



**Teachers Learning Together for Student  
Success with Systems Thinking:  
A Thoughtful Approach to the Common Core**

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# The Great Kapok Tree: A Tale of the Amazon Rain Forest

by Lynne Cherry

In the Amazon rainforest, the great kapok tree emerges through the canopy and provides a place for a community of animals to live. When a man arrives to chop down the great kapok, he falls asleep, and the animals who live in the tree plead with him in order to save their home.

## Learning Objective(s)

- Students will identify characters within *The Great Kapok Tree*, what they do, and why they feel the rainforest is important.
- Students will find text-based evidence within *The Great Kapok Tree* to describe the lesson the main character learns.
- Students will use a systems thinking habit to explain why the man should not cut down the tree.

## Curriculum Context

Early Elementary Literacy

## Systems Concept(s) and Habit(s)

Awareness of the interdependencies within a rainforest habitat and understanding of the consequences of rainforest deforestation

## Systems Tool(s)

Habits of a Systems Thinker

## Deeper Learning Competencies

Mastery of core academic content; critical thinking; effective communication; ability to work collaboratively; academic mindset

## Common Core Standards

- 1.RL.2.2 Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral.
- 1.RL.2.3 Describe how characters in a story respond to major events and challenges.

## Materials

*The Great Kapok Tree: A Tale of the Amazon Rain Forest*  
by Lynne Cherry

## Instruction and Assessment

This lesson models the principle of Gradual Release of Responsibility: I do, we do, you do.

### I DO:

- Introduce the book *The Great Kapok Tree* to students. Share information from the inside cover and title page as an introduction to the story.
- Read the story once without pausing.
- Read the story again, this time pausing on every page to discuss the who, what, and why.
- Record students' responses on a chart.
- Model this process for students on pages one and two, allowing children to help with the why.

### WE DO:

- Finish the story, stopping on every page.
- Have students turn to each other and talk about the what and why.
- Continue recording responses on the anchor chart.

### I DO:

- Quickly review *The Great Kapok Tree* anchor chart.
- Introduce the Habits of a Systems Thinker. For primary students, you may choose to focus on a select number of habits.
- Give an example of how the habits are evident within the book. Use the book and the anchor chart to show how to find evidence.

### For example:

- Identify the circular nature of complex cause-and-effect relationships: The monkeys tell the man that once you cut down one tree, you'll cut down another and then another, until there is nothing left to cut down and the rainforest is a desert.
- Change perspectives to increase understanding: The boy asks the man to wake up and look upon them the creatures of the forest with new eyes because he might change his mind after hearing what all the animals have to say.

- Find where unintended consequences emerge. Recognize the impact of time delays when exploring cause-and-effect relationships: The anteaters tell the man that he has no thought for the future because there will be no trees in the future if he keeps cutting them down.

### WE DO:

- Pass out placemats for students—one for every two students.
- Explain that you will read the story one more time. Students should put their thumbs up every time they hear a spot in the story where the man could use a systems thinking question or habit to decide if he should or shouldn't chop down the tree.
- Begin reading.
- Stop when there are multiple thumbs up, and have students turn to each other and talk. Have a couple of students share their thoughts.
- Repeat for the remainder of the book.

### YOU DO:

- Check for understanding

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## ACKNOWLEDGMENTS

### Lindsay Rondeau

Tahoma School District, Maple Valley, Washington



# A House for Hermit Crab

by *Eric Carle*

Poor Hermit Crab! He has outgrown his snug little shell, so he finds himself a larger one—and many new friends to decorate and protect his new house. But what will happen when Hermit Crab outgrows this shell and has to say good-bye to all the sea creatures who have made his house a home? “Children facing change in their own lives and friendships will relate to Hermit Crab’s story—and learn a lot about the fascinating world of marine life along the way.” (*Amazon.com*)

## Learning Objective(s)

- Students will describe the connection between two individuals, events, ideas, or pieces of information in a text.
- Students will identify the main topic and retell key details of a text.

## Curriculum Context

Early Elementary Literacy

## Systems Concept(s) and Habit(s)

Leverage; time delays; identifying patterns and trends

## Systems Tool(s)

Behavior Over Time Graph

## Deeper Learning Competencies

Mastery of core academic content; critical thinking and problem solving; effective communication; academic mindset

## Common Core Standards

- 1.RL.2 Retell stories, including key details, and demonstrate understanding of their central message or lesson.
- 1.RL.7 Use illustrations and details in a story to describe its characters, setting, or events.
- 1.RI.2 Identify the main topic and retell key details of a text.
- 1.RI.3 Describe the connection between two individuals, events, ideas, or pieces of information in a text.

## Materials

- *A House for Hermit Crab* by Eric Carle, prepared for use in a storyboard format (page by page) either physically on laminated sheets or electronically.
- Prepared cards listing the months of the year

## Instruction and Assessment

### DAY 1

- Gather students together to introduce and read the story *A House for Hermit Crab*. In advance, prepare the book to be shared page by page in a storyboard format, either by laminating pages from a book or electronically. This storytelling format allows for increased comprehension of academic concepts and can be kept on display throughout the unit so students can refer back to it day after day.
- After presenting the story, as a whole group, retell the story in the students' own words.
- Students place cards with each month of the year on the appropriate page of the story.
- Students then work independently to sequence the story.

### DAY 2

- Review the following Habits of a Systems Thinker: Identifying leverage points and Recognizing time delays.
- Help students determine examples of these two habits in the story *A House for Hermit Crab*.

#### Examples:

*Leverage:* Hermit Crab offers compliments before asking sea creatures to be his friend.

*Time Delays:* Hermit Crab shows persistence in gaining friends who he knew would help him stay healthy.

### DAY 3

Reread the entire story displayed on the storyboard. On the side, display flip-chart paper with a Behavior Over Time Graph (BOTG) prepared to collect data and guide discussion during the reread of the story. For example, students might decide to graph the accumulation of Hermit Crab's friends through the story.

#### Discuss the results.

Following the BOTG activity, ask students if they notice any repeating patterns. Another way to pose this question is, "What is the lesson learned in this story?" For example, in this lesson students may recognize that "if you're friendly, then you'll have friends."

### DAY 4

- What can you learn from a character in this story? How do you know this? Use part of the story to explain.
- Review all prior lessons and discussions. Introduce how students might explain their thinking in written form.

### DAY 5

Provide students an opportunity to creatively display their thinking from throughout the week.

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## ACKNOWLEDGMENTS

### Cindy Hanson

Tahoma School District, Maple Valley, Washington

# Patterns in Algebra

Algebra uses mathematical statements to describe relationships. Identifying patterns helps to demystify algebra, such that expressions can be viewed in a concrete fashion.

## Learning Objective(s)

Students will be able to use the properties of operations to determine when two equations are equivalent to each other.

## Curriculum Context

- Observing Patterns, Mastering Algebra
- Systems Concept(s) and Habit(s)
- Understanding of the Habits of a Systems Thinker:
  - Seeks to understand the big picture
  - Observes how elements within systems change over time, generating patterns and trends
  - Recognizes that a system's structure generates its behavior
  - Surfaces and tests assumptions
  - Checks results and changes actions if needed through "successive approximation"
  - Changes perspectives to increase understanding

## Deeper Learning Competencies

Mastery of academic content; communication in groups; ability to explain thinking (metacognition)

## Common Core Standards

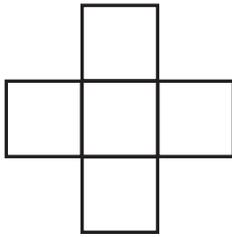
- 6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables and

relate these to the equation. For example, in a problem involving motion at a constant speed, list and graph ordered pairs of distances and times and write the equation  $d = 65t$  to represent the relationship between distance and time.

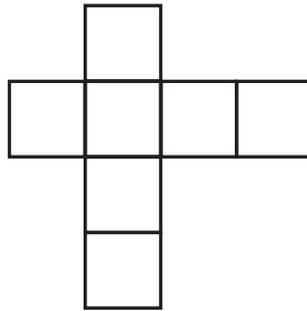
- 7.EE.B.3 Solve multi-step, real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals) using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
- 7.EE.B.4 Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
- 8.EE.A.2 Use square root and cube root symbols to represent solutions to equations of the form  $x^2=p$  and  $x^3=p$ , where  $p$  is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that  $\sqrt{2}$  is irrational.

## Materials

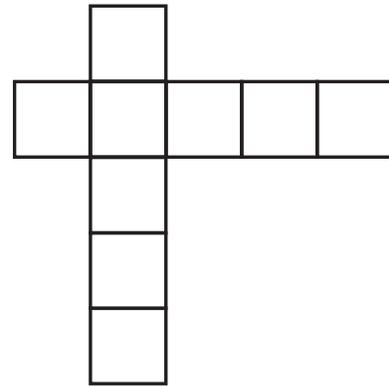
Visual representations of growth, such as fractals, blossoms, etc.



PHASE 1



PHASE 2



PHASE 3

**Instruction and Assessment**

**Activating Background Knowledge**

This is an open-entry task that makes use of students' strengths using different representations.

**Vocabulary:**

Coefficient, equation, equivalent expression, variable

**Questions:**

How did you begin to solve your problem?

Tell me about your thinking...

How did you reach your answer? How did you decide which strategy to use? What did you need to understand during the problem?

What do you have to figure out? What did you try that was unsuccessful? How did you know when to change your strategy?

How do you know your answer is reasonable?

If someone felt that your answer was incorrect, how would you show them that you are correct?

How did you represent the math in this problem?

How did you decide which tools/strategies to use to solve the problem?

How did you decide what was important to pay attention to?

What patterns did you notice that helped you?

Give students the opportunity to observe the representations of growth:

What parts were changing from one point in the growth process to the next?

What stayed the same?

Using technology, have students circle parts of new growth from one phase of growth to the next as well as parts that remained the same.

Students work in pairs for 10 minutes. Then students will work in quads to finish their responses to the task.

Students will record their responses on the task paper provided.

Then using the phases pictured to the left, ask students to create an expression to represent the pattern of growth.

There are multiple ways that the task might be solved:  $Y = (1+2n)^2 - 4n^2$  or  $Y = yn + 1$

Students use the five representations (a table, graph, pictorial representation, written explanation, and algebraic representation) to create an equation that expresses the relationship between the nth phase and the number of squares.

Students will use their preferred representations of the problem to support their development of more challenging solution representations.

### **Launching Student Thinking**

Compare phases to a pattern in the process of growing. Ask: What is changing? What is remaining the same? Students can be shown pictures of patterns growing in action to determine phases of growth. Students will be provided with a simple phase problem to analyze in order to understand the generation of a simple linear equation that can be represented visually.

As a whole group, have students complete the Launching Student Thinking activity page.

### **Engage students in the algebraic pattern task.**

Discuss each other's solutions and determine where the visual representation appears in the equation. Ask guiding questions to help students determine the equivalency of equations through simplification.

Calling attention to the Habits of a Systems Thinker throughout the lesson helps students to recognize both the mental processes used to analyze the phases as well as the strategies they employed to determine the algebraic rule governing the relationship between the phases and the number of squares.

### **Formative Assessment**

Students will be able to explain the work of others and apply the process of creating a rule to another geometric pattern.

Students will determine the rule for a novel pattern independently. Students will reflect in writing where they used the Habits of a Systems Thinker in their process.

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### **ACKNOWLEDGMENTS**

#### **April Knippen**

**Gridley Middle School, Tucson Unified School District,  
Tucson, Arizona**

# Habits of Mathematical Thinking

Successful mathematicians are good mathematical thinkers. This lesson series helps middle school students be more metacognitive of the kinds of thinking required to successfully achieve in mathematics.

## Learning Objective(s)

Students will use the Habits of a Systems Thinker (HOST) to help define the Eight Mathematical Practices outlined in the Common Core Standards.

## Curriculum Context

- Middle School Mathematics
- Systems Concept(s) and Habit(s)
- Habits of a Systems Thinker

## Deeper Learning Competencies

Learning how to learn, communication, collaboration, mastery of academic content

## Common Core Standards:

The Eight Mathematical Practices

## Materials

- Habits Matrix
- Interview Questions and Prompts
- Non-Routine mathematical problem, suitable for the students and grade level being taught

## Instruction and Assessment

Consensus Block

- Assign students a non routine problem and allow them to work on it in collaborative groups. Consider using the consensus block: In groups of four, students work to solve the problem in the corner of a page first and then as a group they come together and work on a solution in the middle.

- After the students have completed the problem. Debrief the lesson so that students know the solution and can articulate multiple ways to have arrived at the solution.
  - Then ask students to respond to the following questions independently.
  - How did you begin to solve your problem?
  - How do you know your answer is reasonable?
  - How did you decide what was important to pay attention to?
  - What patterns did you notice that helped you?
  - You may choose to add to this list from the Interview Questions and Prompts.
- As an alternative you could use the MP Skills Inventory Worksheet.
- Provide each group of four students with a blank matrix of the HOST/Mathematical Practices. Ask them to generate examples of how the habit could inform their use of the mathematical practice.
- Share the ideas generated among the groups of students to create a large classroom matrix.
- Reference this matrix throughout the year to increase student use of the mathematical practices.

## Resources

- Habits of a Systems Thinker, [www.watersfoundation.org](http://www.watersfoundation.org)
- Eight Mathematical Practices [www.corestandards.org/Math/Practice](http://www.corestandards.org/Math/Practice)

## ACKNOWLEDGMENTS

## Middle School Math Cohort

Hewlett Deeper Learning and the Common Core

Name: \_\_\_\_\_

Date: \_\_\_\_\_

# Mathematical Practices Skill Inventory

Answer YES or NO to each of the following questions:

	QUESTION	ANSWER
THK	Are you patient?	
	Do you keep going when it gets hard?	
	Are you comfortable speaking up in class?	
	Do you think about how to solve a problem before you start working?	
	Do you remember to label your answers?	
	Do you write well when asked to write about math?	
REA	Do you think about the story when you are doing the math?	
	Do you estimate before you start working?	
	Do you know what a non-example is?	
	Do you listen and know what to do?	
	Do you ask questions that help you understand the math?	
	Do you use math vocabulary during class and on assignments?	
MOD	Do you give reasons you think your answer is correct?	
	Can you draw pictures or make models of most math problems?	
	Can you write out math problems using appropriate symbols?	
	Are you proficient using tools for math?	
	Can you decide which bits of information are important?	
	Do you confirm that you have answered the original question?	
GEN	Do you notice math outside of math class?	
	Are you good at finding patterns in problems?	
	Do you know when your answer isn't quite right?	
	Can you turn a hard problem into an easier one?	
	Can you see how math problems have similar structures?	
	Will you start over if you figure out a better way to do the problem?	

AWE	Do you notice when behavior goes in a circle?	
	Can you use a model to explain a complex idea?	
	Can you explain how multiple things are connected to each other?	
	Can you explain a chain of cause and effect?	
	Can you look at behavior over a long time and figure out patterns?	
	Can you look at behavior over a long time and figure out what has changed?	
UND	Can you change your mind when you realize you made an assumption?	
	Can you see problems from more than one point of view?	
	Do you think about “What if?” before you act?	
	Do you take the time to do more work so the results are better?	
	Can you admit you were wrong?	
	Are you a good listener?	
ACT	Do you try to think of more than one way to solve a problem?	
	Are you willing to give up a small reward for a bigger one you have to wait for?	
	Do you think about good and bad consequences before you act?	
	Do you think about long-term consequences of your actions?	
	Do you check your work as you go?	
	Do you pause to make sure you are on the right track?	

## Interview Questions/Prompts that Promote Mathematical Thinking

Mathematical Practice	Interview Questions/Prompts
Make sense of problems and persevere in solving them	<ul style="list-style-type: none"> <li>• How did you begin to solve your problem?</li> <li>• Tell me about your thinking...</li> <li>• How did you reach your answer? How did you decide which strategy to use? What did you need to understand during the problem?</li> <li>• What do you have to figure out?</li> <li>• What did you try that was unsuccessful? How did you know when to change your strategy?</li> </ul>
Reason abstractly and quantitatively	How do you know your answer is reasonable?
Construct viable arguments and critique the reasoning of others	<p>If someone felt that your answer was incorrect, how would you show them that you are correct?</p> <p><i>(Also a prompt could be presented to students of a response to a problem with a misconception present. Students could be asked to locate the misconception, justify why it is a misconception, and explain how they would go about correcting the reasoning)</i></p>
Model with mathematics	<ul style="list-style-type: none"> <li>• How did you represent the math in this problem?</li> <li>• Use appropriate tools strategically</li> <li>• How did you decide which tools/strategies to use to solve the problem?</li> </ul>
Attend to precision	<ul style="list-style-type: none"> <li>• How precise does your answer need to be? How do you know?</li> <li>• What information did you use to estimate the answer?</li> <li>• Compare your answer to your estimate.</li> </ul>
Look for and make use of structure	How did you decide what was important to pay attention to?
Look for and express regularity in repeated use of reasoning	What patterns did you notice that helped you?

## Mathematical Practice Matrix

	Makes sense of problems and perseveres in solving them	Reason abstractly and quantitatively	Construct viable arguments	Model with mathematics	Use appropriate tools strategically	Attend to precision	Look for and make use of structure	Look for and express regularity in repeated reasoning
 <p>Seeks to understand the big picture</p>								
 <p>Observes how elements within systems change over time, generating patterns and trends</p>								
 <p>Recognizes that a system's structure generates its behavior</p>								
 <p>Identifies the circular nature of complex cause and effect relationships</p>								
 <p>Changes perspectives to increase understanding</p>								
 <p>Surfaces and tests assumptions</p>								

## Mathematical Practice Matrix

	Makes sense of problems and perseveres in solving them	Reason abstractly and quantitatively	Construct viable arguments	Model with mathematics	Use appropriate tools strategically	Attend to precision	Look for and make use of structure	Look for and express regularity in repeated reasoning
 <p>Considers how mental models affect current reality and the future</p>								
 <p>Considers both short and long-term consequences of actions</p>								
 <p>Considers an issue fully and resists the urge to come to a quick conclusion</p>								
 <p>Finds where unintended consequences emerge</p>								
 <p>Recognizes the impact of time delays when exploring cause and effect relationships</p>								
 <p>Uses understanding of system structure to identify possible leverage actions</p>								
 <p>Checks results and changes actions if needed: "Successive approximation"</p>								

# Financial Planning Life Scenarios

Few things are as relevant to high school students as how they spend their money. The Robinsons and the Meltons are two families that earn the same income, live in the same neighborhood, are of the same age, and have two children each. Yet the Robinsons are six times wealthier than the Meltons. Students use systems thinking tools to analyze these real-life scenarios to determine key principles to personal wealth.

## Learning Objective(s)

- Students will use systems thinking tools and habits to analyze financial plan approaches based on diverse life scenarios.
- Students will explore and describe consequences for various financial decisions regarding education; career-ready skills; life and health choices; money handling; debt handling; and planning for retirement.
- Students will collaborate with a partner to understand and explain the cause and effect of financial plan behavior.
- Students will apply successful financial planning habits and choices to future decisions.

## Curriculum Context

Personal Finance

## Systems Concept(s) and Habit(s)

Long-term, short-term, and unintended consequences; leverage; surface and test assumptions; accumulation

## Systems Tool(s)

Iceberg, Behavior Over Time Graphs, Connection Circles

## Deeper Learning Competencies

Critical thinking and problem solving; collaboration; effective communication; learning how to learn; academic mindset

## Standards

Evaluate non-fiction written works by explaining reasoning and identifying information used to support decisions. (Missouri Business/Economic Standard)

## Materials

- Scenarios
- Large paper for creating Iceberg models

## Instruction and Assessment

### Warm-Up Activity

Brainstorm and discuss types of systems based on students' prior knowledge.

### Lesson Activities

1. Teacher will use presentation software to introduce the Robinsons and the Meltons (life scenarios), and students will take notes on financial planning vocabulary and concepts.

2. Students prepare an Iceberg and related Behavior Over Time Graphs (BOTGs) to analyze the Robinsons' and Meltons' financial plan approach.

3. Students will use another life scenario to make connections between the cause and effect BOTGs. Students will explain these connections in a format given by the teacher. This will be completed as a class learning activity and as an individual activity with a partner.

4. Summative assessment will require students to read and analyze a detailed life scenario for Robinson or Melton at 18, 25, and 35. Students will then complete a Connection Circle and four related BOTGs and will explain a cause-and-effect relationship in a format provided by the teacher.

### **Closure**

- Student present their assignments and formative assessments.
- Teacher will chair classroom discussion by asking essential questions.

### **Assessment**

The following activities will be graded:

1. Robinson and Melton Icebergs and BOTGs
2. Connection Circle, BOTGs and explanation of cause-and-effect relationships (summative assessment)

### **Assignment**

1. Graphic organizer to summarize analysis completed on Robinsons and Meltons
2. Connection Circle, BOTG, and explanation of cause-and-effect relationships (see attached scoring guide)

### **Resources**

A Mystery of Two Families (see attached)

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### **ACKNOWLEDGMENTS**

**Cheryl Jolly-Luster**

Ritenour High School, Ritenour, Missouri

Name: \_\_\_\_\_

PF#: \_\_\_\_\_

## A Mystery of Two Families

The Robinsons and the Meltons are two families that earn the same income, live in the same neighborhood, are of the same age, and have two children each. Yet the Robinsons are six times wealthier than the Meltons. **Why is this?**

The Robinsons spent time managing their money but not worrying about it. Although they never inherited a dime, Mr. and Mrs. Robinson feel they can easily send their children to college. The \$250,000 they have saved is also a good start for their retirement. Both are working to improve their future income. Mr. Robinson is completing a college degree at night, and Mrs. Robinson has been taking weekend seminars offered at no cost by her employer. Both are hoping for promotions.

The Meltons are very worried about money. Their credit card balance keeps increasing every month. They have neither the time nor money to improve their education. Although they could sell their house for more than they owe on the mortgage, they have no savings. They hope their children will get scholarship to pay for college.

To solve the mystery of the two families, let's learn some basic points of economic reasoning that will help you make better choices.

### The Handy Dandy Guide

1. People choose.
2. All choices involve costs.
3. People respond to incentives in predictable ways.
4. People create economic systems that influence choices and incentives.
5. People gain when they trade voluntarily.
6. People's choices have consequences for the future.

### 1. People choose.

This may seem obvious, but think for a minute about how many people say they "have no choice." In fact, we ALWAYS have a choice.

- The Robinsons spend a few hours every week managing their money. They have a budget, record their expenses, and adjust their spending if they are "over budget." Their goal is save 10% of their income each month. They investigate how to invest their savings, comparing rates of return and risks.
- The Meltons feel they don't have time for this. They are thankful for their two credit cards because without them they could never get the things they want. The Melton's do spend a lot of time watching television; relaxing is important.

### 2. All choices involve costs.

Choices come with costs. Because the Robinsons spend time managing their money, they must give something up. Economists say there is an opportunity cost for every choice. The **opportunity cost** is the most valued option that you gave up because you chose what you did. The opportunity cost is your next best option.

- For the Robinsons, the opportunity cost of managing their money is the television they give up. For the Melton's, the opportunity cost of watching television is managing their money.
- Making good choices involves comparing the benefits and costs of any decision. The Robinsons are wealthier than the Melton's because of the choices they made.

### 3. People respond to incentives in predictable ways.

- An incentive is a benefit or cost that influences a person's decisions.
- One powerful incentive is money.
- By managing your money more carefully, you can keep more of the benefits of your hard work by having the money to accomplish other goals.
- Another incentive is interest on savings.
- The incentive for the Robinsons to save is that they will have more goods and services in the future.
- There is also an incentive for getting a good education.

### 4. People create economic systems that influence choices and incentives.

- The American economic system relies on markets, choices, and incentives.
- Every decision has costs and benefits.
- The system creates incentives that guide our behavior.
- The American private-enterprise system has made the United States a land of choices and opportunities.
- These opportunities involve ever-present tradeoffs and choices.
- Every choice has an opportunity cost.
- The Robinsons take better advantage of the opportunities available to them.
  - They do not view themselves as victims of too little income or of businesses that charge too high prices.
  - Instead, they make choices to increase their future income and spend that income wisely.

### 5. People gain when they trade voluntarily.

- "Voluntary" refers to doing something because you want to, not because someone forced you.
- Neither the Robinsons nor the Meltons are forced to buy goods and services.
  - They are not forced to work for their employers.
  - They do these things because the benefits are greater than the costs.

### 6. People's choices have consequences for the future.

- Why would we conserve, save, and invest?
- The choices you make today will affect your future.
- The Robinsons have more wealth because they saved more and spent less than the Meltons, even though the Meltons work more.
- The Robinsons also get more for their income because they compare costs, benefits, and alternatives before making major purchases.
  - Their past decisions have affected their present wealth and lifestyle.



# Personal Finance – Iceberg – Mystery of 2 Families

Assigned (1/23/12) – Due Date \_\_\_\_\_

<b>Background – Robinsons</b>					
The Robinsons and the Meltons are two families that earn the same income, live in the same neighborhood, are of the same age, and have two children each. Yet the Robinsons are six times wealthier than the Meltons. <b>Why is this?</b>					
	<b>PTS EARNED</b>				
<p><b>EVENT - POSSIBLE 5 PTS</b></p> <p>Give 5 examples of what you would see in this household with regards to: family trips, grocery shopping, saving for a rainy day, dining in restaurants and buying a car.</p>					
<p><b>PATTERNS OF BEHAVIOR - POSSIBLE 20 PTS</b></p> <ul style="list-style-type: none"> <li>Sketch 4 behavior over time graphs:                             <table border="0" style="margin-left: 20px;"> <tr> <td>NEEDS</td> <td>SAVINGS</td> </tr> <tr> <td>WANTS</td> <td>MAJOR PURCHASES</td> </tr> </table> </li> <li>What changes do you think affected the items above over time?</li> </ul>	NEEDS	SAVINGS	WANTS	MAJOR PURCHASES	
NEEDS	SAVINGS				
WANTS	MAJOR PURCHASES				
<p><b>UNDERLYING STRUCTURES - POSSIBLE 5 PTS</b></p> <ul style="list-style-type: none"> <li>What affects how the family handles their finances: family, education, self, or their peers and explain?</li> <li>What is the relationship between their wealth and the above influencers?</li> </ul>					
<p><b>MENTAL MODELS - POSSIBLE 5 PTS</b></p> <p>Explain the following using a scale of 1 to 10 (10 = very important, 5 = somewhat important and 1 = not important at all) and explain why:</p> <ul style="list-style-type: none"> <li>What value do you think the family places on saving?</li> <li>What value do you think the family places on wise consumer spending?</li> <li>What value do you think the family places on avoiding credit card debt?</li> <li>What value do you think the family places on wealth versus live for the moment mentality?</li> </ul>					
Create mini poster including iceberg, botg's and summary of each step. - <b>POSSIBLE 20 PTS</b>					
<b>ASSESMENT GRADE</b>					
<b>TOTAL POSSIBLE POINTS (55 PTS)</b>					
<b>NAME</b>	<b>PER</b>				

# Decision Making

## Fundamentals

- Individuals, businesses, governments, and economic systems all face \_\_\_\_\_
- We must make decisions at the personal, business and government levels.
- A wise decision involves weighing the benefits and costs of the alternatives.
- There is a \_\_\_\_\_

## Scarcity

- \_\_\_\_\_ occurs because our \_\_\_\_\_ and our wants are unlimited.
- Scarcity exists because human wants always outstrip the limited resources available to satisfy them.

## The issue of wants

- People's \_\_\_\_\_
- Even wealthy individuals desire more.
- Many people would also like to have more income.
- Wants also change over time.

## Resources

- \_\_\_\_\_
- When you get a better education, you improve your human resources.
- \_\_\_\_\_
- Natural resources are not the only resources a nation needs to become rich.
- \_\_\_\_\_ include all the resources made and used by people to produce and distribute goods and services.
- \_\_\_\_\_ are examples of capital resources.
- In economics, capital refers to \_\_\_\_\_, not money.  
Money is just a medium of exchange used to make the buying and selling of goods and services easier.

## The Opportunity Cost

- Because of scarcity, we must make choices.
- Every choice involves an opportunity cost.
- The \_\_\_\_\_
- It is the value of what you give up in order to get what you want.
- What influences your money attitudes?
- Our attitudes and belief systems are influenced by our peers, family, society, and religious upbringing.
- Understanding these beliefs will help you to gain a greater understanding of your spending patterns.

# Focus on the Pivotal Year 1964

This project-based lesson plunges students into the six elements of deeper learning by focusing on 1964, a pivotal year in American History. Through interviews, video, print sources, and online research, students analyze the significant events, focusing on the trends, structures, and mental models that defined them. They present their synthesized information as an iMovie. This lesson addresses key standards in history, reading, writing, speaking, and listening.

## Learning Objectives

### STUDENTS WILL UNDERSTAND THAT:

- Taken together, the events of 1964 make that one of the most transitional years in 20th-century American history.
- Oral histories, first-person accounts, and interviews are valuable sources to learn about history through the first-hand experiences of those who participated in events of the past.

### STUDENTS WILL KNOW:

- The difference between primary and secondary sources
- How at least one event impacted and was impacted by larger political or social trends and patterns in American history

### STUDENTS WILL BE ABLE TO:

- Create an engaging and informative short digital story using iMovie
- Select and upload a segment from an audio interview to an iMovie project
- Use research databases to find authoritative and credible articles on historical topics

## Curriculum Context

Contemporary US History

## Systems Concept(s) and Habit(s)

Awareness of patterns and trends over time

## Systems Tool(s)

Behavior Over Time Graphs, Mental Models, Connection Circles, Iceberg

## Deeper Learning Competencies

Mastery of core academic content; critical thinking and problem solving; effective communication; ability to work collaboratively; learning how to learn; academic mindset

## Common Core Standards

- 9-10.RH.1 Cite specific evidence to support analysis of primary and secondary sources.
- 9-10.RH.3 Analyze in detail a series of events described in a text, determine whether earlier events caused later ones or simply preceded them.
- 9-10.RH.6 Compare the point of view of two or more authors for how they treat the same or similar topics, including which details they include and emphasize in their respective accounts.
- 9-10.RH.9 Compare and contrast treatments of the same topic in several primary and secondary sources.
- 9-10.WH.2 Write an informative narration of a historical event.

- 9-10.WH.6 Use technology to produce, publish, and update individual or shared writing products, taking advantage of technology’s capacity to link to other information and to display information flexibly and dynamically.
- 9-10.WH.7 Conduct a short research project to answer a self-generated question; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.
- 9-10.WH.8 Gather relevant information from multiple, authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectively to maintain the flow of ideas, avoiding plagiarism.

### Materials

- iMovie
- Attached handouts
  - Interview Guide
  - Change Organizer
  - Iceberg worksheet
  - Storyboard form
  - Writing a Thesis for an Expository Essay worksheet

### Instruction and Assessment

Students collect their digital stories in a “Story Corps”-type booth at a community or neighborhood event. See attached interview guide.

### Activities and Tasks

**Survey of the events of 1964:** Watch selections of the documentary 1964. While viewing, identify the key events. Summarize those events. Create Behavior Over Time Graphs that illustrate the patterns and trends and predict the future impact of the event on these trends and behaviors. (90-minute class period)

**Initial reading of non-fiction text:** Choose one key event from notes on 1964 to focus on for extended research and creation of digital story. During reading of selected text, take notes using the Change Organizer (see attached).

### Initial research questions, working bibliography, and research notes:

Working either individually or in pairs (students’ choice), formulate a research question on the topic selected. Identify and listen to “Story Corps” recording to use as a source. Conduct further research using the online databases EBSCOhost and History Reference Center. Find out and document the basic information about the selected event: Who was involved? What happened? Where and when did it happen? (90-minute class period)

**Synthesis of the learning from research:** Using the Iceberg diagram, synthesize learning from the research. Generate the bottom half of the Iceberg diagrams in consultation with peers, using small whiteboards in table groups. Using the completed Iceberg worksheet, develop an organizing thesis statement to capture the main idea for the digital story. See attached Iceberg and Writing a Thesis for an Expository Essay worksheets.

**Storyboard:** Using the Storyboard form, plan out digital stories and the images, text, voice over, and/or music. The Storyboard form should be printed on 11 x 17-size paper.

**Digital story production:** Using iMovie, create a digital story using the Storyboard as a guide. The final stages of this lesson require approximately four 90-minute class periods.

### Resources

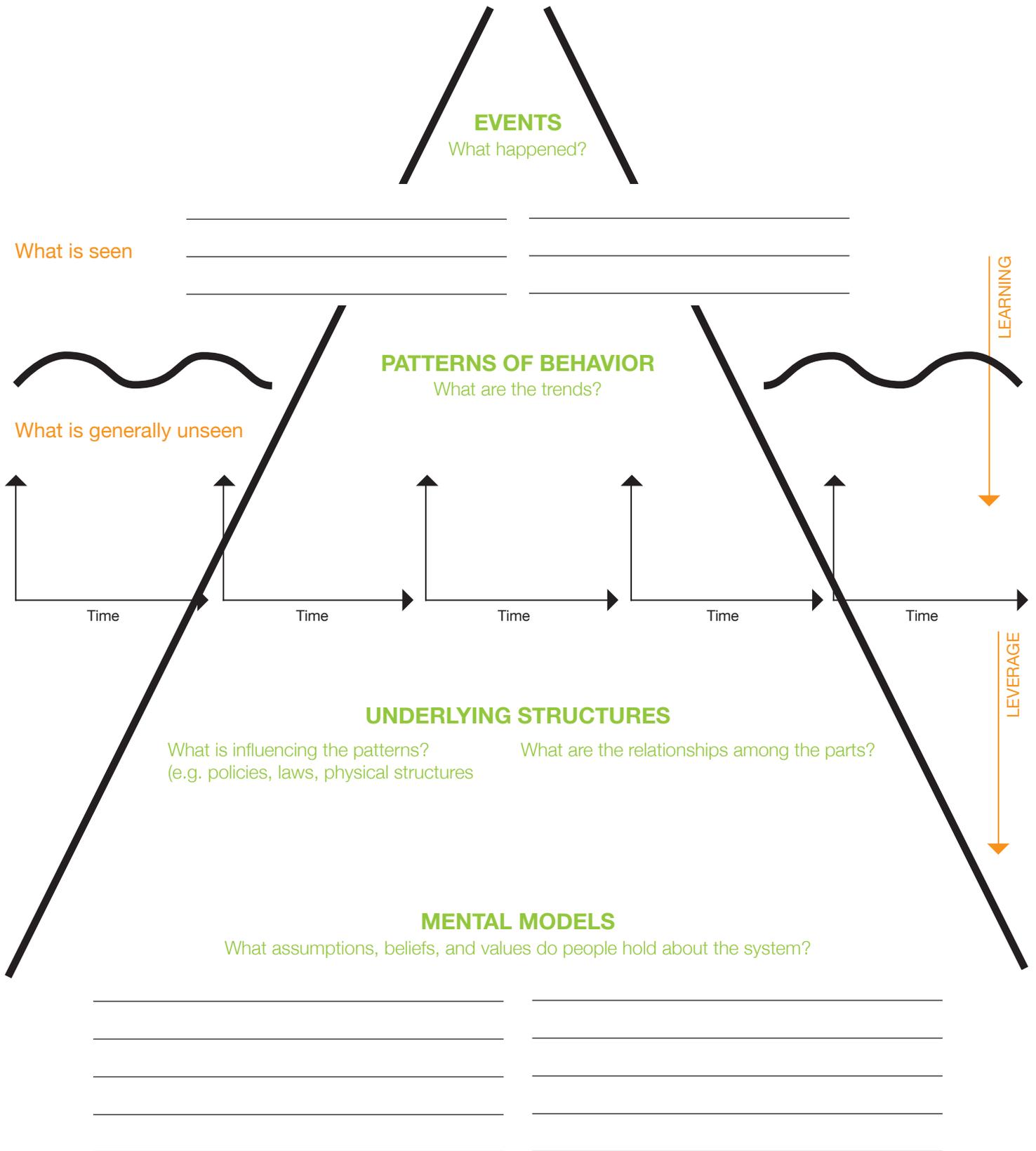
- Video: 1964.
- Non-fiction texts:
  - *The Importance of Muhammad Ali*
  - *The Allure of the Feminine Mystique*

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### ACKNOWLEDGMENTS

## Brett Goble

City High School, Tucson, Arizona



## Writing a Thesis Statement for an Expository/Informative Essay

**The thesis statement drives the structure and content of the expository essay.**

It's the most important sentence in your essay, but that doesn't mean it has to be complicated. In fact, the best thesis statements are simple. It's important that the statement be clear and that it be one that you can support with facts.

**Too much:**

The Boston Tea Party was the most important act of civil disobedience in the American colony because it protested unjust taxation without representation and was therefore the main cause of the Revolutionary War.

**Just right:**

The Boston Tea Party was a significant act of civil disobedience that **galvanized** Americans around the issue of taxation without representation and helped **spark** the Revolutionary War.

Remember, your thesis statement should be based purely on factual information that you present in the body of your essay. It should be clear, concise, and well written. Once you have a sound thesis in place, writing the rest of your essay will be easy because you will know exactly what information you need to present, and in what order.

**Your thesis statement should be a response to your research question.**

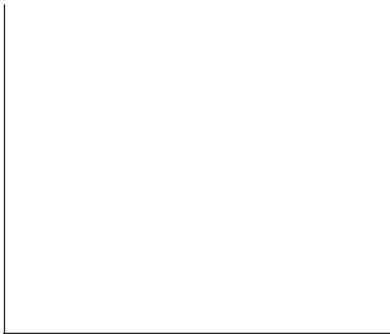
Once you have gathered all your facts, you'll need to evaluate them. What is the main thread that ties together all of the information? What do you want to say about this particular topic? Brainstorm on paper, then boil your answer down to one sentence. This is your thesis.

# Identifying Change Over Time in Text

As you are reading, look for key words such as:

- change • transform • revolution • becoming • more
- rose • went up • increased • got higher • grew/growth • gained
- less • fell • went down • decreased • went lower • declined • lost

Write down one or more quotes in each box. Circle key words of change and underline what you think is changing. Draw a line graph of how the quote shows change over time. Explain why the change occurs.

QUOTES FROM BOOK	CHANGE OVER TIME	WHY THIS MIGHT BE OCCURRING
		
Page(s)		
		
Page(s)		
		
Page(s)		<p>© 2008, Systems Thinking in Schools, Waters Foundation</p>

Focus on the Pivotal Year 1964

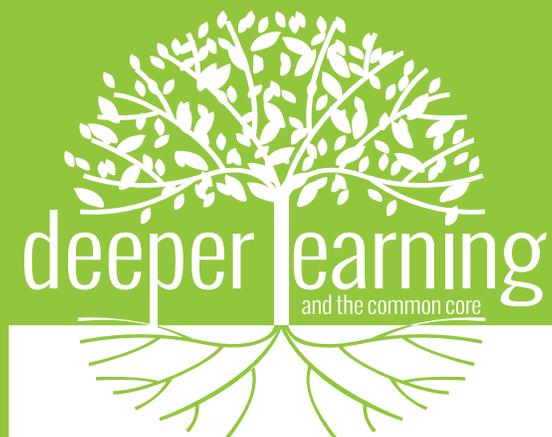
QUOTES	CHANGE OVER TIME	WHY THIS MIGHT BE OCCURRING
		
Page(s)		
		
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Page(s)		<p>© 2008, Systems Thinking in Schools, Waters Foundation</p>

# Storyboard Form

Story Title: \_\_\_\_\_

Group Name: \_\_\_\_\_ Page #: \_\_\_\_\_

<b>Insert or Sketch Image</b>	<b>Insert or Sketch Image</b>	<b>Insert or Sketch Image</b>
<b>Accompanying Audio / Words</b> _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	<b>Accompanying Audio / Words</b> _____ _____ _____ _____ _____ _____ _____ _____ _____ _____	<b>Accompanying Audio / Words</b> _____ _____ _____ _____ _____ _____ _____ _____ _____ _____
<b>Other Information</b> <i>(e.g. duration, transitions, music)</i>	<b>Other Information</b> <i>(e.g. duration, transitions, music)</i>	<b>Other Information</b> <i>(e.g. duration, transitions, music)</i>



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