



Steel and the birth of a city

from the Esri Geoinquiries™ collection for U.S. History

Target audience – U.S. History

Time required – 15 minutes

Activity

Explore the growth of steel in the United States, using Pittsburgh as a case study.

C3 Standards

C3: D2.His.1.9-12. Evaluate how historical events and developments were shaped by unique circumstances of time and place as well as broader historical contexts.

C3: D2.His.14.9-12. Analyze multiple and complex causes and effects of events in the past.

C3: D2.Geo.1.9-12. Use geospatial and related technologies to create maps to display and explain the spatial patterns of cultural and environmental characteristics.

Learning Outcomes

- Students will be able to understand which resources caused the growth of major American cities in the late 19th century.
- Students will be able to understand the importance of resources and distribution networks for the growth of American business.

Map URL: <http://esriurl.com/historygeoinquiry8>

Ask

During 1886-1906, where would have been a good place to produce steel in the United States?

- The United States was a land rich in natural resources. In some areas of the country, the convergence of natural resources, creative ideas, and a growing nation's thirst for expansion created the perfect environment for exponential industrial growth.
- ? With your pre-knowledge, which ingredients do you think are necessary to make steel for a growing nation? *[The students might not know the specific types of resources needed for steel production, but they should be able to identify transportation and raw materials. The teacher should elicit the correct responses through some brief discussion.]*

Acquire

Where were steel natural resources located?

- To refine steel, two minerals are needed: coal and iron ore. Originally, to smelt steel, large tracts of forest were burned to create charcoal to burn in the smelters. A new method was created where coal was mined and then burned in large ovens called beehive ovens to create "coke." Coke was used instead of charcoal to smelt the iron ore that was being mined. Thus, steel was created.
- Turn on the Coalfields and Coal Mines layers.
- Turn on the Top 20 Cities Of 1890 layer. (You can turn this layer on and off to view the layers below.)
- ? Which of the more populated cities look well placed, close to coalfields and coal mines? *[Pittsburgh is the best-placed city.]*
- Turn on the Eastern US Iron Ore Mines layer.
- ? Does Pittsburgh have ready access to both the coalfields and iron ore mines? *[Yes, because Pittsburgh and other Appalachian states have extensive iron ore mines and select regions of coalfields.]*

Explore

How do you get the raw materials to the smelters and mills?

- Click the Appalachian Coal Deposit bookmark.
- ? What geographic feature runs directly through the coal deposits running all along the western range of the Appalachian Mountains? *[The Ohio River runs through this area.]*
- Click the Pittsburgh Rivers bookmark.
- ? What advantages did Pittsburgh have in terms of natural transportation? *[Three rivers converge at Pittsburgh, which provided water transportation for raw materials coming into the city's steel mills and transportation for finished steel.]*

more ►

Analyze

Were there other factors that made Pittsburgh a successful steel-producing city?

- Zoom out twice.
- Turn on the Railroads 1870 and the Smelters layers.
- ? How did the railroads support the location of the steel smelters in relationship to the mines? *[They provided additional transportation to areas that the river system did not reach.]*
- Click the Heart Of Industrialization bookmark.
- ? Thinking about your knowledge of the U.S. western frontier in 1886-1906 and the data you have explored in this activity, what factors made Pittsburgh uniquely successful as a major steel production city in this era? *[Coal fields ran from the north through Pittsburgh all the way south along the Appalachian Mountains. Iron ore mines were clustered all over the vicinity of Pittsburgh. Finally, major natural transportation routes from three rivers and the rail lines could transport the raw materials into Pittsburgh and the finished products outward to other major population areas.]*

Act

Could Pittsburgh have succeeded as a major steel production city with only one of the factors illustrated?

- Click the Eastern Half Of USA bookmark.
- ? Name some other cities that may have developed as steel-producing cities due to natural resources, transportation, or population. *[Answers will vary, but some choices might be St. Louis, MO; Columbus, OH; Cleveland, OH; Allentown, PA; Chicago, IL; or Omaha, NE.]*
- ? Were the other cities you noted as uniquely suitable to becoming the “Steel City” as Pittsburgh was? *[The other cities were located near various resources needed to produce steel, but Pittsburgh was located perfectly to capitalize on its proximity to all of the resources.]*

IDENTIFY

- Click any area on the map.
- A pop-up window opens, displaying information about the area you clicked on.

BOOKMARK

- At the top of the map, click the Bookmarks button.
- Choose your bookmark; the map will take you there.

Next Steps

DID YOU KNOW?

ArcGIS Online is a mapping platform freely available to public, private, and home schools. A school subscription provides additional security, privacy, and content features. Learn more about ArcGIS Online and how to get a school subscription at <http://www.esri.com/schools>.

THEN TRY THIS...

- Using an ArcGIS Online organization for schools, create a density map of the iron ore mines.
- Using an ArcGIS Online organization for schools, perform a proximity buffer of the Smelters layer to see how many of the needed resources fall within a 10-, 25-, or 50-mile distance of the smelter.

TEXT REFERENCES

This GIS map has been cross-referenced to material in sections of chapters from these texts.

- *The Americans* by McDougall Littell – Chapter 14
- *America: Pathways to the Present* by Prentice Hall – Chapter 10