CBL Biology: Life Science Option

BSCS Green Version 10th edition

Biology, An Ecological Approach

Lesson Plan for Week 10, Day 1

Outcomes for Today

Standards Focus: 6bc

PREPARE

1. Background knowledge necessary for today's reading

This lesson is where we make a so-called quantum leap in many ways to view the world as a commons. It is important to review the concept of the commons, both for yourself and your students. Go over the previous commons lessons on the CD ROM. Identify and discuss a local commons. This could be your own school quad or related common use area. Many areas of the typical school suffer a "tragedy of the commons" if no one person is responsible for the space. Places like activity rooms and multi-use rooms often suffer. Talk about these spaces with students.

2. Vocabulary Word Wall

Introduce five important, useful words from today's reading.

commons population exponential growth logistic growth affluent

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

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READ

3. Review the vocabulary and concepts previously covered in this chapter

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

The commons is a common area used for the benefit of all.
One example of a commons was a common pasture which was used by farmers in yesterday's England to raise cattle.
As long as the number of cattle on the land did not deplete the resource (grass), the commons (pasture) remained healthy.
If one farmer increased the number of cows, he would gain a short term profit at the expense of the commons.
If all or most of the farmers followed this pattern, the pasture would be destroyed and everyone would lose.
This is the tragedy of the commons.

4. Read directions for investigation

5. Read text. Chapter 24, Managing Human-Affected Ecosystems, Text Investigation 24.2, pp. 713- 715.

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

Setting	Characters	Pages
Hardin Pond the earth	water lilies humans	CD ROM

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RESPOND

6. Fix the facts. Clarify what is important

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

The water lilies started slow and then took off, covering the pond quickly. Exponential growth is the factor in such growth.

You can't keep improving lifestyles and increasing the people on earth forever; eventually we would run out of resources.

The straw model can be used to describe the population challenge.

Dumping waste into a river is an example of the commons concept as the river is the commons.

If we pass laws against such practices, then we refer to the river as a managed commons.

7. Post information on the billboard. Add new information to ongoing whole class projects posted on the wall

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities

9. Explore today's simulation with inquiry activities

10. Collect data and post

The Earth as a Commons

You will need the CD ROM, *The Commons*, for this activity. This activity guides students towards an understanding of the earth as a commons. If you don't have access to the technology of a computer lab, this activity can be carried out with a projector.

Procedure

Open *The Commons* CD and navigate to the Human Population section (look for the icon of the busy street). Begin navigating through this, starting with the section on Hardin Pond, followed by the section on the personal challenge.

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Activity
After working through the population growth sections of the CD ROM, engage students in a debate process. Form two groups. The debate topic should be a question related to population growth such as: Should individual couples make the decision about how many children to have?

Discussion
Follow the CD ROM discussions on population growth and ethical decisions.

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

Key Questions
Explain exponential growth and give an example.
Explain logical growth and give an example.
How is the earth like a commons?
What is a managed commons? Give examples.
What is meant by a personal commitment to the future of earth?
What is a historical example of the consequences of population growth?

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

Key Paragraph
What will be our quality of life be as population grows? How near are we to the limit (if any) of human population that earth can support? How would a longer doubling of time make a difference in supporting the human population?

EXTEND

11. Prompt every student to write a short product tied to today's reading

My Commitment

Ask students to respond to this prompt:
What is your personal commitment to the future of our earth and its inhabitants?

12. Close with a short summary

Extend the reading to the students' lives or to the world.

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CBL Biology: Life Science Option

BSCS Green Version 10th edition

Biology, An Ecological Approach

Lesson Plan for Week 10, Day 2

Outcomes for Today

Standards Focus: 6bc

PREPARE

1. Background knowledge necessary for today's reading

The system of sustainable agriculture is just now catching on in the public consciousness. This follows on the heels of organic farming. Organic agriculture refers to the process of growing fruits and vegetables without the use of artificial fertilizers and pesticides. In their place, natural materials such as manure and integrated pest management techniques (natural predators) are used. It is important that students understand this concept as you move into a lesson on sustainable agriculture.

2. Vocabulary Word Wall

Introduce five important, useful words from today's reading.

sustainable **crop rotation** **weed** **manure** **till**

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

In order for humans to continue with their present quality of life, population growth must be curtailed.

Human population growth and associated environmental problems of pollution and land degradation have grown to the point where the health of planet earth is at risk.

The same technology that has caused many of earth's environmental problems can also be used to help solve environmental problems.

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4. Read directions for investigation

5. Read text. Chapter 24, Managing Human-Affected Ecosystems, Text Section 24.7, pp. 705- 707.

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

Setting	Characters	Pages
rural farm	corn, alfalfa, oats	707

RESPOND

6. Fix the facts. Clarify what is important

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

Sustainable agriculture means that less energy is used to raise the food and the land is not harmed or depleted in the process.
Alternatives to fossil fuels for agriculture include wind and solar power.
Crop rotation is where different crops are planted in succession in the same field.
Sustainable agriculture also makes use of organic (natural) ingredients such as animal wastes (manure) or other organic materials to enhance the soil.

7. Post information on the billboard. Add new information to ongoing whole class projects posted on the wall

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities

9. Explore today's simulation with inquiry activities

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A Sustainable World

There are several excellent websites for use with either a computer lab set-up or with projection equipment.

This site contains several quizzes to look at the world with a sustainable lens.
http://www.worldbank.org/challenge/html/innovate.html

This site allows students to build a sustainable world.
http://www.worldbank.org/challenge/html/build_it.html

Other activities:
Take a walking field trip to a local market to view examples of organic produce. Of course, you can buy and eat.

Discussion
Engage students in a discussion on the importance of sustainability.

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

Key Questions
Explain sustainable agriculture by using some examples.
Explain organic farming with examples.
How is the soil impacted by conventional agriculture and by sustainable agriculture?
Explain crop rotation. Why is this process important?

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

Key Paragraph
A central component of sustainable agricultural systems is crop rotation, the planted succession of various crops on one field. Rotation provides better weed and insect control, improves nutrient cycling, and thus improves crop yields.

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EXTEND

11. Prompt every student to write a short product tied to today's reading

Green Advertising

After looking at some examples, write an advertisement for a local newspaper promoting a new "green product" or service you have developed.

12. Close with a short summary

Extend the reading to the students' lives or to the world.

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CBL Biology: Life Science Option

BSCS Green Version 10th edition

Biology, An Ecological Approach

Lesson Plan for Week 10, Day 3

Outcomes for Today

Standards Focus: 6bc

PREPARE

1. Background knowledge necessary for today's reading

This lesson is an introduction to the relatively new study of bioethics. Before delving into this topic, it is important to have an introductory understanding of the study of ethics and the ethical decision-making process. For a good resource go to http://www.scu.edu/ethics/

There are several subsections including one on bioethics.

2. Vocabulary Word Wall

Introduce five important, useful words from today's reading.

famine **ethics** **bioethics** **fertility** **industrialized**

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

Human impacts on the earth's environment have been documented during these last few lessons.

Most enlightened cultures realize that the future of a quality life on earth is dependent on a sustainable form of agriculture and living.

Cooperation among countries will be necessary in order to address the issues that threaten ecosystems that know no boundaries.

Green technology and sustainable agriculture are examples of new systems of "eco-friendly" living.

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4. Read directions for investigation

5. Read text. Chapter 24, Managing Human-Affected Ecosystems, Text Section 24.9, pp. 707- 708.

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

Setting	Characters	Pages
childless couple	fertility drug	707

RESPOND

6. Fix the facts. Clarify what is important

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

Ethical issues involve decisions of conscience.
Here are some ethical decision examples:
Should a couple unable to have children take fertility drugs?
How should genetic counseling be a part of the decision process?
Should the presence of one small endangered flower stop development of a subdivision of new homes?

7. Post information on the billboard. Add new information to ongoing whole class projects posted on the wall

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities

9. Explore today's simulation with inquiry activities

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Bioethical Debates

Student debates over bioethical issues will help with their understanding of these complex issues. Depending upon the level of your class, there are two possible lesson plans linked here:

Bioethics in the Classroom
This website outlines the procedures and topics for a bioethical classroom debate:
http://www.kumc.edu/gec/lpsulliv.html

Debate Observations
This link contains a number of archived debates on bioethical issues:
http://www.pbs.org/wnet/religionandethics/teachers/lp_bioethics2.html

Discussion
After observing and engaging students on this topic, invite a local newspaper reported to observe the process and question the students. They must be well prepared.

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

Key Questions
What is meant by the term local aspect as used on page 707 of the student text?
Give an example of a bioethical question.
What factors enter into ethical decisions?
What is the difference between a right and an obligation? Give examples.

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

Key Paragraph
Each environmental issue has unique, local aspects. Decisions about specific problems cannot be made from a distance or on a broad basis only. They must, in part, be made by those who are close to the situation and who are themselves affected.

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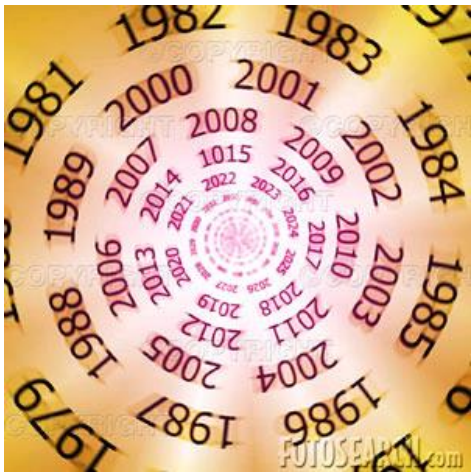
EXTEND

11. Prompt every student to write a short product tied to today's reading

The Spiral

Ask students to write about an ethical dilemma beginning in the center of a blank page and writing in a spiral format.

Here is an example of dates in spiral format:



12. Close with a short summary

Extend the reading to the students' lives or to the world.

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Biology, An Ecological Approach

Lesson Plan for Week 10, Day 4

Outcomes for Today

Standards Focus: 6bc

PREPARE

1. Background knowledge necessary for today's reading

What is meant by the idea of commitment? Simply put, it goes something like this: Say what you mean. Mean what you say. Do what you said you were going to do. Ask students about commitments they may have already. What happens if one breaks a commitment? All of the issues and challenges related to the earth and related environmental issues begin with the individual. Ask students if they have ever seen the bumper sticker, "Think globally, act locally."

See: http://en.wikipedia.org/wiki/Think_Global,_Act_Local

This is the key concept in this lesson.

2. Vocabulary Word Wall

Introduce five important, useful words from today's reading.

over-packaged **over-processed** **needs** **wants** **global**

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

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READ

3. Review the vocabulary and concepts previously covered in this chapter

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

The rapidly increasing human population and related consumption of resources by humans threatens the many ecosystems on earth.
In order to reverse this negative trend of increasing damage, there must be changes in current governmental policies and laws.
Agriculture techniques must change from the energy-consuming, mechanized farming model to one of sustainable agriculture.
Human knowledge and technology can be used to help save and restore local ecosystems.

4. Read directions for investigation

5. Read text. Chapter 24, Managing Human-Affected Ecosystems, Text Section 24.10, pp. 708- 710.

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

Setting	Characters	Pages
improved energy-efficient home	fluorescent light bulbs, low-flow shower heads, environmental conscious human in habitants	708

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RESPOND

6. Fix the facts. Clarify what is important

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

Global population control as well as related problems like pollution control will need world wide cooperation among the people of different countries.

The three essential questions we must ask ourselves are:

1. What kind of world do we want?
2. What kind of world can we get?
3. What changes are willing to make to get it?

We can all do simple things to help such as:

1. Turning off lights when we leave a room
2. Not letting water run down the drain while we brush our teeth
3. Riding a bicycle instead of driving
4. Carpooling to work or school
5. Recycling bottles, paper, and aluminum

Needs are much different from wants.

7. Post information on the billboard. Add new information to ongoing whole class projects posted on the wall

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities

9. Explore today's simulation with inquiry activities

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10. Collect data and post

Needs and Wants
Please see the Supplemental Investigation on **Needs and Wants** attached to the end of this week's lesson plan.

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

Key Questions
Why is cooperation between countries needed to solve environmental problems?
Make a list of things every homeowner can do to increase energy efficiency.
Explain the meaning of over-packaged and over-processed in relation to consumer goods and food.
Explain the difference between needs and wants. Give several examples.

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

Key Paragraph
Each of these small acts constitutes a personal economic and political decision that, when combined with those of many others, can lead to large-scale changes with profound effects on earth. Remember that all organisms on the earth, including ourselves, depend on many types of energy flows and chemical cycles that are affected by human activity. These life-sustaining processes and cycles are fundamental to the diverse interrelationships that form the web of life.

EXTEND

11. Prompt every student to write a short product tied to today's reading

My Turn
Explain to students the concept of an editorial opinion. Share some examples with them. Then direct them to write an editorial opinion and submit some to a local newspaper.

12. Close with a short summary

Extend the reading to the students' lives or to the world.

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Biology, An Ecological Approach

Lesson Plan for Week 10, Day 5

Outcomes for Today

Standards Focus: 6bc

PREPARE

1. Background knowledge necessary for today's reading

This is the final lesson in the four quarter format. It is a lesson designed for reflection. Many young people (and more than a few not-so-young people) have a rather gloomy outlook for the future. Many psychologists believe that we tend to live our own perceptions of the future which is why this lesson is important. After all, perception is reality.

2. Vocabulary Word Wall

Introduce five important, useful words from today's reading.

dilemma **rural** **knowledge** **urban** **word**

- Show, say, explain, expand, explode or buzz about the word briefly.
- Show, say and define the word quickly and add to the word wall.

READ

3. Review the vocabulary and concepts previously covered in this chapter

Start at the beginning and review the concepts and vocabulary covered so far.

- Mention the setting and main ideas.
- Point to the concept chart as you quickly review it.

In order for humans to continue with their present quality of life, population growth must be curtailed.
Human population growth and associated environmental problems of pollution and land abuse have come to the point where the health of the planet is at risk.
Biotechnology is an emerging science that can be used to address many of the environmental issues of the day.

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4. Read directions for investigation

5. Read Student Study Guide Introduction, Text, pp. 1- 2

☐Shared Reading RRP: Read, React, Predict every 2-3 pages
☐Tape ☐Partner ☐Choral ☐Silent ☐Round Robin Reading

Setting	Characters	Pages
your world	you	n/a

RESPOND

6. Fix the facts. Clarify what is important

Discuss the reading and add 3-5 events to the billboard.

- Discuss the text; clarify the most important facts, concepts, ideas and vocabulary.
- Decide on the 3-5 most important **concepts** and post these on the billboard.

Students might mention:

How can I predict my future?
Maybe I can create my own future.
I know more about biology since taking this class.

7. Post information on the billboard. Add new information to ongoing whole class projects posted on the wall

- New concept information can be added to the billboard.
- An answer can be added to a question from the KWL Chart.
- New information can be added to ongoing charts and investigations.

EXPLORE

8. Explore today's investigation with inquiry activities

9. Explore today's simulation with inquiry activities

10. Collect data and post

Predicting my future

For this activity you will need the Student Study Guide. If you need to make copies, please copy pages one and two for student completion.

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Procedure
After an introductory discussion on the future and how we relate to it in terms of today, allow students to complete the worksheet entitled "Predicting Your Future."

Discussion
Create data sheets and graphs based on student responses.

Other possible activities for a ☐class ☐group or ☐individual
☐Bookmark ☐Open Mind Portrait ☐g6 Graphic Organizer
☐g7 Main Idea Graphic Organizer ☐c1-12 Cubing ☐Postcard ☐Prop
☐Poster ☐Ad ☐Map ☐Retelling ☐Reader's Theatre ☐Cartoon ☐Rap

Key Questions
Which questions on pages one and two are ethical questions?
Which questions are you most certain about?
Write a new question about the future and answer it.
Which question are you least certain about?

Remember to ask ☐literal ☐structural ☐idea ☐craft ☐author ☐literature ☐life ☐evaluate and ☐inference questions every day.

Key Paragraph
Much of the information you will study in biology is related to your own life and to your immediate surroundings. It is also related to what your life may be like in the future. What will your future be? You can use your knowledge of the present to make predictions about the future. Be creative with your predictions, but keep them realistic. Based on what you know and what you can guess, write your answers to the following questions.

EXTEND

11. Prompt every student to write a short product tied to today's reading

Letter to another class
Ask students to write several paragraphs to an incoming student to this class. They should include the following:
- Study tips
- Key things that they learned
- Advice on working with peers

In short, anything that they think the incoming student should know.

12. Close with a short summary

Extend the reading to the students' lives or to the world.

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Supplemental Student Investigation
Industrialization Today and Yesterday China and England
Five days of activities

Introduction
This is a multi-day supplemental activity and is designed for higher level work. Nevertheless, you should be able to use it as the activity part of several lessons related to the Industrial Revolution with implications for human ecosystems.

Overview
Industrialization is a global macro-change that started in the 18th century in Great Britain and continues today in developing states. Students will compare the 18th century Industrial Revolution in England to industrialization in China. They will learn how internal and external factors promoted or hindered industrialization. Another important aspect of this unit is to consider the effects of industrialization on social, political, economic, and cultural conditions.

Central Questions:
1. What factors/causes are necessary for industrialization?

2. Why did England industrialize first? Why not China?

3. What is macro-change and how is industrialization a macro-change?

Day One: Linking Consumerism and the Industrial Revolution[1]
Draw a simple table on the white/black board (below).

NEEDS WANTS

Students can split into small groups and duplicate the table on a sheet of paper. Hand out the following list of items to each group:
comfortable work clothing, shoes, sugar, bed, tea, coffee, watch, hat, soap, jewelry, perfume, guns (including military weapons), razor, umbrella, knife, dress clothing, tobacco, chair, cupboard, toys.
Have students place each item on their chart according to whether it is a need or want. They are to assume the perspective of someone in early 18th century England.
Ask groups to share some of their results. Chances are, not all groups will have the same results.

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Ask students to consider how many of those same items we consider needs in 2006. Ask if they think there is a difference in perspective when classifying needs and wants from 300 years ago to today. Ask them to consider the perspective of a Cro-Magnon woman 15,000 years ago. How many of the items would be needs for her?
If students have not already concluded so, explain that **all** the items are wants, none are needs.
Write the following statement on the board and have students copy it at the top of a sheet of blank paper:
"Consumerism promoted the Industrialization Revolution when shopkeepers and producers began to realize that wants and needs were infinitely stretchable."
Ask students to define consumerism. They should be able to say consumerism is when you buy things not needed. Refer back to the example of changing "needs" from the Cro-Magnon to 17^{tht} century to 2006 and ask them to add more to their definition. Hopefully, they can conclude that consumerism is consuming things you do not need, while believing you do need them – stretching needs and wants, stretching wants into needs. Have students write a class-constructed definition of consumerism below the earlier statement on their papers.
Ask students to predict what shopkeepers and producers in 18th century Europe did when they "began to realize that wants and needs were infinitely stretchable." If they cannot answer, ask what shopkeepers and producers do today help "stretch" wants and needs of customers. If they still cannot answer, add this question to the homework assignment.

Day 2: Ingredients for an Industrial Revolution
Ask students what they found interesting in the reading of Section 24.4.
Review the topic from yesterday by reminding them of the position statement:
"Consumerism promoted the Industrialization Revolution when shopkeepers and producers began to realize that wants and needs were infinitely stretchable."
Have students share their position and written statements with a classmate.
This position statement is another version of the chicken-or-egg-first question. Which came first, consumerism or **industrialization**? Many authors' position clearly is that consumerism promoted **industrialization**. Ask students who disagreed or had different interpretations to share.

What is industrialization?
Share some definitions with students:

- A process that transforms agrarian and handicraft-centered economies into economies distinguished by industry and machine manufacture.
- The change in social and economic organization resulting from the replacement of hand tools by machine and power tools and the development of large-scale industrial production: applied to this development in England from about 1760 and to later changes in other countries (*Webster's New World Dictionary*)
- Modernization
- The major technological, socioeconomic and cultural change in the late 18th and early 19th century that began in Britain and spread throughout the world (*Wikipedia*)
- A massive increase in production, and related acceleration of transportation, communication and sales capacities. The heart of this increase was new technology, particularly technology based on coal or water power instead of human or animal power.[2]

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Tell students the exact definition is not important, but the concept is. **Industrialization** is a macro-change equal to the development of agriculture. The process usually takes 80-100 years for full transformation. What caused the Industrial Revolution? A number of factors combined– there is no simple one-shot explanation.

Brainstorming activity: As a class, list ingredients they think necessary for **industrialization**.

- Draw on the board and have students duplicate on plain paper the following:

Economic
Political

Internal
Factors

Industrialization

External
Factors

Physical/Resources

Social/Cultural

- Explain the difference between internal and external factors. Use the example that England had a lot of capital to invest in machinery, technology, and factories because they had engaged in a great deal of trade in sugar, textiles, and slaves etc… This necessary capital was an external factor.
- An internal factor example would be the presence of coal as a raw material in England. However, a country like Japan that had to import coal would be an external factor.
- Have students write factors on their copies as the brainstorming progresses. Do not be concerned if they cannot come up with many - this is just a start.
- Looking for things like: power (coal), technology (machines, steam engine), increased iron production (technology, access to raw materials), transportation (railroads, navigable waterways), labor (population), efficient agriculture production (food), capital (trade), favorable government policy (promoted **industrialization**, trade, responsive to reform),use of corporations to raise capital, demand (for products)

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Day 3: Coal, Steam, and Iron…All Aboard!

Go over factors on the chart from Day 2 if you have not already done so.

Teacher-led portion: PowerPoint – *Coal, Steam, and Iron*.

The PowerPoint traces the early development and relationship between these vital ingredients for **industrialization**. Most of the material is from *Coal: A Human History* by Barbara Freese, Penguin Books, 2003.

Write this statement on the board and have students copy it to their notebooks:

Explain what the author means when she states,

"Coal mining was one of the few occupations in which a person faced a very real risk of death by all four classical elements – earth, air, fire, and water."

Day 4: Why England First?

Geography matters. Use a world map to locate England. Emphasize its small size compared to other countries such as Russia and **China**.

Overhead #1: relative size of England

http://www.bus.ualberta.ca/exchange/images/blank%20world%20map.gif

Overhead #2:
http://www.ldeo.columbia.edu/edu/dees/U4735/projections/pitman/12.coal.deposits.gif

England had coal, but not nearly as much as many other countries. Take a closer look at England and have students think about coal and effective use of it at the start of the Industrial Revolution. Ask them what about England allowed them to harness the power of coal more effectively than other countries did.

http://www.rossoldbooks.co.uk/Images2/NM894.JPG

(Easier transport. England was surrounded by water and there were many rivers and even canals they could use.) Russia, **China**, and even other European countries did not have the water transportation system England did.

Homework: Read Bentley & Ziegler p. 820 "The Factory System" up to p 831 "Industry and Society." As you read, look for ingredients or factors that favor **industrialization**. There are at least seven in the reading. Add them to your chart in your notebook in a third color of ink or marker.

Day 5: Why not China?

Go over the factors students found in the reading. Make sure they found and added sufficient labor force, technology/machinery, manufacturing techniques (piecework), favorable government policies, political stability, skilled and disciplined work force, economic and legal structures that support business like corporations, banks, and brokerage firms. Ask students how each affected and promoted the process of **industrialization**.

Some students may suggest effects rather than factors of **industrialization**. Take care to make sure they understand the difference between effects of **industrialization** and factors since the reading contains both. We will cover effects of **industrialization** later.

mondediplo.com/maps/china16th

Point out to students that **China** had a more extensive and longer history of global trade and connection than England. Refer back to the coal deposit map and point out that **China** had much coal and **China** actually used coal earlier and more extensively, long before England learned to use it. Tell students that **China** had a smaller "**industrialization** revolution" 700 years before Great Britain started theirs. During the Northern Song dynasty, **China** leaned to make iron with coal 700 years before the process was re-discovered in England. Have students copy the following in their notebooks:

"With such a head start on industrialization, why did China fall behind?"

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Supplemental Student Investigation
Needs and Wants

Objective:
To internalize the difference between needs and wants from a global perspective.

Overview
Participants make cards illustrating things they think they need and want to be healthy and happy. Groups then sort these cards into "wants" and "needs." The whole group discusses what it means when people's basic needs are not met and the relation of basic human needs to human rights.

Materials
3"X5" cards, old magazines, glue, scissors, art supplies

Procedure

1. Ask participants, working in pairs or small groups, to create 10-20 cards that illustrate the things they think children need and want to be healthy and happy. They may draw these things on the cards or cut out and paste on pictures from magazines.

2. Each pair or group exchanges cards with another. The group then sorts out the new cards into categories:
- Which things are NEEDS (e.g., essentials for survival, such as food, health care, shelter)?
- Which things are WANTS but not NEEDS (e.g., desirable but not necessary for survival, such as toys, education, or voting rights)?
- Which things are neither?

3. The groups who exchanged cards join together and compare their cards. They then try to reach agreement on categories for all the cards. When they have done so, discuss:
- Which pile of cards is bigger? Why?
- If you had to move two cards from the NEEDS pile to the WANTS pile, which two would you choose? How would your life be affected by this change (e.g., if something you feel you really need were no longer available to you?).

4. Ask whole class to combine their cards. Attach them to the wall or blackboard to complete a class list. Discuss:
- Are all human needs included in the NEEDS list? Are there other needs that should be added to the list?

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- Are all the wants included? Can the class think of others?

5. Discuss:
   - Is it easy to differentiate between wants and needs?
   - What happens to someone when his or her wants are not fulfilled?
   - What happens to someone when his or her basic needs are not met?
   - What happens to a community when many people's basic needs are not met?
   - Are there people who don't have their basic needs met in the world? In the USA? In your community? In your school?
   - Are there some kinds of people who often don't get their basic needs met?
   - Should these needs be met? Why?
   - Should some people have their wants satisfied when others don't have their needs met?
   - What can be done to meet people's basic needs?
   - Whose responsibility is it to meet people's basic needs?
   - What actions can you take to help meet the basic needs of others in your community?

Going Further

1. Discuss:

Are there such things as basic human needs common to everyone everywhere in the world?
   - Are these needs always met?
   - What influences our wants?
   - How are wants influenced by age? Gender? Class? Culture? Ethnicity?
   - What is the relationship of human needs to human rights

Adaptations

1. Follow-up – Keep the cards and reuse them in another subject area. For example, apply the needs and wants categories to a mathematics, current events, or foreign language lesson.

2. For younger children – Younger children may benefit from seeing concrete examples of children in order to imagine what a specific child's wants and needs might be. Have children look through magazines or pictures and choose a specific child to be an "imaginary friend." Children could imagine characteristics of this friend (e.g., name, age, toys, pleasures, etc.). Children could cut out this picture, mount it on paper, and introduce their new friend. This step might be done before Step 1 in the procedure section.

3. A Geography Activity – If the class is learning about a different locality in geography, they could explore needs and wants of people living in a different environment, especially considering the effects of climate, landscape, and rural or urban setting. They might reconsider the cards they made: what pictures might be changed? What categories?

4. A Literature Activity – Have students make their piles based on the needs and wants of characters in a short story or novel they are reading.

Source: Adapted from Margot Brown, *Our World, Our Rights*, 23-26.

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