oldest camera is not the biggest. The cameras do not get smaller with time.</u>
<u>Price</u>	<u>X</u>		<u>Cameras become relatively more expensive over time (using real dollars).</u>

Order of Product: C A E F B D

Summary: (How did the characteristics help you in determining the age of each artifact?)

Describe any cause-effect factors that you noticed in your examination of the artifacts.)

As cameras developed over time, the quality and quantity of the pictures taken become better. The cameras become more expensive over time. As camera technology improved, so did the pictures. As camera technology improved and more features were added, the price increased. Perhaps as cameras developed and features were added, the new individual features became more compact, but the addition of features caused the camera size to stay almost the same.

**Handout 2 Famous Buildings in the United States**

Directions: Cut out the building cards and place them in order from the first built to the last. Use the characteristics as clues to help you place them in the proper order. Then complete Handout 1: Characteristics of Changing Technology for buildings.



Name - Empire State Building  
Location - New York, New York  
Height - 1250 feet  
Floors - 102  
Cost - \$41 million then, \$500 million in 2005  
Materials - steel, stone, bricks and aluminum



Name - Chrysler Building  
Location - New York, New York  
Height - 1046 feet  
Floors - 77  
Cost - \$20 million then, \$250 million in 2005  
Materials - steel and bricks



Name - First Interstate World Center  
Location - Los Angeles, California  
Height - 1018 feet  
Floors - 75  
Cost - \$350 million then, \$500 million in 2005  
Materials - concrete, steel, granite, and glass



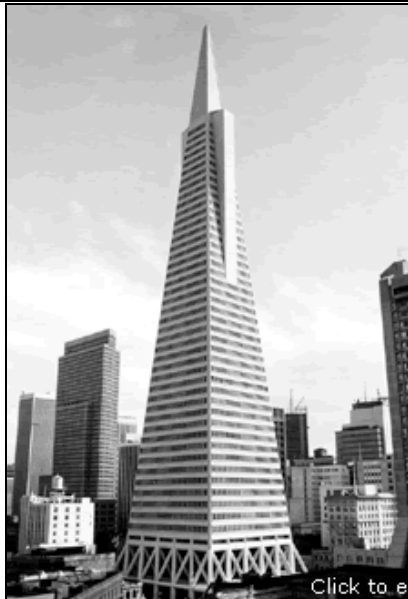
Name - Sears Tower  
Location - Chicago, Illinois  
Height - 1454 feet  
Floors - 110  
Cost - \$150 million then, \$600 million in 2005  
Materials - steel and aluminum



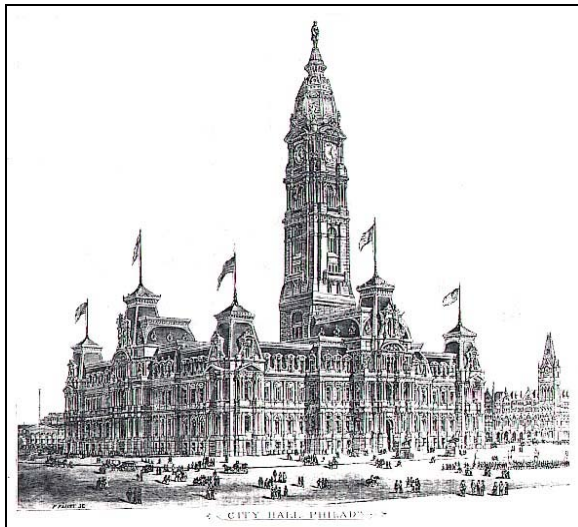
Name - Flatiron (or Fuller) Building  
Location - New York, New York  
Height - 285 feet  
Floors - 22  
Cost - \$41 million then, \$800 million in 2005  
Materials - steel and stone



Name - Home Insurance Building  
Location - Chicago, Illinois  
Height - 138 feet  
Floors - 10  
Cost - undetermined  
Materials - steel



Name - Transamerica Pyramid  
Location - San Francisco, California  
Height - 853 feet  
Floors - 48  
Cost - \$140 million then, \$500 million in 2005  
Materials - concrete, steel, crushed stone and glass



Name - City Hall  
Location - Philadelphia, Pennsylvania  
Height - 548 feet  
Floors - 53  
Cost - \$24 million then, \$500 million in 2005  
Materials - brick and stone

### Attachment 1 – Answer Cues for Famous Buildings in the United States

Use the chart below to help you identify changes in technology. Think about what characteristics changed over time for the products of the industry. Then write a summary about the changes. Include how you were able to tell an old product from a new product.

**Industry: Buildings**

Characteristic	Was this information helpful?		Why or why not?
	Yes	No	
<i>Appearance</i>	X		<i>The more complicated the shape the newer the building. Students may notice the number of windows.</i>
<i>Name</i>		X	<i>The name does not give an obvious clue, but the newest building is the only building with the word "World" in the name.</i>
<i>Location</i>	X		<i>East coast buildings tend to be the oldest buildings.</i>
<i>Height</i>	X		<i>As building technology improved, buildings became taller.</i>
<i>Floors</i>	X		<i>As building technology improved buildings have more floors.</i>
<i>Costs</i>	X		<i>By looking at nominal dollars there is a pattern cost to age; however, real dollar cost is not as obvious.</i>
<i>Materials</i>	X		<i>Older buildings did not use steel. Aluminum is yet another material not used until later.</i>

Summary:

*Answers may vary.*

*Example: As buildings were built there was a "race" to building the tallest building. The height of the building is a good indication of age. Buildings could be built taller and with more floors as new building materials were developed and used. The introduction of steel had a big impact on the size of buildings.*

## Attachment 1 continued

## Answer Cues for Famous Buildings in the United States

<b>Building</b>	<b>Year</b>	<b>Characteristics</b>	<b>Additional Information</b>
Home Insurance Building Chicago, Illinois	1885	Height – 138 feet Floors – 10 Cost – unknown Materials – steel	Considered the first American skyscraper supported by a metal frame. It was demolished in 1931. Using steel reduced the weight to one-third the weight of a masonry building. The strength of the steel allows for the building to have many windows.
City Hall Philadelphia, Pennsylvania	1901	Height – 548 feet Floors – 53 Cost – \$24 mil, \$500 mil in 2005 Materials – brick and stone	City Hall remains the largest and tallest masonry municipal building in the world. It took 30 years to build from 1871 to 1901. The statue of William Penn is 37 feet tall. A shoe on the statue is five feet long.
Flat Iron (Official name is the Fuller Building) New York, New York	1902	Height – 285 feet Floors – 22 Cost – \$41 mil, \$800 mil in 2005 Materials – steel and stone	The Flatiron or Fuller Building was one of New York City’s tallest buildings in 1902. The tallest in the world was a New York building, the Park Row at 391 feet. Park Row remained the tallest until 1908 when the Singer Building surpassed it.
Chrysler Building New York, New York	1930	Height – 1046 feet Floors – 77 Cost – \$20 mil, \$250 mil in 2005 Materials – steel and bricks	A spire was added and the Chrysler Building became the world’s tallest building. Mr. Chrysler wanted his building to be a “bold structure, declaring the glories of the modern age”. He decorated with hubcaps, mudguards and hood ornaments like his cars.
Empire State Building New York, New York	1931	Height – 1250 feet Floors – 102 Cost – \$41 mil, \$500 mil 2005 Mat. - steel, stone, bricks & aluminum	The Empire State Building was built during the depression and was built in record time, 1 year and 45 days. The Empire State Building became the world’s tallest building and held the title until 1972 when the World Trade Center was built.
The Transamerica Pyramid San Francisco, California	1972	Height – 853 feet Floors – 48 Cost – \$140 mil, \$500 mil in 2005 Mat – concrete, steel, stone & glass	The design of the building was borrowed from trees, which allow natural light and air to filter down to the ground. The crushed stone exterior is quartz and gives the building a shiny look. It takes 1 month to wash the 3,678 windows.
The Sears Tower Chicago, Illinois	1973	Height – 1454 feet Floors – 110 Cost – \$150 mil, \$600 mil in 2005 Materials – steel and aluminum	In 1974 The Sears Tower became the world’s tallest building until 1998 and the Petronas Towers in Malaysia were built. The Sears Tower still has the record for the tallest occupied floor in the world.
First Interstate World Center Los Angeles, California	1990	Height – 1018 feet Floors – 75 Cost – \$350 mil, \$500 mil in 2005 Materials – concrete, steel, granite, and glass	Located 26 miles from the San Andreas Fault, the building is flexible enough to withstand an earthquake that measures 8.3 on the Richter Scale. The building is also stiff enough to resist strong winds. The building was built on the site of the Los Angeles Central Library that was destroyed by fire in 1986.




History Detectives

Assessment

*Directions: Use the camera to help you order from the first built to the last. Use the characteristics as clues to help you place them in the proper order. Then complete Handout 1: Characteristics of Changing Technology for the cameras.*

 <p style="text-align: center;"><b>CAMERA A</b></p>	 <p style="text-align: center;"><b>CAMERA B</b></p>	 <p style="text-align: center;"><b>CAMERA C</b></p>
<p>Low resolution picture quality                  No Zoom capability                  Range-finder focus system                  Black &amp; White exposure prints only                  Manual film advance                  24 picture capacity                  Weight = 5 pounds                  Size (LxWxH) = 6x3x4 inches                  Price = \$12.50 then, \$175 in 2005</p>	<p>High resolution picture quality                  4x Zoom capability                  Automatic Focus                  Color exposure prints                    24 to 36 picture capacity                  Weight = 1 pound                  Size (LxWxH) = 4x3x2 inches                  Price = \$149 then, \$190 in 2005</p>	<p>Poor resolution picture quality                  No Zoom capability                  No focus system                  Black &amp; White pictures                    4 to 10 picture capacity                  Weight = 2 to 3 pounds                  Size (LxWxH) = 6x4x5 inches                  Price = \$1 then, \$20 in 2005</p>

History Detectives - Assessment

		
<p><b>CAMERA D</b></p>	<p><b>CAMERA E</b></p>	<p><b>CAMERA F</b></p>
<p>High resolution picture quality                  24x Zoom capability                  Automatic focus                  Color or Black &amp; White prints                  3 inch image display                  300 picture memory card                  Weight = 0.40 pounds                  Size (LxWxH) = 6x4x5 inches                  Price = \$ 350 then, \$350 in 2005</p>	<p>Moderate resolution picture quality                  No Zoom capability                  Limited focus ability                  Black &amp; White exposure prints only                    24 picture capacity                  Weight = 2 to 3 pounds                  Size (LxWxH) = 6x3x4 inches                  Price \$16 then, \$115 in 2005</p>	<p>Moderate resolution picture quality                  No Zoom capability                  Limited focus ability                  Color exposure prints only                  Instant pictures                  10 picture capacity                  Weight = 4 pounds                  Size (LxWxH) = 8x5x6 inches                  Price \$20 then, \$100 in 2005</p>