INTRODUCTION:

Arts and Economics...two subjects few ever thought would go together. This curriculum was created to teach students not only fundamental economic concepts but also how to interpret a piece of artwork. Regardless if you are an art teacher using this curriculum to teach economics or an economics teacher using this curriculum to incorporate art, this curriculum is designed to enable any teacher, regardless of subject area, to incorporate these two subjects in the classroom.

BUT I'M NOT AN ART TEACHER!

No worries! This curriculum is designed to teach students to OBSERVE a piece of artwork and to CRITICALLY THINK about what they see. There are two main questions you can ask students if you are ever in doubt how you can engage the:

1) WHAT DO YOU SEE?
2) WHY DO YOU SAY THAT?

By asking these two questions, you will engage your students in thoughtful discussion about a piece of artwork. By defending their answers, your students will move from just regurgitation to more critical thinking.

BUT I'M NOT AN ECONOMICS TEACHER!

No problem! This curriculum is designed to teach students fundamental (basic) economic concepts. Since all lessons focus on the same concepts, each lesson can be taught independently. Below is a brief overview of these fundamental concepts.

The fundamental problem in economics is scarcity. The root word of scarcity is scarce which means “lacking” or “not enough.” Thinking about this word, we do not have all the resources we need to provide for all our unlimited wants. Scarcity affects everyone – individuals, families, businesses, and countries. Because of scarcity, we have to make choices in how to allocate (use) these scarce resources. This is why economics is called the study of choice.

When studying economics, economists focus on the factors of production – land, labor, capital, and entrepreneurship. Land is also known as natural resources such as crude oil, timber, iron ore, and so on. Labor is known as human resources. These are the people who make the goods or provide the services (doctors, firemen, teachers, etc.). Capital includes anything you use to make the good or provide for the service such as
computers, hammers, conveyor belts, etc. Last, an entrepreneur is a person who combines the other factors of production - land, labor, and capital - to earn a profit. The most successful entrepreneurs are innovators who find new ways produce goods and services or who develop new goods and services to bring to market.

SO WHERE DO I BEGIN?

Anywhere! Each lesson can be completed independently. You do not have to complete all six lessons as a unit. Lesson 1 begins with basic observation of photos with each lesson gradually engaging students to a higher-order level of thinking. The lessons are also created where you can swap the different works of art with the various teaching strategies. For example, maybe you like the work of art for Lesson 4 but the teaching strategy in Lesson 3. You can pick and choose what you like. These lessons are created to stimulate thinking and engage students in discussion. They are not created to cause additional stress to the teacher on trying to figure out how to teach “art” or “economics.” Enjoy the lessons and have fun! Economics and art… who would have thought? 😊
Lesson 1

What Do You See?

Overview: This lesson incorporates the jig-saw strategy. The first part of the lesson will engage students in interpreting a photograph (observe, reflect, question). The second part of the lesson will teach students the four factors of production with the students later applying these concepts to the photograph they observed.

Objective: Students will:

- Identify and apply the factors of production (land, labor, capital, entrepreneurship).
  - Land: natural resources; things that come from nature and not altered by man
  - Labor: human resources; work that people do
  - Capital: anything used to produce a good or provide a service (hammer, nails, equipment)
  - Entrepreneurship: people who create new products or a new way of doing things; people who create/own businesses
- Learn how to interpret a photo (basic introduction).

Voluntary National Standards in Economics

- Content Standard 1: Scarcity - Students will understand that: Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.

Mississippi Economic Standards

- Standard 4. Understand that resources are limited and therefore choices must be made.

Time Frame: 1 class block or 2 class periods

Procedure: (JIG SAW ACTIVITY)

- Divide students into groups of five. This is their HOME group.
- Give each HOME group a folder that contains each picture (five total).
  - In the HOME group, the students should each take one picture and Handout 1. Complete handout 1 using the picture.
  - Give students plenty of time.
- After each student has had time to complete Handout 1, break students in to EXPERT groups. All Picture One's will meet together. All Picture Two's will meet together, etc. In the EXPERT groups, students will discuss answers to the questions from Handout 1 and then complete Handout 2.
- After each student completes Handout 2, tell students to return back to the HOME group and share findings with other students in the group.
- After five to ten minutes of students sharing their findings, give each group Handout 3. Teach students about the factors of production (read and discuss paragraph on Handout 3). Tell students that they will identify what factors of production can be observed in the photographs and document thoughts on Handout 3.

Closure: Project each photograph and ask students what factors of production they saw in each picture. Ask for explanations in order to clarify any misunderstandings.

Assessment: The students will match examples to the correct factor of production. This can be an individual activity or you can create a competition review using Kahoot!
PHOTOS FOR GROUP ACTIVITY
Handout 1 (complete in HOME group individually)  
Name: ______________________________

Directions: Use your photograph to answer each question.

Which photograph do you have? ______________________________

OBSERVE  
1) Describe what you see.

2) What objects do you notice first? What are the conditions of those objects?

3) Do you see people? If so, what are they doing?

4) What other details can you see?

REFLECT:  
5) What can you learn from examining this image?

6) Why do you think this image was made? What might have been the creator’s purpose?

7) What do you feel when looking at this image?
Handout 2: (complete in EXPERT group)

Directions: This is your EXPERT group. Make sure all students in this group observed and reflected on the same photograph. Complete each section as a group.

QUESTION:

Discuss each question from Handout 1. Write down all answers that you did not originally write down in Handout 1. You will use this information to teach your HOME group. For example, did another student see something that you did not originally see? Did they interpret an activity differently?

Second, analyze the photograph by asking questions that lead to more observation and reflection.

- What didn't you learn that you would like to know about?

- What questions does this image raise?

- What do you wonder about...?

- If you could give this photo a title, what would it be?

When the teacher instructs you, go back to your HOME group and discuss your photo with your group. Discuss your OBSERVATION AND REFLECTION (be sure to include details learned in EXPERT group) then discuss what your EXPERT group discussed.
FACTORS OF PRODUCTION

The fundamental problem in economics is scarcity, not having enough resources to provide for our unlimited wants. Because of scarcity, we have to make choices in how to use this scarce resources. The factors of production are resources that are the building blocks of the economy; they are what people use to produce goods and services. There are four factors of production: land, labor, capital, and entrepreneurship. Land includes anything that is a natural resource (a resource that comes from nature). Labor is defined as the humans/people who do work (doctors, teachers, lawyers, farmers, etc.). Capital is anything used in the production of a good/service (hammer, nails, machines, robots, etc.). Entrepreneurship includes innovators and business owners; people who take a risk.

For each photo, identify the factors of production. Use your imagination ("What ifs") to help answer each question. There is at least one factor of production for each picture.

| PICTURE ONE | Land: |
|             | Labor: |
|             | Capital: |
|             | Entrepreneurship: |

| PICTURE TWO | Land: |
|             | Labor: |
|             | Capital: |
|             | Entrepreneurship: |

| PICTURE THREE | Land: |
|              | Labor: |
|              | Capital: |
|              | Entrepreneurship: |

<p>| PICTURE FOUR  | Land: |
|              | Labor: |
|              | Capital: |
|              | Entrepreneurship: |</p>
<table>
<thead>
<tr>
<th>Picture</th>
<th>Land</th>
<th>Labor</th>
<th>Capital</th>
<th>Entrepreneurship</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Picture One</strong></td>
<td>cotton, land</td>
<td>none</td>
<td>silos in the background</td>
<td>not seen but farmer who owns the farm</td>
</tr>
<tr>
<td><strong>Picture Two</strong></td>
<td>none</td>
<td>operator of backhoe</td>
<td>backhoe</td>
<td>none</td>
</tr>
<tr>
<td><strong>Picture Three</strong></td>
<td>no production of good/service; let students use imagination</td>
<td></td>
<td>Natural resources (trees); barn could be capital...</td>
<td></td>
</tr>
<tr>
<td><strong>Picture Four</strong></td>
<td>no production of good/service; allow students to use imagination</td>
<td></td>
<td>WHAT IF this was a farm... there are deer prints by a pond...could fish come from this pond? Hunt deer?</td>
<td></td>
</tr>
<tr>
<td><strong>Picture Five</strong></td>
<td>cotton, land</td>
<td>operator of tractor (not seen)</td>
<td>equipment</td>
<td>owner of farm</td>
</tr>
</tbody>
</table>
Assessment

Directions: Match each example to the correct factor of production.

___ 1) At the car manufacturing facility, the robotic arm is attaching a part onto the car. What is the robotic arm?

___ 2) Henry is a CPA working for an accounting firm. What is Henry?

___ 3) The logging company cut timber off 20 acres of our land. What is timber?

___ 4) Bill Gates is which factor of production?

___ 5) Iron ore represents which factor of production?

___ 6) Susan decided to open up her own store, selling boutique clothes and shoes. What is Susan?

___ 7) The farmer bought a new tractor. What is the tractor?

___ 8) The farmer who bought the new tractor would be considered which factor of production?

___ 9) The carpenter uses hammer and nails to build a house. What are hammer and nails?

___ 10) If you created a new way of doing things, what would you be called?

CHOICES: (will be used more than once)
A) Land
B) Labor
C) Capital
D) Entrepreneurship
Assessment

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A) Land
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Overview: This lesson is formatted as a project based learning activity. The students take on the role of an archeologist investigating a dig at historic Jamestown. They will observe and take notes on an assigned artifact while at the same time taking notes on how these artifacts may have been used in the settlement's economy (applying economic concepts). The students will be divided into groups to complete the See-Think-Wonder handout and then present findings to the class. After presentations, a “bigger picture” of Jamestown’s settlement will develop. The last part of this activity is doing research to see not only how close they were in their observations but to learn about the culture and economy of Jamestown.

Objective: Students will:
- Learn how make inferences by observing artifacts from Jamestown’s historic colony.
- Know the five characteristics of the free enterprise system.
- Research and relate free enterprise characteristics to Jamestown’s history.

Voluntary National Standards in Economics
- Content Standard 1: Scarcity - Students will understand that: Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.
- Content Standard 3: Allocation – Students will understand that different methods can be used to allocate goods and services. People acting individually or collectively must choose which methods to use to allocate different kinds of goods and services.
- Content Standard 4: Trade – Students will understand that voluntary exchange occurs when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and among individuals or organizations in different nations.
- Content Standard 6: Specialization - When individuals, regions, and nations specialize in what they can produce at the lowest cost and then trade with others, both production and consumption increase.
- Content Standard 7: Markets and Prices - A market exists when buyers and sellers interact. This interaction determines market prices and thereby allocates scarce goods and services.
- Content Standard 8: Role of Prices - Prices send signals and provide incentives to buyers and sellers. When supply or demand changes, market prices adjust, affecting incentives.
- Content Standard 9: Competition and Market Structure – Students will understand that competition among sellers usually lowers costs and prices, and encourages producers to produce what consumers are willing and able to buy. Competition among buyers increases prices and allocates goods and services to those people who are willing and able to pay the most for them.
- Content Standard 10: Institutions – Students will understand that institutions evolve and are created to help individuals and groups accomplish their goals...A different kind of institution, clearly defined and enforced property rights, is essential to a market economy.
- Content Standard 14: Entrepreneurship – Students will understand that entrepreneurs take on the calculated risk of starting new businesses, either by embarking on new ventures similar to existing ones or by introducing new innovations. Entrepreneurial innovation is an important source of economic growth.

Mississippi Economic Standards
- Standard 1 – Understand that the nation’s overall economy is characterized by the interaction of spending and production decisions.
- Standard 4 - Understand that resources are limited and therefore choices must be made.
- Standard 5 – Understand that markets exist when buyers and sellers interact and engage in exchange.
- Standard 6 – Understand the personal economic consequences of spending and investment decisions made by individuals, businesses, and governments.
Time Frame: 1 block or 2 class periods (Handout 1 on one day; Handout 2 on the next day)

Procedure: (P-B-L)

☐ Divide students into seven groups and give each group an artifact photo to study. Laminate the photos or place in sheet protectors so students can use a dry erase marker to circle their observations.

☐ Give each group Handout 1 (you can have the group complete one sheet or each student completes the handout). Direct the students through this activity:
  o Read the scenario aloud.
  o Say: “Look at your group’s artifact for at least 60 seconds and identify small and big details. In the section “SEE,” write down 3 things you see.” (give students time to write)
  o Say: “Now, what do you wonder? In the section “WONDER,” create a few questions you have about this artifact.” (give students time to write)
  o Say: “Next, make interpretations about your artifact. For example, what can you infer (conclude, understand, assume) about what you observed? Try to find visual evidence to try and answer your own questions. It’s ok if you don’t have immediate answers and you need to acquire further investigation. These answers will be recorded in the THINK section” (give students time to write)
  o Say: “Last, make a prediction about what your artifact was possibly used for in the Jamestown colony. Write your prediction in the section titled “PREDICTION.” (give students time to write)

☐ After all groups have completed Handout 1, instruct them to complete a small presentation/discussion of their artifact. This is not a formal presentation but merely a discussion on what they analyzed.
  o Give each group a sheet of butcher paper.
  o Instruct each group to draw the SEE-WONDER-THINK-PREDICT chart on the sheet of paper.
  o Tell students to discuss and write down answers from Handout 1 (they do not have to write down all their answers but the main points).
  o Present the artifacts to the class.

☐ After all students have discussed each artifact, have a class discussion and make inferences about the culture and economy of Jamestown, basing their answers from the artifacts observations. Write these answers on the board or on a sheet of butcher paper.
  o Examples may be: they farmed, they fished, etc.

☐ Next, complete Handout 2. Students should read and answer questions concerning Jamestown’s economy.
  o There are several ways to do this handout—on computers through research (websites provided) or by making copies of the reading material/sources provided in this lesson
  o http://historicjamestowne.org/ is a great website (official Jamestown website)
  o This can be an individual assignment or completed in assigned groups.
    ▪ If you choose to do this as an individual assignment, assign various students to read Source 1, Source 2, and Source 3.
    ▪ If you choose to do this assignment as a group, you can do one of the following options:
      □ Give each group only one reading source and have them each read the same source and answer the questions.
      □ Give each group all three reading sources and the students decide which one to read.
If using the reading sources provided, place handout in a sheet protector and give to students. Instruct students to underline examples with a dry erase marker (erases easily from sheet protector). This will help students with reading comprehension.

After completion of Handout 2, discuss the capitalism/free enterprise characteristics. Draw the chart from Handout 2 on the board. Ask various students to come to the board and write characteristics of Jamestown’s economy (taken from handout). Discuss.

Closure: Go back to the board/sheet of butcher paper where you documented inferences (assumptions) about Jamestown’s economy/culture. Have the class discuss which answers/predictions about Jamestown were correct.

Assessment: Give each student the assessment to gauge how well they understood the characteristics of the free enterprise system. The questions on this assessment are taken from Handout 2.
KEY TO Handout 2 (there are other possible answers...these are just a few that will help direct you)

<table>
<thead>
<tr>
<th>FREE ENTERPRISE CHARACTERISTIC</th>
<th>EXAMPLE</th>
<th>SOURCE</th>
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| Economic Freedom              | 1) The colonists in Virginia tried a number of different enterprises: silkmaking, glassmaking, lumber, sassafras, pitch and tar, and soap ashes, with no financial success"  
2) By 1612, John Rolfe experimented with planting a new variety of tobacco, a mild Spanish leaf, which he anticipated would be more suited to English tastes than the bitter Indian variety.” | 1) Source 1  
2) Source 3 |
| Voluntary Exchange            | 1) Tobacco served as money at Jamestown and was used to pay salaries and wages.”  
2) Tobacco was shipped to England where it was sold to buy goods or to purchase more labor.  
3) Settlers continued to barter with the Indians, as they had from the beginning, in order to meet their daily needs.” | 1) Source 2  
2) Source 3  
3) Source 3 |
| Private Property Rights       | 1) Another legacy of Jamestown is the right of individuals to own property."  
2) Success with tobacco would not have been possible without the right of individuals to own private property.” | 1) Source 2  
2) Source 3 |
| Profit Incentive              | 1) The Company expected the colonist to start industrial enterprises in Virginia that would return profits to the Company.”  
2) It was John Rolfe's experiments with tobacco that developed the first profitable export.  
3) With profits from tobacco, wealthy Virginia planters could purchase luxury goods from around the world” | 1) Source 1  
2) Source 2  
3) Source 3 |
| Competition                   | 1) After a couple of years, he met with great success and was busily marketing his crop among English merchants and tobacco sellers | 1) Source 3 |

Answers to artifacts: #1 – cargo tag; #2 sturgeon (fish) remains; #3 fishing hook; #4 broad ax; #5 tobacco seed; #6 agricultural hoe; #7 cross (possibly from a necklace...very small)
Scenario: You are an archeologist who has been studying the culture and economy of the historic settlement of Jamestown, Virginia. You recently received a phone call about a possible discovery of artifacts. You quickly get to Jamestown to help with the excavation at the new site. After countless hours of digging you unearth various artifacts. You carefully remove the objects from the ground. Now begins the tedious work of deciphering the artifacts and piecing together what was once the first English colony of the New World.

The teacher will direct you through this activity. Use the following chart to record your findings. The order: SEE-THINK-WONDER-PREDICT.

What do you THINK?

What do you SEE?

What do you WONDER?

ARTIFACT #____

PREDICT how you think this artifact was used in Jamestown.
Artifact 2
Artifact 3
Artifact 4
Artifact 5
Have you ever heard the word CAPITALISM? What about FREE ENTERPRISE? Free enterprise (sometimes known as capitalism) is defined as a system in which private businesses are able to compete with each other with little control by the government. There are five characteristics of the free enterprise system: economic freedom, voluntary exchange, private property rights, profit incentive, and competition.

Here is a brief review of each characteristic:
1) economic freedom - individuals are free to work, produce, consume, and invest in any way they please
2) voluntary exchange – buyers and sellers freely engaging in market transactions (in other words, buyers and sellers are buying and selling what they want, when they want, and setting own price)
3) private property rights – individuals own factors of production (not the government)
4) profit incentive – wanting to make a profit by creating products, businesses, and so on
5) competition – competing with other sellers; makes products better and lowers price of product

Directions: Use either the internet or provided reading materials to complete the chart. You must provide examples from Jamestown's history that describe each of the free enterprise characteristics. Provide the exact statement (be sure to put in quotation marks). Be sure to also document the source (where you found the information).

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John Rolfe stepped into history in May 1609 when he boarded the Sea Venture, bound for Virginia. The Virginia Company, founded by investors, had financed and sponsored the English colony founded at Jamestown in May 1607. The Company expected the colonist to start industrial enterprises in Virginia that would return profits to the Company. The colonists in Virginia tried a number of different enterprises: silkmaking, glassmaking, lumber, sassafras, pitch and tar, and soap ashes, with no financial success. It was John Rolfe's experiments with tobacco that developed the first profitable export.

The Spaniards found the natives in the West Indies using the tobacco plant. They took seed to Europe where its use soon spread to other countries around the Mediterranean Sea. Sir Walter Raleigh is often credited with the introduction of tobacco to England. While in reality he may not have been responsible for its introduction, he did play an important role in the spread of tobacco use among the English. Spain and Portugal monopolized the European tobacco trade; England imported tobacco from Spain. The English colonists did not like the type of tobacco the Virginia Indians grew. They preferred the fragrant sort that Spanish colonists were producing in the Caribbean, which they were selling in large quantities and at high prices to London merchants.

The Sea Venture was the flagship of a nine-ship convoy of 500 new settlers. By July the ships had reached the West Indies, where a hurricane struck them. The Sea Venture ran aground on a reef off the Bermudas, but the entire company of 150 safely reached shore in the ship's boats. The colonists found Bermuda to be a hospitable place with sufficient food. In the following months, they built two smaller ships from cedar trees and salvage. By May 1610 the two ships, aptly named the Patience and the Deliverance, were ready. The ships reached the Chesapeake Bay after ten days sailing. While on Bermuda, John Rolfe's wife had given birth to a daughter who was christened Bermuda, but the child died there. Rolfe's wife also died, probably soon after they reached Virginia.

John Rolfe is credited by Ralph Hamor, then Secretary of Virginia, with the experiment of planting the first tobacco seeds that he obtained from somewhere in the Caribbean, possibly from Trinidad. "I may not forget the gentleman, worthie of much commendations, which first tooke the pains to make triall thereof, his name Mr. John Rolfe, Anno Domini 1612, partly for the love he hath a long time borne unto it, and partly to raise commodity to the adventurers... " Rolfe gave some tobacco from his crop to friends "to make a triall of," and they agreed that the new leaf had "smoked pleasant, sweete and strong." The remainder of the crop was shipped to England, where it compared favorably with "Spanish" leaf.

At the same time Rolfe experimented with tobacco, other events transpired that profoundly affected the colony. Pocahontas, daughter of Chief Powhatan, was kidnapped and brought to Jamestown to be traded for English prisoners and weapons that Powhatan held. The exchange never took place and Pocahontas was taken to the settlement at Henrico, where she learned English, converted to Christianity, was baptized, and was christened Rebecca. It was about this time that she presumably came to the attention of John Rolfe. Rolfe was a pious man who agonized for many weeks over the decision to marry a heathen. He composed a long, laborious letter to Governor Dale asking for permission to marry Pocahontas.
The letter reflected Rolfe's dilemma. The tone suggests it was intended mainly for official records, but at some points Rolfe bared his true feelings. "It is Pocahontas," he wrote, "to whom my hearty and best thoughts are, and have been a long time so entangled, and enthralled in so intricate a labyrinth that I (could not) unwind myself thereout." The wedding took place in the spring of 1614. It resulted in peace with the Indians long enough for the settlers to develop and expand their colony and plant themselves permanently in the new land.

In 1616, Rolfe took his wife and infant son Thomas to England. Pocahontas died at Gravesend seven months later, just before returning to Virginia. A sad John Rolfe left his young son in the care of a guardian in England and returned to his adopted home. Upon his return to Virginia, he assumed more prominence in the colony. He became a councilor and sat as a member of the House of Burgesses. He married again to Jane Pearce, daughter of a colonist. He continued his efforts to improve the quality and quantity of Virginia tobacco. In 1617, tobacco exports to England totaled 20,000 pounds. The next year shipments more than doubled. Twelve years later, one and a half million pounds were exported. The first great American enterprise had been established.

John Rolfe died sometime in 1622. Although a third of the colony was killed in the Indian uprising of that year, it is not known how Rolfe died. In a life that held much personal tragedy, Rolfe gave the colony its economic base. His contributions allowed the English settlements to become permanent, thus solidifying the English presence in America and making possible the first steps toward the creation of the future United States.
What is the legacy of Jamestown?

In spite of the many obstacles of poor communication, environmental challenges, disputes over land, and conflicting cultural traditions and beliefs, the colony at Jamestown survived to become the birthplace of our nation. The Powhatans, the English, and the Africans struggled through indescribable hardships and difficult interactions, as each played a unique role in the colony’s survival.

The colony at Jamestown laid the foundation for our system of free enterprise. Colonists came to Virginia to make a profit. They tried many things, including glassmaking and silk production. Nothing worked well for them until 1613, when John Rolfe cultivated a sweeter brand of tobacco and made it profitable for the company. It became profitable because it met the needs and wants of the Europeans for a better tasting tobacco. Tobacco served as money at Jamestown and was used to pay salaries and wages. However, most of the land required to grow tobacco was taken from the Powhatans. Dependence upon this cash crop became the key to survival for the colony. At the same time, tobacco growing could not have succeeded without the labor force the Africans provided.

Another legacy of Jamestown is the right of individuals to own property. In 1618, the Virginia Company gave colonists the right to own land. Until then, the company had owned all land in Virginia. This right to acquire land offered opportunities for upward economic and social mobility. Free Africans were also allowed to possess their own land. This concept of private ownership of land became the major source of conflict between the English and the Powhatans, but it was a major factor in America’s growth as a nation.

In 1619, another modest beginning gave birth to what would become the political character of the colony and an enduring American tradition. On an unbearably hot day in July, two burgesses selected from each of the seven plantations and four boroughs traveled to Jamestown to represent the interests of the colonists in the General Assembly. Prior to this time, the Virginia Company had appointed the governor and his council of advisors as the governing body for the colony. Even though the governor and his council would continue to be present at all meetings, thereby stifling some freedom of debate, this meeting in the church at Jamestown in 1619 was the first step toward representative government in America, which in time would grow to inspire people and nations all over the world.

The interaction of the Powhatan, English and Africans at Jamestown laid the foundation for an American society built by people of diverse cultures, traditions and beliefs. Throughout history these cultural interactions have included conflict, hardships, negotiation and compromise. As a result of English settlement, the Powhatans were forced to live on reservations located on less than desirable tracts of land. Africans were transported to Virginia against their will and forced into slavery for years to come. From its inception in seventeenth-century Virginia, slavery was rationalized as an economic necessity – first with tobacco and later with cotton. Tragically, during the eighteenth century, the institution of slavery took root in the American colonies. Eventually, it would tear the nation apart during the Civil War, which brought about the end of slavery.

Over time, the United States has made great strides in civil rights, but continues to be challenged by the effects of the institution of slavery and the wrongs suffered by America’s original inhabitants. Yet, without the exchange of knowledge and skills of the English, the Powhatans and the Angolans, Jamestown would not have survived. Jamestown’s legacy, including free enterprise, private ownership of land, representative government and our rich cultural diversity, came from the sacrifices and relationships forged by these three groups of people – Powhatan, English and African.
What were the economic practices at Jamestown?

From the beginning when the Virginia Company of London was formed, the overseas venture was an economic one. Captain Newport led the efforts of the settlers to discover gold ore even when their efforts might have been better used toward acquiring food. They were not quick to learn how to grow food in their new environment and increasingly had to rely upon the Indians for corn and other crops. In addition, the colonists did not have the tools they needed since they were limited in what they could bring from England. Lumber was a resource that was plentiful in Virginia, and the location of Jamestown along the water where ships could dock should have been ideal for this industry. Yet, lumber turned out to be a very expensive commodity to ship. Wood extractives such as pitch and tar, soapash and potash were more practical but needed processing before shipping. Silk production, glassmaking and wine production were all industries which were attempted with varying degrees of success, yet none to the extent needed to make a profit for the Virginia Company. Within a few years, most of these early attempts, with the exception of lumber Thatching a roof in re-created James fort, Jamestown Settlement Pocahontas products, were abandoned. Settlers continued to barter with the Indians, as they had from the beginning, in order to meet their daily needs. Even the fur trade, which made a small profit for the Company, would not become a very successful venture until after 1630.

The first truly marketable product raised in Virginia was tobacco. By 1612, John Rolfe experimented with planting a new variety of tobacco, a mild Spanish leaf, which he anticipated would be more suited to English tastes than the bitter Indian variety. He not only learned how to raise this new type of plant but also managed to harvest and cure it so it could be transported to England without spoiling. After a couple of years, he met with great success and was busily marketing his crop among English merchants and tobacco sellers when he traveled with his bride, Rebecca, to London in 1616. Ironically, he could not smoke a pipe in the presence of King James I as the king’s vehement opposition to tobacco was well-known at court and had been set out at length in his A Counter-Blaste to Tobacco published in 1604, in which he attacked arguments in favor of smoking and derided claims about its medicinal qualities. He called it a “stinking weed,” and “a custom loathsome to the eye, hateful to the nose, harmful to the brain, dangerous to the lungs…” Nevertheless, tobacco revolutionized the colony’s economy and became the cash crop of Virginia.

Virginia colonists quickly gave up all other products to meet the demand for tobacco in England. Production increased phenomenally into the 1620s, and became readily available for mass consumption in England. All classes and genders smoked. Virginia became synonymous with tobacco, and Virginians developed a way of life that revolved around its production. Since tobacco was too bulky to carry very far across land, farmers spread out along the rivers where boats could easily pick up their crops. Tobacco was shipped to England where it was sold to buy goods or to purchase more labor. With profits from tobacco, wealthy Virginia planters could purchase luxury goods from around the world such as Chinese porcelains, Oriental silks, Dutch and German ceramics, Venetian glass, objects of gold, silver, brass and pewter, fancy foodstuffs and stylish household furnishings. Virginia became part of the global economy.
Success with tobacco would not have been possible without the right of individuals to own private property. Both as a means for planters to gain more land and as a way to populate the colony, the Virginia Company developed a new policy of land ownership in 1618. Instead of Company controlled plantations, land began to be allotted to individuals. Settlers who had arrived before 1616 (“ancient planters”) were granted 100 acres of land for their own use. Investors also received 100 acres for every share. The new plantations were called “hundreds” or “particular plantations.” These plantations were allowed some self-government, an added incentive for new investors to risk their capital. Those who arrived after April 1616 and paid their own passage received 50 acres for themselves and another 50 for every person they transported. This arrangement, known as the “headright” system, became the primary means by which laborers were recruited and sent to the colony for the rest of the century. By importing hired workers, successful planters could fulfill their need for labor while amassing additional land. The opportunity to realize substantial profits from growing tobacco while accumulating land sparked the spread of settlement. Without a doubt, this new policy changed the economic life of the colony forever.

The headright system eventually led to a hierarchy of labor as well. Indentured servants signed contracts agreeing to work a specified number of years in exchange for transportation to Virginia. This contract was signed with an agent who sold the contract to a colonial planter. Those who acquired indentured servants had to provide them with food, clothing and shelter. They could exact labor under certain conditions, using what the law deemed reasonable discipline. When a contract expired, the servant received “freedom dues,” usually three barrels of corn and a suit of clothes. Former servants often leased land until they could acquire some of their own. Tobacco required a lot of labor, however. Eventually, indentured servants could not meet this demand and, over time, slavery developed in Virginia.
America, Found and Lost

Much of what we learned in grade school about the New World encountered by the colonists at Jamestown is wrong. Four hundred years later, historians are piecing together the real story.

By Charles C. Mann

It is just possible that John Rolfe was responsible for the worms—specifically the common night crawler and the red marsh worm, creatures that did not exist in the Americas before Columbus. Rolfe was a colonist in Jamestown, Virginia, the first successful English colony in North America. Most people know him today, if they know him at all, as the man who married Pocahontas. A few history buffs understand that Rolfe was one of the primary forces behind Jamestown’s eventual success. The worms hint at a third, still more important role: Rolfe inadvertently helped unleash a convulsive and permanent change in the American landscape.

Like many young English blades, Rolfe smoked—or, as the phrase went in those days, "drank"—tobacco, a fad since the Spanish had first carried back samples of *Nicotiana tabacum* from the Caribbean. Indians in Virginia also drank tobacco, but it was a different species, *Nicotiana rustica*. Virginia leaf was awful stuff, wrote colonist William Strachey: "poor and weak and of a biting taste." After arriving in Jamestown in 1610, Rolfe talked a shipmaster into bringing him *N. tabacum* seeds from Trinidad and Venezuela. Six years later Rolfe returned to England with his wife, Pocahontas, and the first major shipment of his tobacco. "Pleasant, sweet, and strong," as Rolfe’s friend Ralph Hamor described it, Jamestown’s tobacco was a hit. By 1620 the colony exported up to 50,000 pounds (23,000 kilograms) of it—and at least six times more a decade later. Ships bellied up to Jamestown and loaded up with barrels of tobacco leaves. To balance the weight, sailors dumped out ballast, mostly stones and soil. That dirt almost certainly contained English earthworms.

And little worms can trigger big changes. The hardwood forests of New England and the upper Midwest, for instance, have no native earthworms—they were apparently wiped out in the last Ice Age. In such worm-free woodlands, leaf litter piles up in drifts on the forest floor. But when earthworms are introduced, they can do away with the litter in a few months. The problem is that northern trees and shrubs beneath the forest canopy depend on that litter for food. Without it, water leaches away nutrients formerly stored in the litter. The forest becomes more open and dry, losing much of its understory, including tree seedlings.

Whether the night crawler and the red marsh worm actually first arrived on Rolfe’s tobacco ships is not known. What is clear is that much of the northern forests in America were worm free until the Europeans arrived there, inadvertently importing earthworms on the root-balls of their plants or in the ballast of ships. The effects of this earthworm invasion have been slow to show themselves because the creatures don’t spread rapidly on their own. "If they’re born in your backyard, they’ll stay inside the fence their whole lives," says John Reynolds, editor of *Megadrilogica*, the premier earthworm journal. But over time, the effect on the ecosystem can be dramatic.
Jamestown is known for inaugurating the great American struggles over democracy (the colony established English America's first representative government) and slavery (it was the first English colony to use captured Africans). Rolfe's worms, as one might call them, point to another part of its history. The colonists did not come to the Americas alone. Instead they were accompanied by a great parade of insects, plants, mammals, and microorganisms. Some of the effects were almost invisible; others were enormous. Together with the newcomers' different ways of managing the land, these creatures literally changed the ground beneath the Indians' feet. Setting up camp on marshy Jamestown peninsula, the colonists were taking the first steps toward creating the American landscape we know today.

Two hundred and fifty million years ago the world contained a single landmass known to scientists as Pangaea. Geologic forces broke this vast expanse into pieces, sundering Eurasia and the Americas. Over time the two halves of the world developed wildly different suites of plants and animals. Columbus's signal accomplishment was, in the phrase of historian Alfred Crosby, to reknit the torn seams of Pangaea. After 1492, the world's ecosystems collided and mixed as European vessels carried thousands of species to new homes across the oceans. The Columbian exchange, as Crosby called it, is why there are tomatoes in Italy, oranges in Florida, chocolates in Switzerland, and hot peppers in Thailand. It is arguably the most important event in the history of life since the death of the dinosaurs.

For English America, Jamestown was the opening salvo in the Columbian exchange. In biological terms, it marked the point when before turns into after. And it began 400 years ago this month, on May 14, 1607, when 104 colonists disembarked on Jamestown peninsula, on the southern fringe of Chesapeake Bay.

Much of what we learned in grade school about the New World encountered by the colonists at Jamestown turns out to be wrong. In movies and textbooks the colonists are often depicted as arriving in a pristine forest of ancient trees, small bands of Indians gliding, silent as ghosts, beneath the canopy. But the idea that the English were "settlers" of land that was unsettled before they arrived is complete nonsense. In fact, three English ships landed in the middle of a small but rapidly expanding Indian empire called Tsenacomoco.

Three decades before, Tsenacomoco had been a collection of six separate chiefdoms. By the time the foreigners came from overseas, its paramount chief, Powhatan, had tripled its size to about 8,000 square miles (21,000 square kilometers) and more than 14,000 people. Wary, politically shrewd, ruthless when needed, Powhatan was probably in his 60s when the English landed—a "goodly old man, not yet shrinking" with age, according to colonist Strachey, "well beaten with many cold and stormy winters," but still "of a tall stature and clean limbs." His sphere of influence stretched from the Potomac to Cape Henry.

Most of Powhatan's people (known by the colonists as the Powhatan Indians) lived in villages of a few hundred inhabitants surrounded by large tracts of cleared land: cornfields and former cornfields. Except for defensive palisades, the landscape was unfenced. By a quirk of evolutionary history, North America had, except for dogs, no
large domesticable mammals; its native species, such as bison and deer, could not be tamed. With no horses, cattle, sheep, goats, or chickens to tend, villagers had no need to enclose their fields.

Between the villages was the forest, splendid with chestnut and elm but hardly untouched. "It was touched, and sometimes heavily," says Donald Young, an ecologist at Virginia Commonwealth University in Richmond. In the fall, Indians burned the underbrush, keeping the forest so open and parklike, colonist John Smith wrote, that "a man may gallop a horse amongst these woods." With Indian villages dotting the region's many riverbanks, the Chesapeake Bay was a jumble of farm fields, marshes, deep forest, and secondary forest (young trees growing on abandoned plots). Jamestown peninsula was an example of the last; it had been cleared, perhaps for farm fields, a generation or two before the English arrived.

The new colony was a private enterprise funded by a group of venture capitalists called the Virginia Company. Much like investors in today's dot-com start-ups, the backers wanted a quick return. They believed, incorrectly, that the Chesapeake Bay region was laden, like Mexico and Peru, with vast stores of gold and silver. The goal was to acquire these precious metals as expeditiously as possible. Spain, too, believed that gold and silver could be found there. It had long ago claimed what is now the U.S. East Coast for itself and in 1570 had planted a mission a few miles north of Jamestown.

The local Indians wiped out that mission. English colonists who settled on Roanoke Island 110 miles (180 kilometers) south of Jamestown in the 1580s may also have met their end at the hands of a native group—very possibly the Powhatan. Nonetheless the Virginia Company directors worried more about protecting their investment from distant Spain than from the Indians. They instructed the colonists—their employees, in today's terms—to settle far from the ocean, "a hundred miles [160 kilometers] from the river's mouth," which would minimize the chance of sudden assault by Spanish ships. And they told them to make sure the settlement was close to a deepwater anchorage, so they could lay up "provisions with ease." In all they did, the directors warned, the colonists should act with "great care not to offend the Naturals [Indians]."

Jamestown was the result. Not wanting to antagonize Powhatan, the newcomers—tassantassas (strangers), as the Indians called them—looked for uninhabited ground. Because native villages occupied all the good land upriver, the colonists ended up picking a site about 35 miles (55 kilometers) from the mouth of the James. It was a peninsula near a bend in the river, at a place where the current cut a deep channel so close to the shore that oceangoing ships could be moored to the trees.

Alas, there was a reason no Indians lived at Jamestown: It was not a good place to live. The English were like the last people moving into a subdivision—they ended up with the least desirable property. Their chosen site was marshy, mosquito-ridden, and without fresh water. Buckets could be dipped into the James, of course, but the water was potable only part of the year. During the summer, the river falls as much as 15 feet (5 meters). No longer pushed back by a big flow of fresh water, the salty water of the estuary spreads upstream, stopping right around Jamestown.
Worse, sediments and organic wastes from the head of the river get trapped at the saltwater boundary. The colonists were drinking some of the dirtiest water in the James—"full of slime and filth," complained Jamestown president George Percy.

By the end of September, nearly half of the original 104 colonists had died. Percy attributed most of the deaths to "mere famine," but he was wrong, in the view of the late historical geographer Carville Earle. The river teemed with fish in the summer—especially big, meaty Atlantic sturgeon—and the English caught and ate them. (Archaeologists at Jamestown have uncovered remains from a sturgeon as long as 14 feet [4 meters].) Instead, Earle argued, the colonists were killed by "typhoid, dysentery, and perhaps salt poisoning." All are associated with contaminated water. During winter the water would have cleared, but not in time to help the tassantassas. Many had been too sick that summer to tend the company gardens. Initially the strangers hoped to trade with the Indians for food while they spent their days hunting for gold, but the region was deep into a multiyear drought, and the Indians did not want to part with what little food they had. By January, only 38 colonists were alive—barely.

Within months, John Smith took charge of Jamestown. His wily, sometimes brutal diplomacy allowed the foreigners to extract enough food from Tsenacomoco villages to survive the next winter. This was quite a feat—with the arrival of two more convoys, the number of mouths at Jamestown had risen, even with all the deaths, to about 200. Despite his successes, Smith, a yeoman's son, managed constantly to irritate his social betters in the Virginia Company's leadership. Worse for the colony, he left for medical treatment in England in the fall of 1609. He had suffered terrible burns when a bag of gunpowder he had fastened around his waist accidentally ignited. In his absence, things deteriorated. That winter, the death toll again was high.

Although Jamestown was nearly defenseless, Powhatan didn't attack. For the first year or two of the colony's existence, he seems to have decided that the foreigners' trade goods—guns, axes, glass beads, and copper sheets, which the Indians prized much the way Europeans prized gold ingots—were worth giving up some not-very-valuable real estate. In addition, Powhatan was probably convinced that the tassantassas would die off without his assistance, suggests Helen Rountree, an emerita anthropologist at Old Dominion University, in Norfolk, and the most prominent historian of Tsenacomoco. He could sit back and wait; the invasion from abroad would end itself.

Things would get ugly before Powhatan was proved wrong. By the beginning of 1610, the settlers at Jamestown were dining on "dogs, cats, rats, and mice," Percy wrote, as well as the starch for their Elizabethan ruffs, which could be cooked into a kind of porridge. With famine "ghastly and pale in every face," some colonists stirred themselves to "dig up dead corpse[s] out of graves and to eat them." One man murdered his pregnant wife and "salted her for his food." When John Rolfe arrived that spring, only about 60 people at Jamestown had survived what was called "the starving time."

Rolfe himself barely made it to Virginia. Almost a year before—June 1609—nine ships had left England, carrying 500 new colonists, Rolfe among them. Not far from landfall, a hurricane slammed into the expedition. Rolfe's vessel
twisted so much in the waves that the caulking popped from its seams. For three straight days every man aboard, many "stripped naked as men in galleys," worked pumps and bucket chains. The voyagers were near collapse when the ship ran aground on an unpeopled island in the Bermudas. For nine months, Rolfe and the other survivors recovered on the island, catching fish, wild hogs, and sea turtles and assembling two small boats from the wreckage of their ship. They staggered into Jamestown on May 24, 1610, a year after leaving London.

Appalled by what they found and with limited supplies, Rolfe's group quickly decided to abandon Jamestown. They loaded the skeleton-like survivors into boats, intending to set off for Newfoundland, where they would beg a ride home from fishing vessels that plied the Grand Banks. As they waited for the tide to turn for their departure, they saw three ships approaching. It was yet another convoy, this one amply supplied and containing a replacement governor and 150 more colonists. The old colonists, despondent, returned to the task of figuring out how to survive.

It wasn't easy. At least 6,000 people came to Virginia from England between 1607 and 1624. More than three out of four died.

The central mystery of Jamestown is why the badly led, often starving colonists were eventually able to prevail over the bigger, better-organized forces of the Powhatan empire. In other parts of the Americas, colonizers had their way smoothed for them, so to speak, because they landed in places that already had been devastated by Eurasian illnesses like smallpox, measles, and typhoid—diseases that had not existed in the Americas. When the Pilgrims came to Massachusetts in 1620, for instance, they established Plymouth village literally on top of an Indian village that had been emptied two years before by an epidemic (apparently spread by survivors of a French vessel that shipwrecked on Cape Cod). In Virginia, despite previous contact with Europeans, the Powhatan had somehow avoided any epidemics and were going strong when the Jamestown colonists arrived. Yet by the late 17th century, the Powhatan too had lost control of their land. What happened?

One answer emerging points to what historian Alfred Crosby calls "ecological imperialism." The tassantassas replaced or degraded so much of the native ecosystem that they made it harder and harder for the Indians to survive in their native lands. As the colonists bitterly came to realize that Virginia had no gold and that the Indians weren't going to selflessly provide them with all the food they needed, they began to mold the land to their needs. Unable to adapt to this foreign landscape, they transformed it into a place they could understand. In doing so, they unleashed what would become a multilevel ecological assault on North America. Their unlikely weapons in this initial phase of the campaign: tobacco, honeybees, and domestic animals.

Most historians think it unlikely that Pocahontas saved John Smith's life. Smith was sent off to explore the headwaters of the Chickahominy River in December 1607, in a canoe with two English companions and two Indian guides. One hope was that the river might be the entrance to the long-rumored passage between the Atlantic and Pacific Oceans. The expedition was intercepted by a force led by Opechancanough, Powhatan's powerful brother.
Opechancanough brought his captive to Powhatan, who lived on the north bank of the York River. In Smith's telling, the leader decided to execute him after a public feast. Executioners "being ready with their clubs to beat out his brains, Pocahontas, the king's dearest daughter," then perhaps 11 years old, suddenly rushed out and cradled Smith's head in her arms "to save him from death." Fondly indulging his daughter's crush, Powhatan commuted Smith's sentence and returned him to Jamestown with food.

Historians don't buy this account, published in 1624, not least because Smith also described his capture a few months after it happened, in a report not intended for publication, and said nothing about being saved by an Indian maiden. Overall, the two versions of Smith's Virginia adventures are similar, except the one intended for the bookstores presents the events with a melodramatic flourish. Being saved from death by a lady's intervention was a favorite motif in Smith's tales. True or not, the story of Smith's rescue has overshadowed a more important bit of history: Pocahontas actually did help save the colony—by marrying John Rolfe six years later.

Evidence suggests Pocahontas was a bright, curious, mischievous girl, one who, like all girls in Tsenacomoco, went without clothing until puberty. Her real name was Matoaka; Pocahontas was a teasing nickname that meant something like "little hellion." When Pocahontas visited Jamestown after Smith's return, Strachey remembered, she got the boys to turn cartwheels with her, "falling on their hands turning their heels upwards, whom she would follow, and wheel so her self naked as she was all the fort over."

The English appear to have liked the girl—but not enough to prevent them from abducting her in 1613. They demanded that Powhatan return the English guns he had acquired, but the leader refused to negotiate with people he must have regarded as criminals. Perhaps Pocahontas was angered by her father's refusal to ransom her. Perhaps she liked being treated royally by the English, who viewed her as a princess. Perhaps Pocahontas, by then a teenager, simply fell in love with one of her captors—decorous, pious, politically adept John Rolfe, who for his part seems to have truly fallen for her. In any case, she agreed to stay in Jamestown as Rolfe's bride.

Both Powhatan and Jamestown's leaders seem to have viewed Pocahontas's marriage as a de facto nonaggression treaty. As relations eased, the foreigners were given free rein to grow tobacco. In Tsenacomoco, the custom was for families to farm their plots and then let them go fallow when yields declined. Any land not currently being planted became common hunting or foraging grounds until needed again for farms. Rolfe and the other tassantassas found a loophole in the system. To them, the Indians' unfenced land looked unused—no matter that it was purposely kept open by burning, and constantly traversed by hunting and gathering parties. The English cleared this "vacant" land to plant tobacco, but instead of abandoning fields as they were depleted, gave them over to cattle and horses. Rather than cycling the land between farm and forest, they divided it into parcels and kept them in continuous agricultural use—permanently keeping prime farm and forage land away from the James River societies, pushing the Indians farther and farther away from the shore.
Tobacco fueled an addiction for more and more land. The Indians had long grown the crop, but only in small amounts, and in fields that mixed different plants. Driven by the English demand, the colonists covered big stretches of land with *N. tabacum*. Neither natives nor newcomers understood the environmental impact of growing it on a massive scale. "Tobacco has an almost unique ability to suck the life out of soil," says Leanne DuBois, the agricultural extension agent in James City County. "In this area, where the soils can be pretty fragile, it can ruin the land in a couple of years." Constantly wearing out their fields, the colonists cleared ever more forest, leaving behind sparse pastureland.

Even in their own villages and farm fields, the Indians couldn't escape the invasive species brought by the English—pigs, goats, cattle, and horses. Indians woke up to find free-range cows and horses romping through their fields, trampling the harvest. If they killed the beasts, gun-waving colonists demanded payment. To the English, the whole concept of a "civilized" landscape was one in which ownership of the land was signaled by fencing fields and raising livestock. After all, England had more domestic animals per capita than most other European nations. "They looked down on the Indians because they had no domestic animals," says Virginia DeJohn Anderson, a historian at the University of Colorado at Boulder. At first the imported animals didn't do well, not least because they were eaten by starving colonists. But during the peace after Pocahontas's marriage, they multiplied. Colonists quickly lost control of them.

The worst may have been the pigs. Smart, strong, constantly hungry, vicious when crossed, they ate nuts, fruits, shellfish, and corn, turning up the soil with their shovel-like noses in search of edible roots. Among these was tuckahoe, a starchy tuber the Indians relied on when times were hard and their corn crops failed. The pigs liked it, too. The natives found themselves competing for food with packs of feral pigs.

But the largest ecological impact may have been wreaked by a much smaller, seemingly benign domestic animal: the European honeybee. In early 1622, a ship arrived in Jamestown that was a living exhibit of the Columbian exchange. It was loaded with exotic entities for the colonists to experiment with: grapevine cuttings, silkworm eggs, and beehives. Most bees pollinate only a few species; they tend to be fussy about where they live. European honeybees, promiscuous beasts, reside almost anywhere and pollinate almost anything in sight. Quickly, they swarmed from their hives and set up shop throughout the Americas.

The English imported the bees for honey, not to pollinate crops—pollination wasn't widely understood until the late 19th century—but feral honeybees pollinated farms and orchards up and down the East Coast anyway. Without them, many of the plants the Europeans brought with them wouldn't have proliferated. Georgia probably wouldn't have become the Peach State; Johnny Appleseed's trees might never have borne fruit; Huckleberry Finn might not have had any watermelons to steal. So critical to European success was the honeybee that Indians came to view it as a harbinger of invasion; the first sight of one in a new territory, noted French-American writer Jean de Crèvecoeur in 1782, "spreads sadness and consternation in all [Indian] minds."
The question arises: If the colonists were pushing Powhatan out of Tsenacomoco, why didn’t he push back? Clearly the Indians were more numerous and understood the terrain better. They were also well armed—colonial matchlocks were less accurate than native bows and took longer to reload. One answer is that Powhatan was slow to realize the foreigners would not self-destruct after all. Year after year, they died by the scores, amply proving to him that the English didn’t know how to survive in America. Yet new shiploads just kept coming. Although Powhatan sent representatives to London, he apparently didn’t understand the implications of their reports of its dense population. England could keep replacing colonists, no matter how many died. By the time he realized this, Powhatan was an old and tired man who had lost his appetite for what would have been a bloody enterprise.

Yet this doesn’t explain why his brother Opechancanough, who was distrustful of the tassantassas and took the reins after Powhatan’s death in 1618, didn’t simply destroy the colony. He did organize a violent surprise attack in 1622 that killed almost a third of the English, but despite ongoing skirmishes, he didn’t follow up with another sustained assault for 22 years, by which time the colony was firmly established. Nor does it explain why adjacent Indian groups didn’t strike the foreigners either. One possible reason is that, by then, the English hadn’t just made the landscape inhospitable. It had turned deadly.

The first known Thanksgiving in English America was celebrated on December 4, 1619, at Berkeley Hundred, a brand-new plantation about 30 miles (50 kilometers) west of Jamestown. Thirty-eight fresh tassantassas had arrived there earlier that day with a deed awarding them title to 8,000 acres (3,200 hectares). (This transaction likely occurred without consulting the original inhabitants.) Like Jamestown, Berkeley Hundred was a private, for-profit enterprise backed by venture capitalists in England. The main order of business: Grow as much tobacco as possible. But the financial backers also watched out for their employees’ spiritual welfare. The day of arrival, they instructed, should be "yearly and perpetually kept holy as a day of thanksgiving to Almighty God." After unloading their baggage, the tassantassas knelt in prayer on the cold shore.

History has not recorded where these kneeling men came from, but records suggest a substantial fraction—as much as a third—of the immigrants in Virginia before 1640 were from the marshes of southern and eastern England. In the 17th century, these areas were rampant with malaria. It was not unusual for 10 or 20 percent of the marsh population to die in a single year, according to Mary Dobson, a medical historian. In contrast to the rest of England, burials outstripped baptisms during much of the 17th and 18th centuries. Little wonder people from these areas wanted to emigrate to the Americas.

But rather than escaping malaria, the colonists brought the disease with them, thanks to the marvelously complicated life cycle of the single-celled plasmodium parasite that causes it. It spends its early stages in the gut of several species in the *Anopheles* mosquito genus. When these mosquitoes bite people, plasmodia swim into their bodies. Once in their new home, the parasites transform themselves into tiny creatures called merozoites, which eventually pop out of red blood cells in synchronized assaults—every 48 hours for *Plasmodium vivax*, the species
first introduced into the Americas. Reacting in frenzy to the attack, the body's immune system sets off waves of intense fever and chills.

This type of malaria rarely kills victims directly, but leaves them weak for months, until the body gradually fights it off. But *P. vivax* can hide for as long as five years in the liver of sufferers who appear to have run it out of their systems, producing full-blown malarial relapses every six to nine months. Others can have the disease but show no symptoms, turning people in seeming good health into carriers.

In theory, it would take only one such carrier to arrive at Jamestown and get bitten by one of the mosquito species that inhabit the East Coast to establish malaria in the entire continent. In this way, one or more colonists must have "infected" the New World's mosquitoes with the parasite for malaria. "It's a bit like throwing darts," said Andrew Spielman, the late Harvard professor of tropical public health. "Bring enough sick people in contact with enough mosquitoes, and sooner or later you'll hit the bull's-eye—you'll establish malaria."

By 1657 the colonial physician and politician John Winthrop (son of the famed, identically named governor of Massachusetts Bay Colony) was commonly encountering what we now know as malaria in the course of his work. According to Robert Charles Anderson, the genealogist who is transcribing Winthrop’s medical journal, the disease was probably well established in the Massachusetts colony by 1640. Since many more early colonists went to Virginia than Massachusetts, malaria could have been stalking the Tidewater there as early as the 1620s. This is speculative, but not implausible. Once malaria has a chance to get into a place, said Spielman, "it usually gets in fast."

If malaria arrived early, it may help explain why Opechancanough never mounted a sustained fight against the colonists, even when it became a matter of survival to his people. Malaria effectively saps the vitality of entire regions. In England’s malaria belt, marshlanders were routinely dismissed as stupid, apathetic, and fatalistic. Similar abuse was heaped on the settlers at Jamestown; Strachey was one of many who denounced what he saw as their propensity for "sloth, riot, and vanity." But at least England could ship in new colonists rapidly. The Indians could not. If a substantial fraction of their population was malarious, it would have limited their ability to attack the colonists. From the native point of view, it would have been as if the environment around them had suddenly become toxic.

No matter how the parasite was actually introduced to Virginia, we know that malaria spread throughout the East Coast, eventually playing a major part in the pageant of U.S. history. Without malaria, slaves would have been less desirable to southern planters: Most people from tropical Africa are resistant to the plasmodium parasite, the product of millennia of evolution in its presence. The disease became especially endemic in the Carolinas, where it crippled the army of British Gen. Charles Cornwallis during the Revolutionary War. England had by that time drained its marshes and largely been freed of malaria. Meanwhile, the colonists had become seasoned. "There was a big imbalance. Cornwallis's army was simply melting away," says J. R. McNeill, an environmental historian at
Georgetown University. McNeill takes pains to credit the bravery of the Revolution’s leaders. But a critical role was played by what he wryly refers to as “revolutionary mosquitoes.” Cornwallis surrendered, effectively ending the war, on October 19, 1781.

By then the Columbian exchange was in full swing. The Atlantic coast was dotted with monoculture fields devoted to such alien crops as wheat, rice, and West Indian tobacco. Black rats from Europe were devouring Indian corn stores from Maine to Florida. Meanwhile, European farmers were adopting New World plants like corn, potatoes, and tomatoes; chili peppers, unknown in Asia before Columbus, were on their way to taking over Indian, Thai, and Chinese kitchens.

No longer maintained by Indian burning, the shrinking forests of the East would become choked with underbrush—the overgrown, uninhabited “wilderness” celebrated by Thoreau. In the 1800s, the great grasslands of the Midwest, once kept open by native burning, began filling with trees. With the Indians vanquished by disease, some archaeologists believe, species they had formerly hunted, such as the passenger pigeon, experienced a population explosion.

On the James River, where the process began, land-clearing sped runoff and increased the river flow, sweeping aside the mats of vegetation that lined its banks in Powhatan’s day. With its plantations, tobacco fields, and rolling meadows, the landscape of the Chesapeake Bay had been utterly transformed. It looked more like England than it had when Jamestown began, but it wasn’t at all the same. Four centuries ago, the English didn’t discover a New World—they created one.
Directions: Match each statement with the correct free enterprise characteristic. Each statement is a description of Jamestown’s economy taken from the reading sources.

1) By 1612, John Rolfe experimented with planting a new variety of tobacco, a mild Spanish leaf, which he anticipated would be more suited to English tastes than the bitter Indian variety.

2) The Company expected the colonist to start industrial enterprises in Virginia that would return profits to the Company.

3) Another legacy of Jamestown is the right of individuals to own property.

4) After a couple of years, he met with great success and was busily marketing his crop among English merchants and tobacco sellers.

5) Success with tobacco would not have been possible without the right of individuals to own private property.

6) Tobacco was shipped to England where it was sold to buy goods or to purchase more labor.

7) The colonists in Virginia tried a number of different enterprises: silkmaking, glassmaking, lumber, sassafras, pitch and tar, and soap ashes, with no financial success.

8) Settlers continued to barter with the Indians, as they had from the beginning, in order to meet their daily needs.

9) It was John Rolfe’s experiments with tobacco that developed the first profitable export.

10) With profits from tobacco, wealthy Virginia planters could purchase luxury goods from around the world.

CHOICES: (choices may be used more than once)

A) Economic Freedom
B) Voluntary Exchange
C) Private Property Rights
D) Profit Incentive
E) Competition
Assessment key

Directions: Match each statement with the correct free enterprise characteristic. Each statement is a description of Jamestown’s economy taken from the reading sources.

A 1) By 1612, John Rolfe experimented with planting a new variety of tobacco, a mild Spanish leaf, which he anticipated would be more suited to English tastes than the bitter Indian variety.

D 2) The Company expected the colonist to start industrial enterprises in Virginia that would return profits to the Company.

C 3) Another legacy of Jamestown is the right of individuals to own property.

E 4) After a couple of years, he met with great success and was busily marketing his crop among English merchants and tobacco sellers.

C 5) Success with tobacco would not have been possible without the right of individuals to own private property.

B 6) Tobacco was shipped to England where it was sold to buy goods or to purchase more labor.

A 7) The colonists in Virginia tried a number of different enterprises: silkmaking, glassmaking, lumber, sassafras, pitch and tar, and soap ashes, with no financial success.

B 8) Settlers continued to barter with the Indians, as they had from the beginning, in order to meet their daily needs.

D 9) It was John Rolfe’s experiments with tobacco that developed the first profitable export.

D 10) With profits from tobacco, wealthy Virginia planters could purchase luxury goods from around the world.

CHOICES: (choices may be used more than once)

A) Economic Freedom
B) Voluntary Exchange
C) Private Property Rights
D) Profit Incentive
E) Competition
Overview: In this activity, the students will analyze a work of art located in Mississippi Museum of Art by brainstorming subject matter that relates to the picture. This activity will also reinforce the economic concept of human resource (also known as labor).

Objective: Students will:
- Interpret a work of art
- Know that human resource (labor) is work that people do
- Apply the economic concept to the work of art

Voluntary National Standards in Economics
- Content Standard 1: Scarcity - Students will understand that: Productive resources are limited. Therefore, people can not have all the goods and services they want; as a result, they must choose some things and give up others.
- Content Standard 4: Trade – Students will understand that voluntary exchange occurs when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and among individuals or organizations in different nations.

Mississippi Economic Standards
- Standard 1 – Understand that the nation’s overall economy is characterized by the interaction of spending and production decisions.
- Standard 4 - Understand that resources are limited and therefore choices must be made.

Time Frame: one class day

Procedure:
- Divide students into groups.
- Give each group VISUAL 1 (laminate each print to preserve for future use).
- Give each group a pad of sticky notes.
- Give each group HANDOUT 1. There are two parts in this handout.
- Read over the handout and go over, with the students, what they are supposed to complete:
  - (Part 1) Brainstorm words, phrases, or sentences related to the work of art.
    - Each student must observe one aspect of the work of art and record observation on a sticky note. Observations can relate to subject matter, interpretation, elements of art, art history, or general critical observation, depending on what subject you teach. Ask students various questions to guide them: what type of clothes are they wearing, can you determine location, what do you notice about facial expressions, what do you think they do for a living, what time period do you think this is, observe their hands, and do on.
  - When everyone in your group has documented one observation on a sticky note, place the sticky notes around the work of art so each group member may see them.
  - (Part 2) EACH group member should write one paragraph (4-5 sentences) using ALL the words/phrases generated by the group. This paragraph should incorporate at least one observation from each sticky note. This is a way for all group members to discuss their individual observations while preparing what will be discussed in class.
After each group has had time to write their paragraphs, conduct a class discussion on the painting. (Various strategies are listed below)

- You can randomly call on various students to read aloud their paragraphs. Discuss the various sentences/paragraphs.
- Have each student write words/phrases on butcher paper. Instruct one group to read all words/phrases related to the work of art. As this group reads, the other groups should place a checkmark beside their words/phrases that are similar to the group that is reading aloud. When that group finishes, then ask the next group to read their words/phrases that were different (not checked off) from the first group. As the second group reads, the other groups mark off their words and phrases. Keep rotating until all groups have read. This allows all the students to share words/phrases without repeating the same words/phrases.
- Have a class discussion.
- Popcorn read: Instruct a student to read his/her paragraph. That student will then call on someone in class to read his/her paragraph. Keep doing this until you call time.

After the completion of HANDOUT 1, tell students ONLY the title of the piece of art (Title: Sharecroppers). If they do not understand about sharecropping, share with them the following information:

- Information on sharecropping:
  - In sharecropping land owners provided sharecroppers with a house and a plot of land, as well as all the seed, fertilizer, and tools necessary to cultivate crops. Owners dictated what crops were to be raised and supervised laborers who worked in the fields. In exchange the sharecroppers worked the fields from seed through harvest.
  - At harvest the entire crop was given to the owner, who sold it. After deducting the cost of supplies for which the owner had paid, the owner shared the remaining profits with the sharecroppers. Sharecroppers usually received between one-third and one-half of the remaining profits.
  - When the weather was poor or prices for the crops were low, profits often did not cover much more than the cost of supplies. Sharecroppers frequently wound up in debt. Sharecroppers who managed to make a profit and save money eventually gained more independence as farmers. Some moved to their own farms, while many who could not afford land became tenant farmers.

Next, tell the students they will complete HANDOUT 2, which will introduce an economic concept called factors of production. Tell the students as they read the definitions of the factors of production, think about which factor would represent this piece of art. Give the students about 15 minutes to complete Handout 2. Once students are finished with Handout 2, ask students which factor of production do they think applies to this piece of art and why.

- ANSWER IN HANDOUT 2: LABOR (HUMAN RESOURCE); represents people doing work

Give each student HANDOUT 3. Instruct the students to read the background of the painting and complete the questions on Handout 2. Discuss once they are finished.
HANDOUT 4 is the assessment for this lesson. This assessment is a tactile activity that will engage the students in applying the factors of production to various examples. There are two ways you can complete this activity:

1) give each student Handout 4, instructing them to cut each example and glue in the appropriate column (this will take longer to complete)

2) teacher laminates enough copies of Handout 4 for each group; cut out each example; place examples and one chart in a sheet protector; give one sheet protector packet (with laminated pieces) to each group; group members work together placing each example in the appropriate column (this is the suggested method...you will be able to use the pieces for future use)

3) A key is provided.
HANDOUT 1

Group Instructions:
- (Part 1) Brainstorm words, phrases, or sentences related to the work of art.
  - Words/phrases/sentences can relate to subject matter, interpretation, elements of art, art history, or general critical observation.
  - Each student must observe one element of the work of art and record observation on a sticky note.
- When everyone in your group has documented one observation on a sticky note, place the sticky notes around the work of art so each group member may see them.
- (Part 2) EACH group member should write one paragraph (4-5 sentences) using ALL the words/phrases generated by the group.
- Last, each group member should read aloud his/her paragraph.

Part 1 Documentation:

What is your word or phrase that you wrote on your sticky note?

Part 2 Documentation:

Write one paragraph (2-5 sentences) using all the words/phrases generated by your group.
1) Factors of production is defined as resources used in the production of goods and services. There are four factors of production – land, labor, capital, and entrepreneurship. Look at the picture below to see how each factor is defined.

Reflect on the work of art and the various observations made by your classmates. Which one of the four factors of production do you believe this work of art best represents? Explain your answer.

2) After discussing Question #1, read HANDOUT 3 and answer the following questions.

a) What inspired the artist to paint this picture?

b) What year was this picture painted?

c) Due to the Great Depression, what were these two men doing?
This double portrait is of two men who served as models for approximately twenty paintings that Marie Hull accomplished during the thirties. Marie Hull was the only Mississippi artist invited to exhibit in the Golden Gate Exposition in 1939 in San Francisco.

The sharecropper paintings evolved naturally. The Depression, spring floods and crop failure all contributed to the dire conditions in which these noble men found themselves. They were going around Jackson sharpening scissors or doing any other day labor that might provide a little money. They were people of integrity and character who were down on their luck. Hull commented, “They were, I think, among the finest things I’ve ever done, but I was doing them for quality, not sentimental appeal.”


Title of Art: Marie Hull (1890-1980), Sharecroppers, 1938, oil on canvas.
<table>
<thead>
<tr>
<th>LAND</th>
<th>LABOR</th>
<th>CAPITAL</th>
<th>ENTREPRENEURSHIP</th>
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<tbody>
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</tbody>
</table>
Handout 4 (older kids)

Directions: Cut out each example and determine if it is land, labor, capital, or entrepreneurship. Place each example in the appropriate column.

<table>
<thead>
<tr>
<th>COMPUTER</th>
<th>TIMBER (TREES)</th>
<th>DOCTOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTIST</td>
<td>BUSINESS OWNER</td>
<td>MECHANIC</td>
</tr>
<tr>
<td>FRESH TUNA (NOT CANNED)</td>
<td>LADDER</td>
<td>CRUDE OIL</td>
</tr>
<tr>
<td>DUMP TRUCK</td>
<td>INNOVATOR</td>
<td>NAILS</td>
</tr>
<tr>
<td>TRACTOR</td>
<td>PAINTBRUSH</td>
<td>MINERALS (IRON ORE)</td>
</tr>
<tr>
<td>COMPUTER</td>
<td>TIMBER (TREES)</td>
<td>DOCTOR</td>
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<tr>
<td>----------------</td>
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<td>----------</td>
</tr>
<tr>
<td>capital</td>
<td>land</td>
<td>labor</td>
</tr>
<tr>
<td>ARTIST</td>
<td>BUSINESS OWNER</td>
<td>MECHANIC</td>
</tr>
<tr>
<td>labor</td>
<td>entrepreneurship</td>
<td>labor</td>
</tr>
<tr>
<td>FRESH TUNA (NOT</td>
<td>LADDER</td>
<td>CRUDE OIL</td>
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<tr>
<td>CANNED)</td>
<td>capital</td>
<td>land</td>
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<tr>
<td>land</td>
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<tr>
<td>DUMP TRUCK</td>
<td>INNOVATOR</td>
<td>NAILS</td>
</tr>
<tr>
<td>capital</td>
<td>entrepreneurship</td>
<td>capital</td>
</tr>
<tr>
<td>TRACTOR</td>
<td>PAINTBRUSH</td>
<td>MINERALS</td>
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<td>capital</td>
<td>capital</td>
<td>(IRON ORE)</td>
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<td></td>
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<td>land</td>
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Overview: In this activity, the students will write a short story by interpreting Rabbit Hunter by Biney Times. Through this activity, students will apply basic economic concepts.

Objective: Students will:
- Define basic economic concepts – scarcity, factors of production, choices, cost/benefit analysis
- Interpret a work of art
- Apply four basic economic concepts within their short story

Voluntary National Standards in Economics
- **Content Standard 1: Scarcity** - Students will understand that: Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.
- **Content Standard 2: Decision Making** - Effective decision making requires comparing the additional costs of alternatives with the additional benefits. Many choices involve doing a little more or a little less of something; few choices are “all or nothing” decisions.
- **Content Standard 3: Allocation** - Students will understand that different methods can be used to allocate goods and services. People acting individually or collectively must choose which methods to use to allocate different kinds of goods and services.
- **Content Standard 9: Competition and Market Structure** - Students will understand that competition among sellers usually lowers costs and prices, and encourages producers to produce what consumers are willing and able to buy. Competition among buyers increases prices and allocates goods and services to those people who are willing and able to pay the most for them.

Mississippi Economic Standards
- **Standard 1** – Understand that the nation’s overall economy is characterized by the interaction of spending and production decisions.
- **Standard 4** - Understand that resources are limited and therefore choices must be made.
- **Standard 5** – Understand that markets exist when buyers and sellers interact and engage in exchange.

Procedure:
- Give each student Handout 1: BASIC ECONOMIC CONCEPTS.
- Instruct them to read the paragraph and answer the questions.
- Discuss the fundamental problem in economics and factors of production. Lesson 3 has an additional assessment on factors of production if you wish to use (matching).
- Give each student Visual 1 (work of art) and Handout 2: INTERPRETATION OF ART.
- Instruct the students to complete the handout by interpreting the photo. The students will use this handout to create a short story based on the photo. This will be the evidence they will use for the short story.
- After students have completed HANDOUT 2, explain to them they will be writing a short story based on what they think is happening in the photo.
  - Give them HANDOUT 3, HANDOUT 4, and HANDOUT 5.
    - Handout 3 will help guide the writing process.
    - Handout 4 is the grading rubric.
    - Handout 5 is where they will write the short story.
  - When the students are finished, they should write the short story.
    - Remind them to use the evidence from the interpretation handout.
    - Remind them to include 4 economic concepts in the short story.
Assessment: The student's short story will be the final assessment. A rubric if provided.
INFORMATION

Economics is the study of the production and consumption of goods and services. However, there is a lot more about studying economics than just buying and selling goods and services. The fundamental (or basic) problem in economics is scarcity. Scarcity is defined as not having enough resources to produce everything we want. Because of scarcity, we have to make choices in how to allocate (or use) these scarce resources. These resources that are scarce are our factors of production – land (natural resources), labor (human resources), capital, and entrepreneurship (an innovator). When deciding how to use these resources, you have to think about the pros (benefits) and the cons (costs). For example, if you spend $10 to buy a new book, you cannot use that same $10 to buy a shirt. You will think about which item you really want – the book or the shirt. You can't buy both of them using the same $10. You must decide. Scarcity affects EVERYONE!

1) List and define all vocabulary words from the reading (they are in bold).

2) Because of scarcity, what must you do?

3) Who does scarcity affect?
The teacher will give you a work of art to interpret. Answer the following questions to help direct your interpretation. You will later use these answers to help write your short story concerning this work of art.

<table>
<thead>
<tr>
<th>QUESTION</th>
<th>ANSWER</th>
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<tbody>
<tr>
<td>What do you see in this picture?</td>
<td></td>
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<tr>
<td>What words would you use to describe this painting?</td>
<td></td>
</tr>
<tr>
<td>What words would you use to describe this painting?</td>
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<tr>
<td>What does this painting remind you of?</td>
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<tr>
<td>What can you tell me about the person in this painting? What can you tell me about how this person lived? What makes you say that?</td>
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<tr>
<td>What do you think is the most important part of this picture? Why?</td>
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<tr>
<td>What title would you give to this painting?</td>
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<tr>
<td>What do you think this painting is about? Why do you think that?</td>
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<tr>
<td>Why do you think other people should see this work of art?</td>
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<tr>
<td>What do you think is important to remember about this painting?</td>
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</tbody>
</table>
**Directions:** Using your answers from Handout 2, create a short story using this work of art as a background. Consider what was possibly going on in the picture. What do you think they did that day? Why? Do you think there were any conflicts/hurdles that day? Within your story, you must correctly APPLY four economic vocabulary words from Handout 2. Also, think about a hamburger when you write your short story. See picture below. Remember your short story is telling a story based on your interpretation of Visual 1 (work of art). Have fun and be creative!
<table>
<thead>
<tr>
<th>Score (circle one):</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td><strong>Numerical Grade:</strong></td>
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<tr>
<td><strong>Comments:</strong></td>
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**Handout 4: Grading Rubric**

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<td><strong>2</strong></td>
<td><strong>3</strong></td>
<td><strong>4</strong></td>
</tr>
<tr>
<td><img src="image1.png" alt="Image" /></td>
<td><img src="image2.png" alt="Image" /></td>
<td><img src="image3.png" alt="Image" /></td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td>□ Short story is not complete and does not reflect the photo.</td>
<td>□ Student uses evidence from art interpretation handout but the story is weak and confusing.</td>
<td>□ Student uses evidence from art interpretation handout in a thoughtful and coherent way.</td>
<td>□ Student uses evidence from art interpretation handout.</td>
</tr>
<tr>
<td>□ Did not include 4 economics concepts</td>
<td>□ Included only 2-3 economic concepts.</td>
<td>□ Included 3-4 economic concepts.</td>
<td>□ Included 4 economic concepts.</td>
</tr>
<tr>
<td>□ Work is not neat and clear</td>
<td>□ Work is unorganized.</td>
<td>□ Work is organized.</td>
<td>□ Work is neat and organized.</td>
</tr>
<tr>
<td>□ Work has many spelling and grammatical errors.</td>
<td>□ Work has some spelling and grammatical errors.</td>
<td>□ Very few spelling and grammatical errors.</td>
<td>□ No spelling or grammatical errors.</td>
</tr>
</tbody>
</table>

"You get a hot dog instead of the hamburger you ordered."

"You get the hamburger on time, but it is barely warm, missing it's top bun, and does not have the ketchup and mustard you requested."

"You get the hamburger you requested hot off the grill."

"You get the hamburger you requested hot off the grill and upgraded to a double-stack with all the toppings – for free!"
Overview: In this lesson, students take on the role as homeowner who finds a mysterious painting in the attic. She contacts her uncle, an art dealer, about the painting. He asks the homeowner various questions to identify the artist and name of the painting. Through these questions, students will interpret the painting. The students will then write a letter to the uncle detailing the analysis. They will later use the painting to create a production possibilities curve (economic concept). This concept shows a trade-off between two resources. The more you produce one thing (given your fixed resources), the less you produce something else. For example, if you use one person to assemble a car, that same person cannot be on the assembly line producing a truck.

Objective: The student will:
- Observe, interpret, and analyze a painting
- Write a letter using information obtained in analysis
- Create a production possibilities curve using resources from the painting.

Voluntary National Standards in Economics
- Content Standard 1: Scarcity - Students will understand that: Productive resources are limited. Therefore, people cannot have all the goods and services they want; as a result, they must choose some things and give up others.
- Content Standard 3: Allocation – Students will understand that different methods can be used to allocate goods and services. People acting individually or collectively must choose which methods to use to allocate different kinds of goods and services.

Mississippi Economic Standards
- Standard 4 - Understand that resources are limited and therefore choices must be made.

Procedure:
- Time: 1-2 classes (depends if you have block scheduling)
- Give each student Handout 1 and Visual 1.
- Read aloud the scenario:
  - You just bought an older home in the historic part of town. One day, as you were cleaning out the attic, you noticed a tightly wrapped item fit snugly in the corner. As you carefully unwrapped the item, bright colors began to emerge. It was an oil painting. You notice there was no signature on the painting, making it very difficult to determine the history of the painting. Your Uncle Robby is an art dealer so you call him to see if he can help you determine the artist and name of the painting. Your uncle gives you a list of questions to answer, asking you to later write him a letter detailing your analysis. He will then use this information to research the painting.
- After reading the scenario, instruct each student to complete the art analysis handout.
- After the students complete Handout 1, give each student Handout 2, instructing them to write a letter detailing their observation. Remind them they have to include their answers from Handout 1.
- After the students finish writing their letters, give them Handout 3. Read aloud definition of a production possibilities curve. Once students understand the graph, instruct them to create a PPC using the numbers provided in the chart (key below). Make sure they understand that there is an assumption that the hunter's resources are fixed and he can either gather pumpkins or hunt rabbit (but he can't be at two places at one time). Once students create a PPC, go over the correct answer.

Assessment: student's letter

Additional resource: https://www.youtube.com/watch?v=tW4G5IPpzFY (Jacob Clifford's EconMovies Monster Inc.) This would be a great clip to show students before complete Handout 3. This video clip will introduce the production possibilities curve.
You just bought an older home in the historic part of town. One day, as you were cleaning out the attic, you noticed a tightly wrapped item fit snugly in the corner. As you carefully unwrapped the item, bright colors began to emerge. It was an oil painting. You notice there was no signature on the painting, making it very difficult to determine the history of the painting. Your Uncle Robby is an art dealer so you call him to see if he can help you determine the artist and name of the painting. Your uncle gives you a list of questions to answer, asking you to later write him a letter detailing your analysis. He then will use this information to research the painting.

Below is the set of questions given to you to answer. Write your answers below. Once you have answered each question, write a letter to your uncle detailing your analysis. In your letter, be sure to use your answers from this handout. Your letter will be written on Handout 2.

1) (OBSERVATION) What are all the things that you see in the painting.
   1. What is the person wearing?
   2. What can you say about the pose: casual, playful, formal?
   3. Are there signs of an occupation or hobby?
   4. What else do you in the picture: animals, weapons, tools?
   5. Other things you see:

2) (INTERPRETATION) What meanings can you find in the painting? Think about (but don’t be limited to) the following questions:
   1. What title would you give to this painting?
   2. What sounds would this painting make?
   3. What can you tell us about the person in this painting?
   4. What do you think this painting is about? Why do you think that?
   5. Pretend you are inside this painting. What does it feel like?

3) (EVALUATION) Is the portrait a good work of art? Let the following questions act as a guide, but don’t be limited by them.
   1. Do you think this painting tells a story? If so, what?
   2. Why do you think other people should see this work of art?
Dear Uncle Robby,

Sincerely,
The fundamental problem in Economics is scarcity - a lack of resources to provide for all our unlimited wants. Because of scarcity, individuals have to make choices in how to use these resources. Each choice we make has a cost. For example, if you decide to go to the movie, you cannot use that same money to buy a new book. You either buy the movie ticket or buy the book. The book is what we call our opportunity cost – the next best choice given up when we choose something else. Another example: you can either watch a movie or use that time to study for your test. If you choose to watch the movie, your opportunity cost is studying for the test (and possibly a lower test grade). Economists teach this concept by using the production possibilities curve. The production possibilities curve shows the trade-offs between the many combinations (possibilities) of choices of production between two fixed resources. Look at the grade below.

In this illustration, you can either produce cars or trucks. You can produce anywhere on the green line (given your fixed amount of resources – people, machines, etc.). If you produce at Point A, you can produce 9 boats and 4 trucks. At Point C, you can produce 4 boats and 9 trucks. If you were producing at Point D, however, you will only be producing 4 boats and 4 trucks when you COULD be producing at Point A (9 boats and 4 trucks). This is called being INEFFICIENT. You are not using the resources you have (people are standing around, machines are not being used, etc.). At Point E, you would like to produce 9 boats and 9 trucks but you can’t since your resources are fixed on the green line. Point E is called UNATTAINABLE because you cannot attain that goal (combination).

Go back and look at the painting. The name of the painting is Hunter’s Paradise by Tina Mason (1954). Imagine the hunter in the painting can only do two things: gather pumpkins or hunt rabbits. Create your own production possibilities curve. Your graph will show a trade-off between these two activities and the various combinations for the hunter. Plot the points from the chart onto your graph.
LESSON 6

Overview: In this lesson, students will not only analyze a painting and learn how we are all connected in a community. There are two activities for this lesson. These activities are taken from the Never Too Young publication.

Objective: Students will:
- Know how communities are interdependent
- Know what type of goods and services the government provides (public v. private goods).
- Analyze a painting and apply interpretation to the two activities.

Voluntary National Standards in Economics

- Content Standard 1: Scarcity - Students will understand that: Productive resources are limited. Therefore, people can not have all the goods and services they want; as a result, they must choose some things and give up others.
- Content Standard 3: Allocation – Students will understand that different methods can be used to allocate goods and services. People acting individually or collectively must choose which methods to use to allocate different kinds of goods and services.
- Content Standard 4: Trade – Students will understand that voluntary exchange occurs when all participating parties expect to gain. This is true for trade among individuals or organizations within a nation, and among individuals or organizations in different nations.
- Content Standard 9: Competition and Market Structure – Students will understand that competition among sellers usually lowers costs and prices, and encourages producers to produce what consumers are willing and able to buy. Competition among buyers increases prices and allocates goods and services to those people who are willing and able to pay the most for them.
- Content Standard 10: Institutions – Students will understand that institutions evolve and are created to help individuals and groups accomplish their goals...A different kind of institution, clearly defined and enforced property rights, is essential to a market economy.
- Content Standard 13: Income - Income for most people is determined by the market value of the productive resources they sell. What workers earn primarily depends on the market value of what they produce.
- Content Standard 14: Entrepreneurship – Students will understand that entrepreneurs take on the calculated risk of starting new businesses, either by embarking on new ventures similar to existing ones or by introducing new innovations. Entrepreneurial innovation is an important source of economic growth.
- Content Standard 15: Economic Growth - Investment in factories, machinery, new technology, and in the health, education, and training of people stimulates economic growth and can raise future standards of living.
- Content Standard 19: Unemployment and Inflation Unemployment imposes costs on individuals and the overall economy. Inflation, both expected and unexpected, also imposes costs on individuals and the overall economy. Unemployment increases during recessions and decreases during recoveries.
Mississippi Economic Standards
- Standard 1 – Understand that the nation's overall economy is characterized by the interaction of spending and production decisions.
- Standard 4 - Understand that resources are limited and therefore choices must be made.
- Standard 5 – Understand that markets exist when buyers and sellers interact and engage in exchange.
- Standard 6 – Understand the personal economic consequences of spending and investment decisions made by individuals, businesses, and governments.

National Standards for Financial Literacy
- I. Earning Income: Income for most people is determined by the market value of their labor, paid as wages and salaries.
- II. Buying Goods and Services: People cannot buy or make all the goods and services they want; as a result, people choose to buy some goods and services and not buy others. People can improve their economic well-being by making informed spending decisions, which entails collecting information, planning, and budgeting.

Time Frame: 1-2 classes (depending if you have block scheduling)

Procedure:
1. Give each student a copy of the painting (VISUAL 1) or project the painting on your classroom whiteboard. Image can be downloaded at http://collection.msmuseumart.org/Obj3077?sid=251534&x=83122
2. Ask students to silently explore the painting, not letting their eyes settle on any one part for too long.
4. Ask students the following questions:
   a. What do you see?
   b. What makes you say that?
5. As students respond, their answers will be a mix of description and interpretation. For example, a student may indicate the presence of a train near the bottom center of the art work. Asking “What makes you say that?” will prompt them to describe how the line of rectangles along a pathway elevated over a grid of roads seems to represent a train.
6. Continue to have students describe the work, between each answer restate and connect previous student descriptions using terms from the Elements & Principles sheet to slowly create an overall description of the work.
7. As students begin to notice stylistic details such as not all objects have shadows, simply shapes are used repeatedly, buildings are the focal point of the work, etc. ask the question, “Why might the artist have done this?” or “How does it effect your interpretation of the work for the artist to have made this choice?”
8. Many of the following questions will be prompted by student discussion during class description of the work, for those which do not come up previously, end with questions similar to the ones below:
   a. What is the focal point of this work? Where does the artist seem to draw our eye? Why might she have done this?
   b. What types of interactions are central to this image? What types of actions are on the margins? How does this effect our experience of the work?
   c. What types of exchange might be taking place in this image? Indicate a specific object or set of objects in your answer.
   d. What types of transportation do you see? How do these different types of transportation relate to economic activity in this scene?
   e. What choices is the artist making to emphasize certain aspects of this scene over others? Why might the artist have made these choices?
   f. Does this city seem successful? What does it mean for a city successful? What might this city need? What are assets this city has? How might this city's success be effected if different parts were removed?

9. DISCUSSION: How are communities interdependent (in other words, how do they depend on each other)? What would happen if a business closed? Businesses buy supplies from other businesses; employees spend their paychecks in other stores; and so on.

10. After discussing the painting, complete Never Too Young Lesson 5: Entrepreneurs in the Community and Advertising

Assessment: An assessment for older students is included in this lesson.
Assessment

Name: _________________________________________________

Directions: Read each question carefully and answer using complete sentences. Think about the activities you completed in class when writing your answer.

1) How do businesses depend on one another?

2) What happens to the community if a business fails or closes?

3) There are many entrepreneurs within communities. Define entrepreneur and give one example.

4) Why is advertising important to businesses?
Assessment

Directions: Read each question carefully and answer using complete sentences. Think about the activities you completed in class when writing your answer.

1) How do businesses depend on one another?

Businesses buy supplies from other businesses; employees spend their paychecks in other stores; and so on.

2) What happens to the community if a business fails or closes?

Employees lose jobs and then won't be able to buy products or services from other businesses.

3) There are many entrepreneurs within communities. Define entrepreneur and give one example.

A person who starts a new business

4) Why is advertising important to businesses?

Through advertising, including the use of catchy slogans and logos, people become familiar with a business’s products.
**FAMOUS SLOGANS**

Matching: Match each company with the slogan they use in advertising their products.

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<td>1.</td>
<td>Wendy’s</td>
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<td>Walmart</td>
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<td>Rice Crispy</td>
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<td>American Express</td>
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<td>Disneyland / Disneyworld</td>
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<td>10.</td>
<td>Frosted Flakes</td>
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<td>CNN</td>
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<td>12.</td>
<td>Kit Kat</td>
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<td>13.</td>
<td>Red Lobster</td>
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<td>14.</td>
<td>Fox News</td>
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<td>Chick-fil-a</td>
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<td>16.</td>
<td>Allstate Insurance</td>
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<td>Burger King</td>
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<td>Life Alert</td>
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<td>Verizon Wireless</td>
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<td>Delta</td>
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<td>McDonalds</td>
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<td>KFC</td>
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<td>Little Caesars</td>
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<td>25.</td>
<td>Energizer</td>
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<td>26.</td>
<td>United Airlines</td>
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<tbody>
<tr>
<td>A.</td>
<td>Don’t leave home without it.</td>
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<tr>
<td>B.</td>
<td>I’m lovin’ it</td>
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<tr>
<td>C.</td>
<td>Gimme a break, gimme a break</td>
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<tr>
<td>D.</td>
<td>The most trusted name in news</td>
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<tr>
<td>E.</td>
<td>I’ve fallen and I can’t get up.</td>
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<td>F.</td>
<td>Just do it.</td>
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<td>G.</td>
<td>Keeps going and going and going.</td>
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<tr>
<td>H.</td>
<td>You’ll love the way we fly</td>
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<td>I.</td>
<td>Eat Mor Chikin’</td>
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<td>J.</td>
<td>You’re in good hands.</td>
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<td>K.</td>
<td>Fair and balanced</td>
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<td>L.</td>
<td>Finger licking good</td>
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<td>M.</td>
<td>Pizza, Pizza</td>
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<td>N.</td>
<td>Fly the friendly skies</td>
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<td>O.</td>
<td>Think Differently</td>
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<td>P.</td>
<td>Can you hear me now?</td>
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<td>Q.</td>
<td>Let your fingers do the walking.</td>
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<td>R.</td>
<td>Save money. Live better.</td>
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<td>S.</td>
<td>Where’s the beef?</td>
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<td>T.</td>
<td>The happiest place on earth.</td>
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<td>U.</td>
<td>They’re g-r-r-r-eat!</td>
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<td>V.</td>
<td>Seafood Differently</td>
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<td>W.</td>
<td>My bologna has a first name….</td>
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<td>X.</td>
<td>Snap, Crackle, Pop</td>
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<td>Y.</td>
<td>Eat Fresh</td>
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<td>Z.</td>
<td>Have it your way.</td>
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Instructions: With your table create a product (a shoe) together. Using the your colored pencils have one group member draw your company's logo and product. Answer the following questions about your company (your table) and about your product (your shoe).

1. What is the name of your company?

2. What is the name of your product?

3. What is your slogan?

4. What makes your product special? How will your company market your shoe?

5. Choose someone in your group to draw a logo for your company.

6. Choose someone in your group to draw your product on the back of this worksheet.