

Building Books of Knowledge (Industrial Revolution)

Grade Level: 6th Grade

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Length of Unit: 2 weeks

I. ABSTRACT

This two-week unit will focus on the Industrial Revolution. Students will build a body of knowledge on the subject and create a book that will demonstrate the scope of their learning. This book will include entries on inventors/inventions, diary entries of child workers, and commentaries on the impact of industrialization and child labor on today's world. Students will be introduced to the seventh grade topics of writing a persuasive essay (attn: thesis) and will be introduced to historical fiction.

II. OVERVIEW

A. Concept Objectives

1. Recognize the impact of Industrialization on today's world.
2. Introduce persuasive essay writing
3. Understand resources, their allocation and use (Douglas County Standard 7)
4. Demonstrate an understanding of the chronological organization of events and major eras. (Douglas County Standard 6)
5. Understand the impact of urban growth and industrialization on the people of the Industrial Revolution.

B. Content from the *Core Knowledge Sequence*

1. The early factory systems
2. Beginnings in Great Britain
3. Iron and steel mills
4. Revolution in transportation
5. Revolution in textiles
6. Writing a persuasive essay, attn: thesis (preview to seventh grade)

C. Skill Objectives

1. Create a book to showcase knowledge gained
2. Identify key inventions/inventors
3. List conditions in the factories
4. Locate key sites of Industrial growth
5. Create thesis to prove viewpoint in child labor scenario.
6. Write in detail about daily life of child workers both today and in past.

III. BACKGROUND KNOWLEDGE

A. For Teachers

1. Hirsch, Jr. E.D. *What Your Sixth Grader Needs To Know*.
2. Baltimore Curriculum Project (BCP) & Core Knowledge Foundation (CKF) Sixth Grade Core Knowledge unit
3. Atwell, Nancie. *In the Middle: Writing, Reading, and Learning, with Adolescents*. Boynton/Cook Publishers, Portsmouth, NH, 1987

B. For Students

1. Slavery Issues – Civil War from 5th Grade
2. Inventions – Simple Machines from 2nd grade

IV. RESOURCES

- A. Freedman, Russell. *Kids at Work* by Russell Freedman
- B. Baltimore Curriculum Project & Core Knowledge Foundation Sixth Grade Unit, Month of March Lessons 1-13. Draft
- C. Banks, J.A. *The World: Past and Present, East and West*, Macmillan/McGraw-Hill. New York, 1995.
- D. Unicef handouts: *A Quiz on Child Labor, Children At Work- On the farm, On the streets, In the home, In factories and mines.* (www.unicef.org/voy/meeting/lab/farmenu.html)
- E. Handout: *The Plight of Women's Work in the Early Industrial Revolution in England and Wales.* (www.womeninworldhistory.com/lesson7.html)
- F. Handouts on Child Labor: *What is Child Labor?, History of Child Labor, Why does Child Labor Occur?* (www.earlham.edu/polis/global_probs/children/Laila.html and Amye, and Janet)
- G. Handout: Four perspectives on the 19th century laborer: *The Workers and the Manager* (Dreiner, Theodore "The Case of Carrie Meeber" *Sister Carrie*, World Publishing Co. NY, NY, 1927)
- H. Internet web-sites
www.unicef.org/aclabor/mythlhq.htm
<http://www.historyplace.com/unitedstates/childlabor/index.html>
www.churchworldservice.org/FactsHaveFaces/childwrk.html
www.hsph.harvard.edu/childlabor/
www.historyplace.com/unitedstates/childlabor/index.html
www.stopchildlabor.org/
www.earlham.edu/~pols/global_probs/children/Laila.html
www.earlham.edu/~pols/global_probs/children/Amye.html
www.earlham.edu/~pols/global_probs/children/Janet.html
www.womeninworldhistory.com/lesson7.html

V. LESSONS

Lesson One: Introducing the Revolution (Note: All lessons are 1 day lesson; 45 minutes; unless otherwise noted)

- A. *Daily Objectives*
 - 1. Concept Objective(s)
 - a. Demonstrate an understanding of the chronological organization of events and major eras. (Douglas County Standard 6)
 - 2. Lesson Content
 - a. Beginnings in Great Britain
 - 3. Skill Objective(s)
 - a. Locate key sites of Industrial growth
- B. *Materials*
 - 1. Time line sheet (Appendix A)
 - 2. BCP & CKF worksheets pages 1-4
- C. *Key Vocabulary*
 - 1. Revolution – a period of dramatic changes and new inventions
 - 2. Industrialization – moving from agriculture to machinery based society
 - 3. Automation – process in which machines replace people
- D. *Procedures/Activities*
 - 1. Students will be introduced to the Industrial Revolution by placing events in a timeline. Recently studied events (Fr. Revolution, etc.) will be placed in a timeline (Appendix A)

2. Teacher will give students about 10 minutes to place items in timeline, then go over answers with class.
 3. Teacher will distribute Introduction to Industrial Revolution Worksheets (BCP)
 4. Teacher will read aloud, or have volunteering students read aloud.
 5. Add to vocabulary list the terms (and definitions) Revolution, Industrialization, Automation.
 6. Students will answer question on pages 3 and 4 as a group.
- E. *Assessment/Evaluation*
1. Worksheets can be collected and graded, or teacher can monitor as students work

Lesson Two: Introduction to Child Labor

- A. *Daily Objectives*
1. Concept Objectives:
 - a. Understand the impact of urban growth and industrialization on the people of the Industrial Revolution.
 2. Lesson Content:
 - a. Child labor
 3. Skill Objective(s)
 - a. Gain familiarity with the topic of child labor.
- B. *Materials*
1. Historical fiction: *Lyddie*
 2. Picture books
 3. Handouts from “History of Child Labor”, “What is Child Labor” websites
- C. *Key Vocabulary*
1. Detrimental – has a negative effect
 2. Adequate – good enough
 3. Exploited – used to achieve an end for someone else
 4. informal sector – domestic and unregulated work settings
 5. formal sector – factories and other regulated businesses
- D. *Procedures/Activities*
1. Begin the lesson by sharing some photos depicting child labor during the time of the Industrial Revolution as well as photos of child laborers in our present day world.
 2. Question the students on the term “child laborer”. Chart answers.
 3. As a class read the article titled “What is Child Labor?”
 4. Discuss the reading and go back to the chart to compare what was learned with what was previously brainstormed on chart. Discuss.
 5. Close by reading historical fiction aloud to the class.
- E. *Assessment/Evaluation*
1. Close by reading *Lyddie* aloud to the class or choose to read excerpts from the four perspectives of laborers in the handout titled “The Workers and the Manager” (providing historical background knowledge)
 2. In the first five minutes of the next class period students will complete an entrance slip that requires them to write at least two new facts they learned about child labor the previous day.

Lesson Three: History of Woman and Child Labor

- A. *Daily Objectives*
1. Concept Objective
 - a. Understand the impact of urban growth and industrialization on the people of the Industrial Revolution.

2. Lesson Content
 - a. Woman and child labor in Great Britain and the United States
 - b. Beginnings in Great Britain
 3. Skill Objectives
 - a. Develop an understanding of the development of woman and child labor in 18th century Great Britain as well as its spread to the United States.
 - b. Realize that child labor is still occurring across the world today.
- B. *Materials*
1. Handout on “History of Child Labor”
 2. Handout on “The Plight of Women Laborers”
- C. *Key Vocabulary*
1. Agricultural societies – groups that relied on agriculture for their survival
 2. Incite – to inspire others to action
 3. Overseer – someone who looks after others with certain goals in mind
 4. Apprentice – a worker who learns from a master
 5. Intercede – to step in
 6. Indentured – forced to work in a servant position in exchange for the ability to live in a given area
 7. Migrant workers – workers who have migrated (moved from their native land) to find work
 8. Mobilized - moved
- D. *Procedures/Activities*
1. Assess learning from previous day with a five-minute entrance slip.
 2. Distribute the article titled “History of Child Labor”. Read aloud together as a class, stopping to discuss key vocabulary. Also read to the class from the articles regarding the plight of women’s work in the early Industrial Revolution and briefly share thoughts.
 3. On chart paper make one column titled *Places where woman and children worked*, and another titled *Working conditions*. Ask volunteers to come up and write facts learned under each heading as the class discusses.
 4. Read historical fiction.
- E. *Assessment/Evaluation*
1. Five-minute entrance slip at the start of the next class period requesting each student to write where and during what time period woman and child labor began.

Lesson Four: What are textiles, and from where do they originate

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Understand resources, their allocation and use (Douglas County Standard 7)
 - b. Understand the impact of urban growth and industrialization on the people of the Industrial Revolution.
 2. Lesson Content
 - a. The early factory systems
 - b. Revolution in textiles
 3. Skill Objective(s)
 1. Identify key inventions/inventors
- B. *Materials*
1. BCP & CKF Lesson 2 “The English Textile Industry” pg. 5-8
 2. Overhead projector and pens

C. *Key Vocabulary*

1. Byssinosis – a respiratory disease caused by breathing in cotton dust.
2. Textile Industry – Businesses that made cloth
3. Spinning Jenny – a machine for spinning thread that uses many spindles
4. Flying Shuttle – a weaving device that carries thread quickly back and forth across the piece being woven
5. John Kay – Invented the flying shuttle in 1733
6. James Hargreaves – Invented the Spinning Jenny in 1765
7. Cotton Gin – machine that removed seeds from unprepared cotton
8. Eli Whitney – Invented the Cotton Gin in 1790
9. Automation – process in which machines replace people

D. *Procedures/Activities*

1. Students look to see where the shirt of their neighbor was made, and what it is made of.
2. Teacher writes on overhead the name of all countries and materials involved
3. Ask students to try and explain how these fibers can be made into shirts and how they can come from all corners of the globe into the classroom.
4. Distribute reading
5. Read aloud, or have students read aloud, the information.
6. Add names of Hargreaves and Kay, Spinning Jenny, byssinosis, textile industry, and Flying Shuttle to Key Words section. Define these terms as above.
7. Students will complete questions on pages 7, 8 individually or in groups.

E. *Assessment/Evaluation*

1. Worksheets can be collected and graded, or teacher can monitor as students work
2. Students should be able to tell how cotton was transformed from the plant to their back. Cotton gin separates from plant, spinning jenny spins to thread, flying shuttle rapidly weaves fabric, fabric sewn together.

Lesson Five: Industrial Strength Machines

A. *Daily Objectives*

1. Concept Objective(s)
 - a. Recognize the impact of Industrialization on today's world.
2. Lesson Content
3.
 - a. Iron and steel mills
 - b. Revolution in transportation
4. Skill Objective(s)
 - a. Identify key inventions/inventors

B. *Materials*

1. BCP & CKF Lesson 3 “The Steam Engine” and Lesson 4 “Highways, Canals and the Railroads”

C. *Key Vocabulary*

1. Macadam Roads – a road made of layers of crushed rock that drained well and was sturdy
2. John L. McAdam – Designer/Inventor of the macadam road
3. Railroads – Used to transport raw materials and finished products to cities. Faster and far more effective than horse power.
4. Canals – Used to transport raw materials and finished products to cities, lowered transportation costs.
5. Air Pollution – Dust kicked up into air from transportation, and soot from machines that burned coal, made the air dirty and bad to breathe

6. Black Lung – a respiratory disease caused by breathing coal dust
7. James Watt – Inventor of the steam engine in 1765
8. Steam Engine – Expanding steam forced the pistons of this machine to create work.

D. *Procedures/Activities*

1. Place box on the floor that is filled with heavy items (textbooks, weights, rocks, etc.)
2. Ask one student to move it (they shouldn't be able to do so); invite more (one-by-one) to help.
3. Students will brainstorm all of the ways the Romans could move heavy objects 1 mile.
4. Hand out Lesson 3 and Lesson 4 to students. Telling them they will learn how certain inventions aided the workers in the Industrial Revolution.
5. Read worksheets aloud, or have students read aloud
6. Students will work as groups to answer questions.
7. For closing, ask students to tell which invention they would like to use to transport 20 of the boxes (from introduction) home this afternoon.

E. *Assessment/Evaluation*

1. Worksheets can be collected and graded, or teacher can monitor as students work
2. Students can write or describe the invention that they feel has had the most impact on today.

Lesson Six: Journal Writing

A. *Daily Objectives*

1. Concept Objective
 - a. Understand the impact of urban growth and industrialization on the people of the Industrial Revolution.
2. Lesson Content
 - a. Descriptive writing. (Covers 6th grade district standard assessment)
3. Skill Objective(s)
 - a. Including factual material learned in their writing.
 - b. Writing from the first person perspective.
 - c. Using descriptive writing.
 - d. Writing in a journal.

B. *Materials*

1. 7-page journal book.

C. *Key Vocabulary*

1. None

D. *Procedures/Activities*

1. Explain to the students that they will be constructing a one- week journal depicting the daily life of a child laborer during the Industrial Revolution.
2. Discuss what it means to “write to describe.” Brainstorm some descriptive words that describe what a child’s life may have been like during that time. Chart these and keep visible for students to work from.
3. Model an example of a daily journal on the overhead projector, pointing out and using descriptive words as well as including factual material gleaned from the previous lessons’ readings.
4. Hand out a journal book to each student. Explain that they make pick the gender, age, and workplace of their child. Require the students to fill up the page with each day’s entry.

5. Journal is due in one week. Provide time for journal writing during class if possible.
- E. *Evaluation/Assessment*
1. Assess each student’s journal for the following two traits: descriptive word choice and the inclusion of factual material.

Lesson Seven: Iron and Steel

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Recognize the impact of Industrialization on today’s world.
 2. Lesson Content
 - a. Iron and steel mills
 3. Skill Objective(s)
 - a. Identify key inventions/inventors
- B. *Materials*
1. BCP & CKF Lesson 6 “Iron and Steel”
- C. *Key Vocabulary*
1. Puddling – process that makes purer iron by stirring air into mixture as it is prepared, which burns off impurities.
 2. Henry Cort – Inventor of puddling process
 3. Bessemer process – Injecting cool air into molten iron allowed steel to be produced much faster.
 4. Henry Bessemer – Created Bessemer process in 1850
 5. Steel – A mixture of iron and carbon that is stronger, lighter, more flexible, and more rust resistant than pure iron.
 6. Natural Resources – Any material made by nature that is used by man to accomplish a task.
- D. *Procedures/Activities*
1. “Imagine a world without metal” the teacher introduces. Have students brainstorm the things they couldn’t do without metal.
 2. Ask students to name 3 activities that do not involve metal.
 3. Hand out Lesson 6 to students, telling them they will learn how steel production aided the Industrial Revolution.
 4. Add the terms steel, and natural resources to the vocabulary list.
 5. Read worksheets aloud, or have students read aloud
 6. Students will work as groups to answer questions.
- E. *Assessment/Evaluation*
1. Worksheets can be collected and graded, or teacher can monitor as students work
 2. Students should understand the step-by-step process of producing steel from rock to rail. Iron ore is mined, ore is baked to produce coke, puddling (stirring) removed more impurities, mix carbon into iron to make steel, injecting cool air into molten iron (Bessemer) speeds process of steel production, form steel in desired shape.

Lesson Eight: Child Labor in our World Today

- A. *Daily Objectives*
1. Concept Objective
 - a. Recognize the impact of Industrialization on today’s world
 2. Lesson Content
 - a. Low wages, poverty, unsafe working conditions of women and children.
 3. Skill Objective

- a. Creating a poster using artistic mediums that depict their knowledge of child labor conditions.
 - b. Learning to use short descriptors in order to persuade.
- B. *Materials*
1. Poster board
 2. Markers, glue, scissors, fabric scraps, paints, felt
 3. *Unicef* handouts: “Children and Work in factories and mines”, “Children and Work on the farm”, “Children and Work in the home”, and “Children and Work on the streets”.
- C. *Key Vocabulary*
1. Exploitative – to take advantage of others for one’s personal gain
 2. Pesticides – poisons put on plants to kill insects
 3. Domestic work – work done in the home
- D. *Procedures/Activities*
1. Divide the class into groups of four. Give a different handout to each group. (The themes will be shared by some groups depending upon your class size)
 2. Each group will read aloud the short article describing the conditions of the work as well as the child testimonials.
 3. They have the rest of the class period to put together a poster depicting the working conditions they were assigned to read about. The purpose of the poster is to discourage the use of child labor in this particular setting. Have a model to show students if at all possible. They may use any of the mediums available to them. Hang the posters in the school hallways.
- E. *Evaluation/Assessment*
1. Students present their posters and new knowledge to the class.

Lesson Nine: Introduction to Persuasive Essay Writing: Writing a thesis

- A. *Daily Objectives*
1. Concept Objective
 - a. Introduce persuasive essay writing
 2. Lesson Content
 - a. Thesis statement
 - b. definitions of evidence, examples, reasoning, opinion
 - c. persuade
 3. Skill Objective(s)
 - a. Students will practice developing a thesis statement
 - b. Students will learn to distinguish between evidence and opinion
- B. *Materials*
1. Overhead projector
 2. Handout: Guidelines for writing a persuasive essay from *In the Middle*.
- C. *Key Vocabulary*
1. Evidence - proof from the text
 2. Examples - Something selected to show or demonstrate
 3. Reasoning - The drawing of conclusions from facts
 4. Opinion - a belief not based on absolute or positive knowledge
- D. *Procedures/Activities*
1. Using an overhead projector write the following: thesis statement = main idea.
 2. Next, writes the following statement: Students who study for exams receive a higher score than those who do not study. Underneath this write columns for evidence, examples, reasoning, and opinion.

3. Discuss the definition of a thesis statement, explaining that it is a main idea or a central proposition. Ask students to respond to the statement provided and mark the column under which their response would fall.
 4. After some discussion, discuss the four terms: evidence, examples, reasoning, and opinion. Ask for different responses to the thesis statement now that the students are more aware of the expected responses to a thesis statement.
 5. Introduce the idea of persuasion and how it relates to today's lesson and thesis.
- E. *Evaluation/Assessment*
1. Require an exit slip from students – a five-minute write on the importance of providing more than just personal opinion when supporting a thesis statement.

Lesson Ten: Alphaboxes

- A. *Daily Objectives*
1. Concept Objective(s)
 - a. Demonstrate an understanding of the chronological organization of events and major eras. (Douglas County Standard 6)
 - b. Recognize the impact of Industrialization on today's world.
 - c. Understand the impact of urban growth and industrialization on the people of the Industrial Revolution.
 2. Lesson Content
 - a. Beginnings in Great Britain
 - b. Revolution in textiles
 - c. The early factory systems
 - d. Iron and steel mills
 - e. Revolution in transportation
 3. Skill Objective(s)
 1. Locate key sites of Industrial growth
 2. Locate key sites of Industrial growth
 3. Identify key inventions/inventors
 4. List conditions in the factories
- B. *Materials*
1. Alphaboxes sheet (Appendix B)
- C. *Key Vocabulary*
1. All previous vocabulary (see Appendix C)
- D. *Procedures/Activities*
1. Ask students if they can figure out what this set of letters describes, "E G B D F". Continue with R O Y G B I V; H O M E S; etc.
 2. Distribute Alpha boxes sheet (Appendix A), telling students that they are to make use of their newly expanded vocabulary to fill in at least one term per box.
- E. *Assessment/Evaluation*
1. Worksheets can be collected and graded, or teacher can monitor as students work
 2. Worksheets will be used in creation of books.

Lesson Eleven: Persuasive essay: Child labor and the Industrial Revolution

- A. *Daily Objectives*
1. Concept Objective
 - a. Introduce persuasive essay writing
 - b. Understand the impact of urban growth and industrialization on the people of the Industrial Revolution.
 2. Lesson Content

- a. The thesis statement “Child labor was or was not a necessary part of the Industrial Revolution.”
 - 3. Skill Objectives
 - a. Analysis of the varying viewpoints of a child laborer, a parent, and a factory owner during the time of the Industrial Revolution.
 - b. Develop a thesis statement regarding these viewpoints.
- B. *Materials*
 - 1. Handout: *Point/Counter-point, 1820-Is Industrial Growth Good for England?*
 - 2. Overhead projector or chalkboard or chart paper
- C. *Key Vocabulary*
 - 1. Point - the view or position held by one or more people
 - 2. Counterpoint - a view that is in opposition to the point
- D. *Procedures/Activities*
 - 1. Distribute the handout to the students and share the reading as a class.
 - 2. Discuss the terms: point and counterpoint, comparing them to counter-arguments.
 - 3. Share thoughts on the discussion questions offered in the handouts.
 - 4. Explain that the students will be writing a persuasive essay from the viewpoint of either: a child laborer, a parent, or a factory owner during the time of the Industrial Revolution. Ask for possible thesis sentences regarding this topic, attempting to formulate one close to “Child labor was or was not a necessary part of the Industrial Revolution.”
 - 5. Review the key points of writing a persuasive essay: strong thesis, evidence, factual examples, and reasoning. Remind them to anticipate counter-arguments while writing.
- E. *Evaluation/Assessment*
 - 1. Assess each student’s essay by looking for the key components taught on persuasive

VI. CULMINATING ACTIVITY

The culminating activity for this unit is the creation of a book that will showcase the scope of the student’s learning. Students are to create a book following the guidelines set forth in Appendix D.

VII. HANDOUTS/WORKSHEETS

See Appendices A-D

VIII. BIBLIOGRAPHY

- A. Freedman, Russell. *Kids at Work: Lewis Hire and the Crusade Against Child Labor*. ISBN: 0395797268
- B. Baltimore Curriculum Project & Core Knowledge Foundation Sixth Grade Unit, Month of March Lessons 1-13. Draft
- C. Paterson, Katherine. *Lyddie*, New York, N.Y., Puffin Books, 1992. (ISBN: 0140349812)
- D. Atwell, Nancie. *In the Middle: Writing, Reading, and Learning, with Adolescents*, Boynton/Cook Publishers, Portsmouth, NH, 1987. (ISBN: 0867093749)
- E. Banks, J.A. *The World: Past and Present, East and West*, Macmillan/McGraw-Hill. New York, 1995. (ISBN: 0021464227)
- F. Internet web-sites
<http://www.historyplace.com/unitedstates/childlabor/index.html>
www.unicef.org/aclabor/mythlhq.htm
www.churchworldservice.org/FactsHaveFaces/childwrk.html
www.hsph.harvard.edu/childlabor/

www.historyplace.com/unitedstates/childlabor/index.html
www.stopchildlabor.org/
www.earlham.edu/~pols/global_probs/children/Laila.html
www.earlham.edu/~pols/global_probs/children/Amye.html
www.earlham.edu/~pols/global_probs/children/Janet.html
www.womeninworldhistory.com/lesson7.html
www.unicef.org/voy/meeting/lab/farmenu.html

APPENDIX A
ALPHABOXES

UNIT COVERED _____

NAME _____ **DATE** _____

**CHOOSE A TOPIC RELATED TO THE UNIT STARTING WITH
THE LETTER IN EACH BOX**

A	B	C	D
E	F	G	H
I	J	K	L
M	N	O	P
Q	R	S	T
U	V	W	XYZ

Appendix B

Key Vocabulary (List and define Core Knowledge vocabulary (and sayings) that will be introduced in the lesson.)

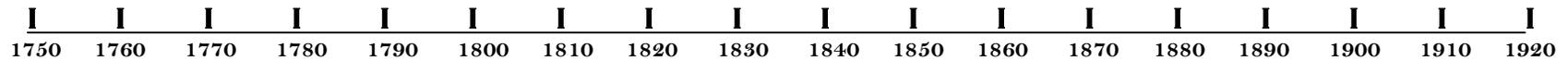
1. Revolution – a period of dramatic changes and new inventions
2. Macadam Roads – a road made of layers of crushed rock that drained well and was sturdy
3. John L. McAdam – Designer/Inventor of the macadam road
4. Child labor – Children, as young as 6, who did physically demanding and/or dangerous work for as long as 12-16 hours a day
5. Railroads – Used to transport raw materials and finished products to cities. Faster and far more effective than horse power.
6. Canals – Used to transport raw materials and finished products to cities, lowered transportation costs.
7. Air Pollution – Dust kicked up into air from transportation, and soot from machines that burned coal, made the air dirty and bad to breathe
8. Black Lung – a respiratory disease caused by breathing coal dust
9. Byssinosis – a respiratory disease caused by breathing in cotton dust.
10. Textile Industry – Businesses that made cloth
11. Spinning Jenny – a machine for spinning thread that uses many spindles
12. Flying Shuttle – a weaving device that carries thread quickly back and forth across the piece being woven
13. John Kay – Invented the flying shuttle in 1733
14. James Hargreaves – Invented the Spinning Jenny in 1765
15. Cotton Gin – machine that removed seeds from unprepared cotton
16. Eli Whitney – Invented the Cotton Gin in 1790
17. Automation – process in which machines replace people
18. Tenants – people who live and work on the land of someone else
19. Industrialization – moving from agriculture to machinery based society
20. Tenements – houses in a row that had low standards of quality
21. Interchangeable parts – machine parts made to a uniform size so they could be replaced easily
22. Factory town – towns that grew in response to the need for workers in factories. People moved from the country to earn more money.
23. Trade Unions – Groups that support the rights of workers
24. Internal combustion engine – engine that provides power through a controlled internal explosion
25. Patent – a legal document giving the an inventor the right to sell and make an item
26. Trademark – a symbol (word, picture, etc.) that identifies the maker of a product.
27. Luddites – Named after Ned Ludd, this is a group of people who violently opposed industrialization.
28. Assembly line – an efficient way of building goods, that had the product move past the workers, who would then add parts. Each worker only worked on a small part of product.
29. Steam Engine – Expanding steam forced the pistons of this machine to create work.
30. James Watt – Inventor of the steam engine in 1765
31. Puddling – process that makes purer iron by stirring air into mixture as it is prepared, which burns off impurities.
32. Iron ore – rocks in which iron can be found
33. Coke – Iron ore that has been baked. This will burn better and make higher quality iron.

34. Henry Cort – Inventor of puddling process
35. Bessemer process – Injecting cool air into molten iron allowed steel to be produced much faster.
36. Henry Bessemer – Created Bessemer process in 1850
37. Steel – A mixture of iron and carbon that is stronger, lighter, more flexible, and more rust resistant than pure iron.
38. Natural Resources – Any material made by nature that is used by man to accomplish a task.

Industrial Revolution Timeline

Place the following items into the timeline below

- AMERICAN REVOLUTION (1776)**
- FRENCH REVOLUTION (1789)**
- NAPOLEONIC DEFEATED (1815)**
- NEW FRENCH MONARCHY (1789)**



Building Books of Knowledge

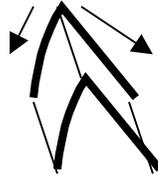
1. Materials:

- a. 4 6x11 inch sheets
- b. 1 6x26 inch sheet (heavy)
- c. 1 glue stick (UHU works for me)
- d. 2 6x11 inch matte board (or poster board) sheets
- e. tapestry needle
- f. 4 feet thread
- g. 2 7x4.25 inch wrapping paper
- h. 18 inches ribbon

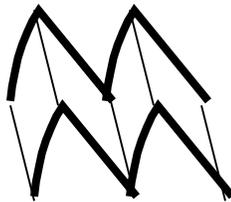
2. Fold 6x26 inch sheet in half. This “hamburger” fold should end up looking like this, with one “mountain peak”:



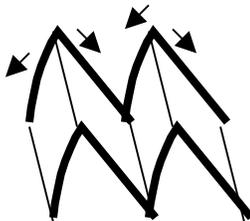
3. Fold the peak of the mountain down to the right edge, then open this fold and fold the peak to the left edge.



4. At this point your paper should look like an “M” or two “mountain peaks”

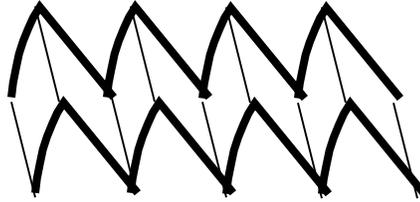


5. As was done in step 3, fold the mountain peaks to the edge. This time you will also fold each peak to the centerline as well.

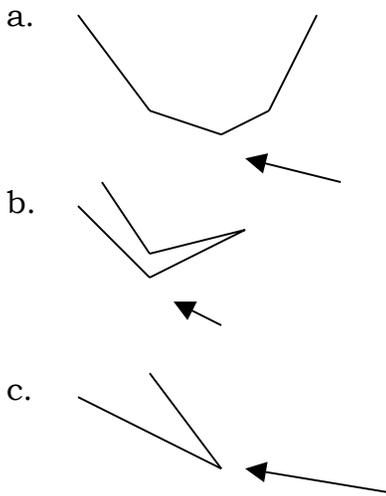


Appendix D
Building Books of Knowledge

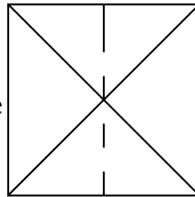
6. At this point you should have 8 equal-sized rectangles. Arrange these in accordion style.



7. The four 6x11 inch sheets will serve as inserts to the accordion book. They can be folded in a number of ways. The arrow indicates the place where pages can be sewn in.



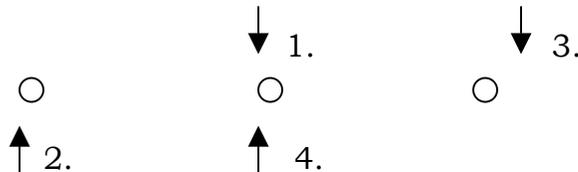
d. Cootie-catcher style
fold corner-to-corner
twice, and in half the
opposite way.



8. These pages can be glued in place (cootie-catcher), or sewn in place (at point shown by arrow).

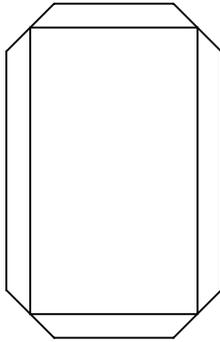
9. Students add information to inserts, and main accordion page. This can take the form of drawings, stories, terms, pictures, etc.

10. Pages can be sewn in using this stitch pattern (using 3 holes)

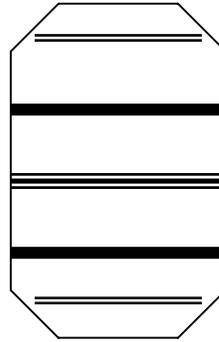


Appendix D
Building Books of Knowledge

11. The two strings in the middle are then tied together.
12. Covers are made by gluing wrapping paper to the poster board. There should be about $\frac{1}{4}$ inch extra around each edge.
13. The corners of the wrapping paper are then cut off close-to but not exactly at the edge.



Back



Front

14. Fold flaps created in step 13 around board and glue down to surface of poster board.
15. Find midpoint of strip of ribbon and glue down to inside surface of one of your covers. This will be used to tie book closed.
16. Glue one cover to each end of the pages in your long accordion sheet.
17. Tie your book shut, and you are done with your book. Enjoy.
18. Hint for success:
Pages are easier to decorate before they are placed in the book.