

UNIT NAME: Important Inventions, Inventors, and Discoveries

SCHOOL DISTRICT: Lawrence Public Schools

DATE: Day One and Two

CLASS AND GRADE: U.S. History, 9th grade

STATE FRAMEWORK: U.S. II 1C

HISTORICAL THINKING STANDARD: 3 A, B, C, J

LEADERSHIP: Introduction to Nikola Tesla, George Stephenson, and the Wright Brothers

ENDURING UNDERSTANDINGS:

1. Studying different types of leaders and their personalities.
2. Understanding how these inventors came to their inventions.
3. Asking ourselves, “What makes a good inventor?” and “What qualities must a good inventor possess?”
4. What moral or ethical dilemmas did certain inventors face? How did it impact their work?
5. How did their inventions impact America and the world?

ESSENTIAL QUESTIONS:

1. How were these leaders alike? Different?
2. Did family, education, or curiosity influence these leaders? How did each of these factors shape their inventions?
3. Do you see similar traits of these inventors in yourself?
4. What was happening in the United States and the world that made an impact on the inventors?

CONTENT:

- Students will be asked if they can match the inventor with their discovery
- Students perceptions will be corrected (if necessary)
- Instructor will then give background information on the three leaders in order to begin answering the essential questions

ACTIVITY:

Students will be given the handout entitled, “What Makes a Good Inventor”. This handout will be given approximately 10-15 minutes to complete and will be done individually. Students will then report out their answers to the class.

Name: _____

Date: _____

WHAT MAKES A GOOD INVENTOR?

Due: At the end of class today

Part One:

Below are two columns. The column on the **left** will ask you for adjectives that describe what you think make a good inventor. The column on the **right** asks you to list at least 3 inventions and the traits you believe the inventor must have possessed to come with his/her ideas.

Attributes	Other Inventions/Traits

Part Two—Essay Question:

If there was **one** invention you wish you invented, what would it be and why? Would you change anything about the invention?

UNIT NAME: Harnessing Lightning: Nikola Tesla

DATE: Day Three and Four

STATE FRAMEWORKS: U.S. II 1 B

HISTORICAL THINKING STANDARDS: 2 F; 3 A, B, G, J

LEADERSHIP: Nikola Tesla

ESSENTIAL QUESTION:

1. Why are we studying Tesla instead of Thomas Edison?
2. Was Tesla a more important inventor?
3. What was Tesla's legacy?

CONTENT:

- Simple background information on Tesla, the video, and the handout
- Students will view video, "Tesla, Master of Lightning"

ACTIVITIES:

1. Student will follow the video with the handout. After the video, students will participate in a discussion about Tesla. These questions are located at the end of the handout as "Thinking Pieces".

2. For Homework, students will make a list of all the things they use on a daily basis that relies upon electricity. Then, the students will participate in my Challenge:

Can you last one day without electricity?

Students will keep a journal entry on their experience of trying to survive without electricity. They will use a second handout as a guide. They will use the information on this guide to help them write a Reaction Paper about this experiment.

-A Rubric for the paper will be provided

NAME: _____

DATE: _____

“TESLA: MASTER OF LIGHTNING” VIDEO AND HANDOUT

Due: At the end class viewing of video

As you watch the video, answer the questions below. You may use a separate sheet of paper. At the end of the video, we will have a class discussion about the questions in the section called, “Thinking Pieces”.

1. How did Tesla’s parents influence Nikola?
2. Why did Tesla come to the United States?
3. What happened between Tesla and Thomas Edison?
4. What did Edison try to do to Tesla’s reputation?
5. What was Tesla working on that is his legacy today?
6. What natural formation became critical to Tesla’s work? What did it do?
7. How did the United States recognize Tesla’s work with AC current?
8. Who helped Tesla develop his dream of AC current?
9. Was Tesla an easy man to get along with? Provide some examples.

Thinking Pieces

1. Was his genius a blessing or a curse?
2. What was it about Tesla’s personality that prevented his full potential?
3. If you could give Tesla any advice, what would it be?

NAME: _____

DATE: _____

MY ONE DAY WITHOUT ELECTRICITY

Due: By Day Six

Use this handout as a guide to help you document your experience living one day without electricity. Get your family involved, it'll be fun!! You will use this information and the Writing Rubric below to help write a Reaction Paper.

- 1. Make a list of the everyday items you and your family use.**
- 2. What day of the week did you choose to go without electricity? Why did you choose that day?**
- 3. What did your family think of this experiment?**
- 4. What were the difficulties you faced? What kind of adjustments did you and your family have to make?**
- 5. What activities did you do during this experiment?**
- 6. Do you think that there are some electrical devices/uses that you can do without?**
- 7. Were there any surprising aspects of this experiment?**

Writing Rubric

	4	3	2	1
Focus/Thesis Statement	The thesis statement names the topic of the essay and outlines the main points to be discussed.	The thesis statement names the topic of the essay.	The thesis statement outlines some or all of the main points to be discussed but does not name the topic	The thesis statement does not name the topic. AND does not preview what will be discussed.
Audience	Demonstrates a clear understanding of the potential reader and uses appropriate vocabulary and arguments.	Demonstrates a general understanding of the potential reader and uses vocabulary and arguments appropriate for that audience.	Demonstrates some understanding of the potential reader and uses arguments appropriate for that audience.	It is not clear who the author is writing for.
Sentence Structure	All sentences are well constructed with varied structure.	Most sentences are well constructed and there is some varied sentence structure in the essay.	Most sentences are well constructed, but there is no variation in structure	Most sentences are not well constructed or varied.
			TOTAL:	

UNIT NAME: Planes and trains and their impact on the Industrial Revolution, American society, and history.

DATE: Day Five and Six

STATE FRAMEWORKS: U.S. I 27

HISTORICAL THINKING STANDARDS: Standard 1A; Standard 4 A, C

LEADERSHIP: George Stephenson; The Wright Brothers; Union Pacific Railroad

ENDURING UNDERSTANDINGS:

1. Understanding of how transient inventions can be (specifically, trains).
2. How American society and economics was impacted by the use of trains and the Transcontinental Railroad.
3. The impact that a successful flight had on history and America.

ESSENTIAL QUESTIONS:

1. How did trains influence American society and economy?
2. Was the timing of the widespread use of railroads perfect in order to lock in their influence?
3. Did the invention of the locomotive lead to other technological advances?
4. What were the motivation(s) behind the development of the Trans-continental railroad?
5. Describe how unique the Wright Brothers were when it came to inventing a successful airplane.

CONTENT:

- Background information on George Stephenson and his place in train and American history
- Information on how society and the economy were influenced by trains and the Trans-continental railroad
- The history of the Wright Brothers and their scientific processes

ACTIVITY 1:

- I. Students will look at online historical maps of the United States prior to 1860 and after 1860. The purpose of which is to help students answer questions on specific subjects. <http://www.irwinator.com/126/w172.jpg>
- II. Students will break into 5 groups-**Environment, Society, Labor Forces, Investors, and Government**. Each group will be assigned one topic.
 - **Environment:** What were the possible effects that the building of railroads had on the environment?
 - **Society:** How did train travel impact American society?

- **Labor Forces:** Who worked on building the tracks? Was building railroads easy? What were the possible dangers?
 - **Investors:** If you had a lot of money to invest, why would you want to invest in railroads? What were the benefits? The drawbacks?
 - **Government:** Why would the government want a transcontinental railroad? What were the major reasons? What would you do to the railroad companies to build the transcontinental railroad?
- III. Students will then answer questions, based on accessing class lecture, prior knowledge, and intelligent guesses.
- IV. As students are engaging in this activity, they must create 2 additional group questions that they developed during their discussion.
- V. Students will then report out their findings to the class.
- VI. The additional questions they come up with will be presented during their findings, collected, and used to promote further class discussion.

ACTIVITY 2:

1. Students will read an excerpt of Orville Wright's diary silently.
2. After they read the excerpt, students will answer the short-answer questions.
3. Students will then pair up and share their answers.

NAME: _____

DATE: _____

ORVILLE WRIGHT'S DIARY ENTRY EXCERPT:
PRIMARY SOURCE READING

Read the diary excerpt below silently. After you finish reading, you will answer the questions. Once completed, you will pair up with another student and share your thoughts on you answers.

Orville Wright's diary, December 17, 1903

When we got up a wind of between 20 and 25 miles was blowing from the north. We got the machine out early and put out the signal for the men at the station. Before we were quite ready, John T. Daniels, W.S. Dough, A.D. Etheridge, W.C. Brinkley of Manteo, and Johnny Moore of Nags Head arrived. After running the engine and propellers a few minutes to get them in working order, I got on the machine at 10:35 for the first trial. The wind was blowing a little over . . . 27 miles. . . . On slipping the rope the machine started off increasing in speed to probably 7 or 8 miles. . . . Mr. Daniels took a picture just as it left the tracks. I found the control of the front rudder quite difficult. . . . As a result the machine would rise suddenly to about 10 ft. and then as suddenly, on turning the rudder, dart for the ground. A sudden dart when out about 100 feet from the end of the tracks ended the flight. Time about 12 seconds (not known exactly as watch was not promptly stopped.) . . .

After repairs, at 20 min. after 11 o'clock Will made the second trial. The course was about like mine, up and down but a little longer over the ground though about the same in time. Dist. not measured but about 175 ft. . . .

At about 20 minutes till 12 o'clock I made the third trial. When out about the same distance as Will's, I met with a strong gust from the left which raised the left wing and sidled the machine off to the right in a lively manner. I immediately turned the rudder to bring the machine down and then worked the [wing-warping] control. Much to our surprise, on reaching the ground the left wing struck first, showing the lateral control of this machine much more effective than on any of our former ones. At the time of its sidling it had raised to a height of probably 12 to 14 feet.

At just 12 o'clock Will started on the fourth and last trip. The machine started off with its ups and downs as it had before, but by the time he had gone over three or four hundred feet he had he had it under much better control, and was traveling on a fairly even course. It proceeded in this manner till it reached a small hummock out about 800 feet from the starting ways, when it began its pitching again and suddenly darted into the ground. The front rudder frame was badly broken up, but the main frame suffered none at all. The distance over the ground was 852 feet in 59 seconds. . . .

After removing the front rudder, we carried the machine back to camp. We set the machine down a few feet west of the building, and while standing about discussing the last flight, a sudden gust of wind struck the machine and started to turn it over. All rushed to stop it. Will who was near one end ran to the front, but too late to do any good. Mr. Daniels and myself seized spars at the rear, but to no purpose. The machine gradually turned over on us. Mr. Daniels, having had no experience in handling a machine of this kind, hung on to it from the inside, and as a result was knocked down and turned over and over with it as it went. His escape was miraculous, as he was in with the engine and chains. The engine legs were all broken off, the chain guides badly bent, a number of uprights, and nearly all the rear ends of the ribs were broken. One spar only was broken.

After dinner we went to Kitty Hawk to send off telegram to M.W. [Milton Wright, their father].

Short-answer questions. Use complete sentences and write neatly.

1. What was the *tone* of the diary entry? How can you tell?

2. Was the tone typical of Orville, from what you've learned of him?

3. Why was this diary entry important? What was it about?

4. What did you learn from it?

5. What is the significance of the date?

UNIT NAME: Bringing it all together

DATE: Day 8

STATE FRAMEWORKS: U.S. I 27; U.S. I 28A

HISTORICAL THINKING STANDARDS: Standard 1C, F; 2F; 3A, B, C, J; 4B, C, E, F

ACTIVITY:

1. Students will take the information presented to them, their in-class work, and any homework and use that information to complete the Venn diagram.
2. These Venn diagrams will be completed on an individual basis. Once the diagrams have been completed, students will swap papers, and the other student will use the rubric to grade the work.
3. Students must not put their names on the paper—only their I.D. number. Student-corrected papers will be random and anonymous.
4. A grading rubric will be provided.

I.D. NUMBER: _____

DATE: _____

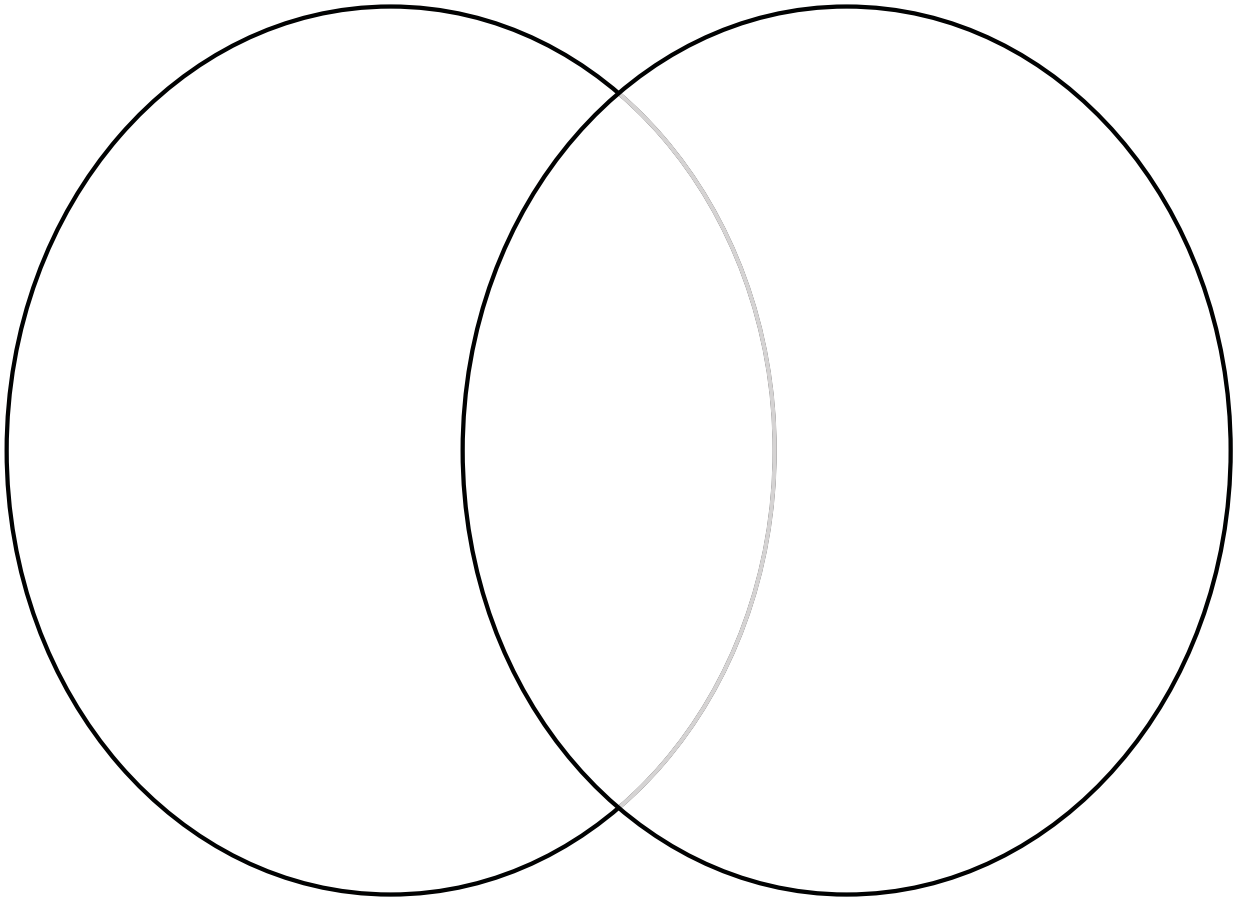
BRINGING IT ALL TOGETHER

Use your notes to complete the 3 Venn diagrams below. Use the rubric to help guide you.

Topics to be compared in the Venn diagram 1 are: Planes and Electricity

PLANES

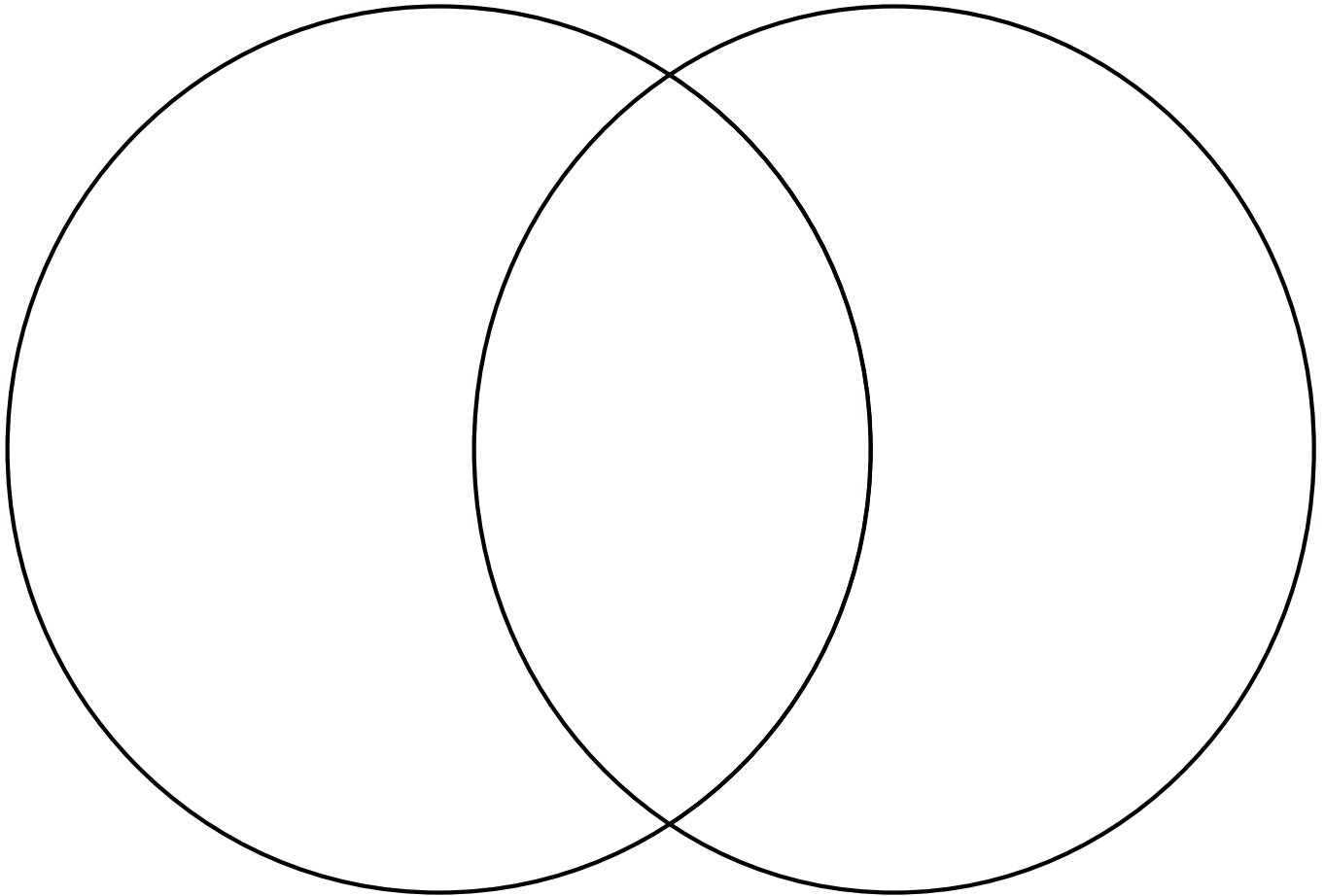
ELECTRICITY



Topics to be compared in Venn diagram 2 are: Electricity and Trains

ELECTRICITY

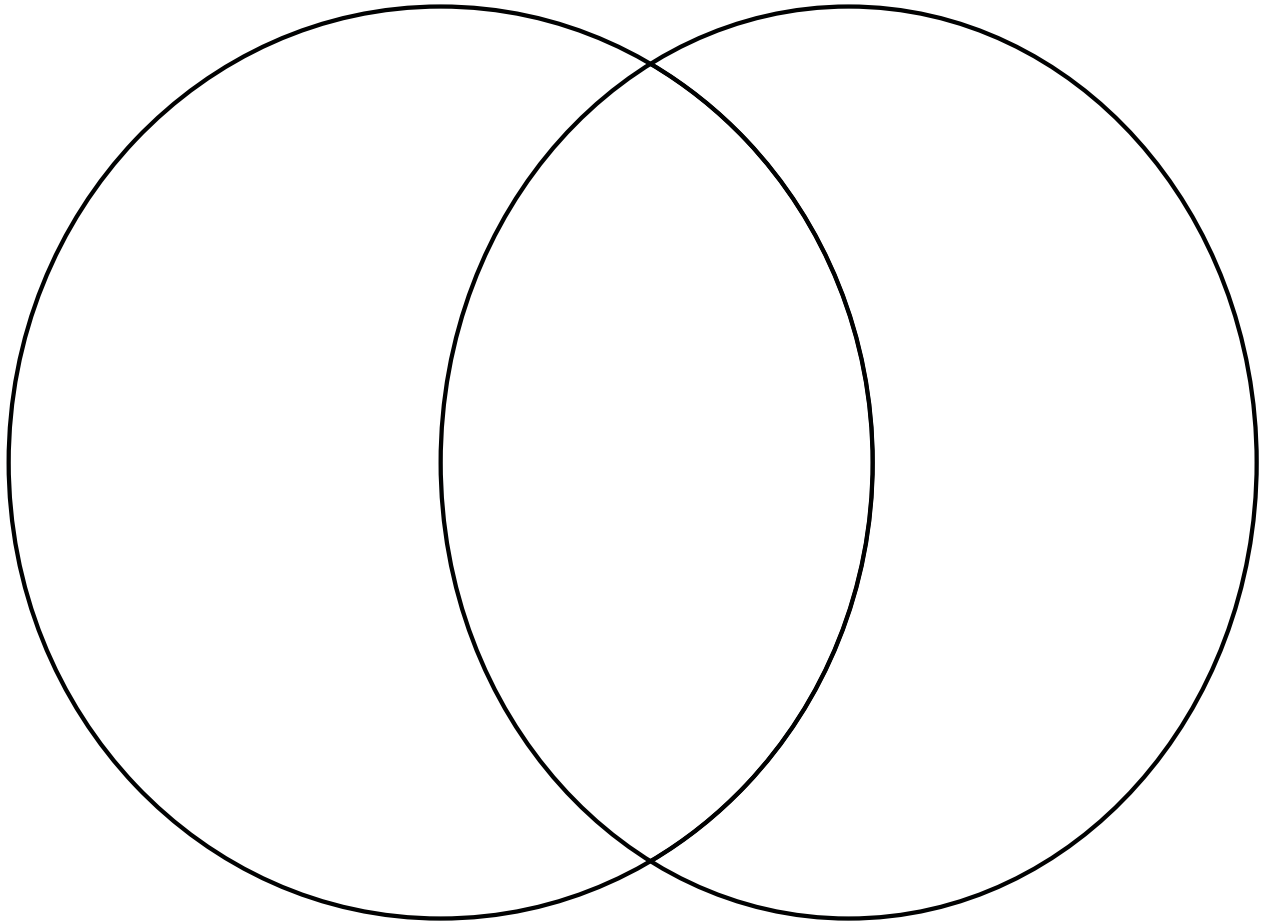
TRAINS



Topics to be compared in Venn diagram 3 are: Trains and Planes

TRAINS

PLANES



VENN DIAGRAM RUBRIC

Diagram 1	3	2	1
Support of comparison statements	All statements are supported by the texts.	Most statements are supported by the texts.	Few or none of the statements are supported by the texts.
Placement of statements within the Venn diagram	All statements that show similarities are placed in the center circle and all statements that show differences are placed in the correct outer circle.	Most statements are placed in the correct circle, but there are a few statements that are incorrectly placed.	Few statements are placed in the correct circle.
Number of quality statements	There are 5 or more comparison statements in each circle.	There are 3-4 comparison statements in each circle.	There are 2 or fewer comparison statements in each circle.
		TOTAL:	

Diagram 2	3	2	1
Support of comparison statements	All statements are supported by the texts.	Most statements are supported by the texts.	Few or none of the statements are supported by the texts.
Placement of statements within the Venn diagram	All statements that show similarities are placed in the center circle and all statements that show differences are placed in the correct outer circle.	Most statements are placed in the correct circle, but there are a few statements that are incorrectly placed.	Few statements are placed in the correct circle.
Number of quality statements	There are 5 or more comparison statements in each circle.	There are 3-4 comparison statements in each circle.	There are 2 or fewer comparison statements in each circle.
		TOTAL:	

Diagram 3	3	2	1
Support of comparison statements	All statements are supported by the texts.	Most statements are supported by the texts.	Few or none of the statements are supported by the texts.
Placement of statements within the Venn diagram	All statements that show similarities are placed in the center circle and all statements that show differences are placed in the correct outer circle.	Most statements are placed in the correct circle, but there are a few statements that are incorrectly placed.	Few statements are placed in the correct circle.
Number of quality statements	There are 5 or more comparison statements in each circle.	There are 3-4 comparison statements in each circle.	There are 2 or fewer comparison statements in each circle.
		TOTAL:	

Personal Narrative

I worked on this project alone. I took personal liberty by choosing some leaders that we did not cover in the TAH sessions, specifically George Stephenson and the Union Pacific Railroad. I did this because I felt that the train system was a huge historical boon and I specifically added the UPRR as a supplement to understanding trains. This particular lesson is added at the end of this narrative. It can be easily added, however, I felt that adding it may have been overkill. I added an artistic component to the UPRR section that I thought would be fun and engaging to the students. Plus, the UPRR website has a ton of historical facts that anyone can tie into the lesson.

Participating in the TAH sessions have given me additional resources that I never knew existed. Plus, engaging with my peers has given me confidence in my teaching ability.

I want my students to learn of *unlikely leaders* in history. I believe that it forces one to think outside the box and assume a different point of view. Plus, I know that students love hearing of the “underdog” and they will naturally ask questions on subjects that may be humorous, sad, touching, frustrating, maddening, and unusual. It also forces them to dig deeper in history to uncover the truth of the matter at hand.

As for Historical Thinking Standards, I found that they fit in nicely with State Standards (although I will say that the HTS are much more complete). Both standards forced me to really question my lesson plans and (hopefully!!) made them more efficient.

Historical Content and Background

The content and background I intend on introducing will include biographical date, demographical data, insights into character and personality. With Tesla, I will set up the video and have students take special interest in Tesla’s behavior and quirks. I want students to look into the characters of each leader and be able to appreciate them.

Information will be given in bulleted form. Ideally, lecture should be restrained to 10-15 minutes, allowing for completion of activities. Dates will be emphasized because students must be aware of the historical time period they are studying.

SUPPLEMENTARY LESSON

ACTIVITY 2: LIBRARY DAY

1.
 - Students will go to the computer lab.
 - Students will log onto <http://www.up.com/>.
 - Click onto “General Public”
 - Then, click onto “History and Photos”
 - Then, “Photo Gallery”
 - Then, “Advertising”
2. Students will each select an image of a poster or an ad. No duplicates.
4. Students will then use the Art Interpretation Rubric provided to help the student decode the ad/poster.
5. Students will print up a copy of their selected poster, then, they will use the Interpretation rubric and the writing rubric in order to answer the question below.

Union Pacific Railroad was one of the major companies that helped build the Trans-continental railroad. Judging by the ad or poster you’ve selected, how would you explain the reason(s) why the company decided to use specific logos, wording, and colors? What was their intention? It may help you to think like someone who worked in the railroads advertising company.

6. Students will then use the Writing Rubric to write a response to the question above.
7. Papers will be due in 2 days.

Writing Rubric

	4	3	2	1
Focus/Thesis Statement	The thesis statement names the topic of the essay and outlines the main points to be discussed.	The thesis statement names the topic of the essay.	The thesis statement outlines some or all of the main points to be discussed but does not name the topic	The thesis statement does not name the topic. AND does not preview what will be discussed.
Audience	Demonstrates a clear understanding of the potential reader and uses appropriate vocabulary and arguments.	Demonstrates a general understanding of the potential reader and uses vocabulary and arguments appropriate for that audience.	Demonstrates some understanding of the potential reader and uses arguments appropriate for that audience.	It is not clear who the author is writing for.
Sentence Structure	All sentences are well constructed with varied structure.	Most sentences are well constructed and there is some varied sentence structure in the essay.	Most sentences are well constructed, but there is no variation in structure	Most sentences are not well constructed or varied.

ART INTERPRETATION RUBRIC

	4	3	2	1
Description	Makes a complete and detailed description of the subject matter and/or elements seen in a work.	Makes a detailed description of most of the subject matter and/or elements seen in a work.	Makes a detailed description of some of the subject matter and/or elements seen in a work.	Descriptions are not detailed or complete.
Analysis	Accurately describes several dominant elements used by the artist and accurately relates how they are used to reinforce the theme, meaning, mood, or feeling of the artwork.	Accurately describes a couple of dominant elements used by the artist and accurately relates how these are used to reinforce the theme, meaning, mood, or feeling of the artwork.	Describes some dominant elements used by the artist, but has difficulty describing how these relate to the meaning or feeling of the artwork	Has trouble picking out the dominant elements.
Interpretation	Forms a somewhat reasonable hypothesis about the symbolic or metaphorical meaning and is able to support this with evidence from the work.	Student identifies the literal meaning of the work.	Student can relate how the work makes him/her feel personally.	Student finds it difficult to interpret the meaning of the work.
Evaluation	Uses multiple criteria to judge the artwork, such as composition, expression, creativity, design, communication of ideas.	Uses 1-2 criteria to judge the artwork.	Tries to use aesthetic criteria to judge artwork, but does not apply the criteria accurately.	Evaluates work as good or bad based on personal taste.