Please refer to the Pennsylvania Standards Aligned System website: (http://www.pdesas.org/module/sas/curriculumframework/SocialStudiesCF.aspx) for information on the Pennsylvania Curriculum Framework for Social Studies. You will find much of the information about PA Academic Standards, essential questions, vocabulary, assessments, etc. by navigating through the various components of the Curriculum Framework.

LESSON / UNIT TITLE: (Type here.):

Teacher Name(s): Steve Radulski and Christopher J. Koschak

School District: South Williamsport and Sullivan County

Building:

Grade Level: 10th

Subject: American History II

Time Required: 3-4 days

Lesson/Unit Summary *(2-3 sentence synopsis)*: The lesson will have students developed a Storyboard/Letter analysis of the Space Race. The lesson will cover the time period from the launch of Sputnik to the present time.

Essential Questions for Lesson/Unit

What purpose did the Space Race serve the United States during the 1950s and 1960s?

Should the United States continue spend money on the space program?

What benefits does the space program provide to citizens?

What purpose does the space program serve the United States today?

Pennsylvania Academic Standards Addressed in Lesson/Unit

(Include standards numbers and standards statements.)

8.3.12.C.
Evaluate how continuity and change in U.S. history are interrelated with the world.

- Technology
- Politics and government

NCHS Standard
Standard 1: The economic boom and social transformation of postwar (WW2) United States.
Standard 1C: The student understands how postwar science augmented the nation's economic strength, transformed daily life, and influenced the world economy.

- Assess the significance of research and scientific breakthroughs in promoting the U.S. space program [examine the influence of ideas]

Standard 2: How the Cold War and conflicts in Korea and Vietnam influenced domestic and international politics

Standard 2A: The student understands the international origins and domestic consequences of the Cold War

- Explain the origins of the Cold War and the advent of nuclear politics

Lesson/Unit Objectives

1. Identify Presidential arguments for supporting scientific and space research
2. Explain the costs, benefits, challenges and achievements of US space exploration, as cited by John F. Kennedy by 1962.
3. Contrast Kennedy's reasons for space exploration as compared to an average US citizen
4. Compare and contrast the successes of the US and Soviet space programs

Vocabulary/Key Terms for Lesson/Unit

Space race	n.	Competition between the United States and the Soviet Union from the 1950s to the 1990s for supremacy in outer space exploration.
Sputnik	n.	First artificial Satellite launched by Soviet Union on October 4, 1957.
National Aeronautic and Space Administration (NASA)	n.	United States Space Agency responsible for U.S. Space exploration.
John F. Kennedy	n.	35th President of the United States 1961-1963
Mercury Program	n.	America's first spaceflight program with a one-man crew that orbited the Earth
Gemini Program	n.	America's second manned spaceflight program with crews of two astronauts that traveled in space, performed docking maneuvers, and made spacewalks
Apollo Program	n.	America's third manned spaceflight program with crews of three astronauts that made several moon landings
John Fitzgerald Kennedy	n.	President of the United States 1961-1963
Yuri Gagarin	n.	First man in space cosmonaut of the Soviet Union **April 12, 1961**
Bay of Pigs	n.	Failed U.S. attempt to overthrow Fidel Castro communist government in
Barack Obama	n.	44th President of the United States 2009-present

Historical Background for Teachers / Research Narrative

(*Insert a 2-3 page abstract that details your research on the lesson/unit topic. This is where you get to share your scholarship with your peers. You should provide enough information that a teacher could potentially teach the lesson/unit and answer general questions based on studying your narrative.*

The Space Race

The Space Race was an extension of the Cold War, which lasted from the conclusion of World War II in 1945 until its end in 1991. Before we explore the Space Race, a brief explanation of the Cold War is necessary. The Cold War developed over deteriorated relations between the former World War II allies of the United States and the Soviet Union. This deterioration stemmed from differences between democracy and capitalism versus totalitarianism and communism. (http://www.nps.gov/archive/elro/glossary/cold-war.htm, Feb, 14, 2011)

The space race can trace its beginnings to military origins revolving around the weapons developed by German scientists to aid Germany in its efforts to dominate the European Continent with the V-2 Rocket. At first, the U.S. pursued using bombers to deliver offensive weapons to the enemy, and the Russians preferred rockets giving them the early lead in the space race. (http://www.nasm.si.edu/exhibitions/gal114/SpaceRace/sec200/sec200.htm , Feb 14, 2011)

The flashpoint of the Cold War occurred on October 4, 1957 when the Soviet Union launched Sputnik, which was the first artificial satellite to revolve around the earth. Sputnik embarrassed the United States and caused those involved in the Space Race to panic, believing that we had fallen behind technologically to the Russians. The United States began to push for more funding in mathematics and science to catch up to the Russians. The main concern with the Russians launching their first satellite was that it demonstrated the Russians had the ability to deliver a nuclear warhead just about anywhere on the planet. An ICBM or Intercontinental

ballistic missile could replace the bomber aircraft to deliver an offensive nuclear strike against an enemy.

The Soviet Union triumphed again next by sending the first man in space - Yuri Gagarin- on April 12, 1961. Gagarin actually orbited the earth, unlike the first American Alan Shepard. The first American to orbit the earth was John Glenn who achieved this feat on February 20, 1962. (http://www.nasa.gov/centers/glenn/about/bios/mercury_mission.html, Feb 14, 2011)

The Soviet Union continued to win the early space race with the first robotic mission to the moon, the first women in space, and the first spacewalk, continuing to embarrassing the Americans. (http://www.nasm.si.edu/exhibitions/gal114/SpaceRace/sec300/sec310.htm, Feb 14, 2011)

It became clear that the United States had decided to step up and make plans to surpass the Soviet Union when President John F. Kennedy announced the "dramatic and ambitious goal of sending an American safely to the Moon before the end of the decade". (http://history.nasa.gov/moondec.html, Feb 13, 2011). The Cold War, the United States trailing in the Space Race, and the Bay of Pigs incident were all factors that contributed to the pressure Kennedy felt to push the nation to take the lead in the space race. With all that was transpiring between Russia and the United States, the cold war became the "primary contextual lens through which many historians now view Kennedy's speech" to Congress when he announced the plan on May 25, 1961. (http://history.nasa.gov/moondec.html, Feb 13, 2011).

It is important to understand the "enormous human efforts and expenditures (financial spending) [that] were necessary" to ensure Project Apollo's

success. (http://history.nasa.gov/moondec.html, Feb 13, 2011). Projects in the history of the United States that would be comparable in terms of manpower and financial commitment would include the Panama Canal and the Manhattan Project. The importance of Kennedy's speech announcing the plan to put a man on the moon can be understood when one considers that "Nasa's

overall human spaceflight efforts were guided by Kennedy's speech; Projects Mercury (at least in its latter stages), Gemini, and Apollo were designed to execute Kennedy's goal".

(http://history.nasa.gov/moondec.html, Feb 13, 2011).

The lessons of the Space Race have not been forgotten. In his most recent state of the union address, President Barak Obama "likened America's current need to advance research and innovation to the famous race between the United States and what was then the Russian-led Soviet Union for supremacy in space exploration." (Chow, Denise, 2011). President Obama went on to make a space race analogy by stating that "This is our generation's Sputnik moment," His reference was an appeal for more research and development in our country, particularly in the areas of bio-medicine, computer/information technology and energy.

Instructional Prodedures and Activities

(List/describe the step-by-step sequence of procedures and learning activities.

I. Previous Nights Homework
   - **a.** Read **Denise Chow Article (dtd 1/26/2011)** ***Obama Evokes Space Race in Naming US Challenges.***
   - **b.** Read Handout "**The Decision to Go to the Moon – President John F. Kennedy May 25, 1961 before a Joint Session of Congress."**
   - c. Answer the following in complete sentences and bring to class. **(See handout – Space Race Exploration**)
     - i. What did President Obama mean when he said "This is our generation's Sputnik moment"?
     - ii. According to President Obama and NASA Chief Charles Bolden, what areas must the US focus on in order to be successful in the future?
     - iii. Hypothesize and write down 2 ways or examples of how space exploration might help the US in the future.
     - iv. How did the launching of Sputnik, the actions of Yuri Gagarin, and the Bay of Pigs influence Kennedy's thinking regarding space exploration?
     - v. Identify and list the three US space "projects" that would eventually result in the US landing a man on the moon

II. Day 1 of Lesson Procedure
   - a. Pair, Share, Write:
     - i. Turn to a partner. Students compare responses to the previous night's reading. Students add or modify their individual responses with information from their partner
     - **ii.** At the bottom of each sheet students will respond to a consensus opinion to the following question: III. "In your opinion: Why might both President Obama and Kennedy place such high importance on science and space exploration?"

b. Provide students the following prompt for discussion and analysis: "What did JFK perceive to be the costs, benefits, challenges and achievements of US space efforts by 1962?"
    i. Show students the following video: **Discovery Education, *The Space Program*, Speeches from History: John F. Kennedy. (3m04s)**
    ii. Distribute **the reading** "**The Nation's Space Effort" President John F. Kennedy, September 12,1962.**
    iii. Distribute the **Graphic Organizer "John F. Kennedy's Vision of the US Space Effort – The Space Race"**
    iv. Students are to read JFK's speech to identify the costs, benefits, challenges and achievements of US space efforts by 1962, placing them in the appropriate space in the Graphic Organizer.
c. Closeout of Day's Lesson
    i. Using poster board, whiteboard or chalkboard, have the class as a whole provide 2 statements or evidence based on the reading.
d. Homework: Complete the reading and graphic organizer

III. Day 2 of Lesson Procedure

a. Opening Activity:
    i. Assign small groups a particular part of the previous night's graphic organizer
    ii. Continuing from the previous day, small groups are to add to the posterboard from the previous class, 3-4 additional pieces of evidence or statements gleaned from JFK's Speech that they wrote the previous evening. The class will review these additions and make any adjustments to their own notes.
    iii. Read aloud to the class **the letter from Mary Lou Reitler** to President Kennedy questioning the reasons for spending of money on the space race.
    iv. Transition. Imagine you are an advisor to President Kennedy. You have an in depth knowledge of the events surrounding the space race during the 1960s. You are asked to take one of the following options:
b. Tangible Activity options
    i. **Option 1: Persuasive Letter to Mary Lou Reitler**. The year is 1969. The US successfully landed a man on the moon. In going through your personal papers from when you were JFK's advisor, you find a copy of Miss Rietler's letter and decide that you'd like to write her explaining why JFK felt so strongly about the space program. Write a letter that is understandable to a teenager, and fully addresses JFK's views as to why space exploration was and will continue to be important to the future security and well-being of the United States. Ensure you include the benefits, achievements and future goals of the US space program of the 1960s. Don't deny the challenges or failures of the program!
c. Option 2 , **The Key Events of the Space Race.**
    i. The year is 1969 and man has just landed on the moon. You are a NASA historian who has been tasked with analyzing the successes and failures of the US space program as compared to the Soviet effort.
    ii. You have two options of presenting your findings and analysis: either a hardcopy storyboard with visuals and summary text, or an electronic presentation of the same information.
    iii. Students will use Windows Photo Story 3, Windows Movie Maker., or MS Powerpoint if choosing the electronic presentation method.
    iv. The Events are
        1. **USSR Sputnik 1 & 2 1957**
        2. USA Vanguard Rocket failure 1957
        3. USSR Luna 3 1959
        4. USA Explorer 1 satellite / Jupiter C rocket 1958

5. USA Mercury Missions 1961-1963
6. USSR Yuri Gagarin 1961 & USA John Glenn orbits 1962
7. USSR Vostock/Voskhod missions 1961-1965
8. USA Gemini Missions 1964-1966
9. USSR Aleksei Leonov spacewalk 1965
10. USA Saturn V Rockets 1967
11. **USA Apollo Missions**

v. You must narrow down the TOP 6 events from the list of 11 events. You MUST included Sputnik 1&2 and the US Apollo Missions. The other 4 events are your choice.

d. Homework:
   i. For the letter, construct a draft outline for the next day
   ii. For the historical storyboard, visit the website http://www.nasm.si.edu/exhibitions/gal114/gal114.htm to gather information about the two required events.

IV. Days 3-4 Research and provide final analysis.
   a. Students continue on research and construction of projects
   b. Students may work alone or in pairs for the historical storyboard projects, but must work individually for the written letter.

V. Day 5
   a. Students will present their projects in class.

Suggested Strategies for Differentiating Instruction

1. The JFK Reading can be reduced to select only portions of it that reflect cost, benefits, achievements and challenges.
2. Provide students with printouts or specific webpages from which to draw their information for the project.
3. Specify the events that students must complete for the project.
4. Students may work in pairs to complete the storyboard project or the persuasive letter.

Assessment of Student Learning (Formative and Summative)

1. Completion and discussion of initial reading assignment on President Kennedy and President Obama.
2. Completion and discussion of Graphic Organizer, JFK's vision of The US Space Effort.
3. Project Options:
   a. A persuasive essay according to PSSA writing rubric.
   b. A storyboard (hardcopy or digital) regarding the history of the space race with rubric.

Materials and Resources

(Include text, supplementary resources, primary source documents, websites, handouts, charts, maps, etc.)

Print Resources and sources:

Denise Chow (dtd 1/26/2011) *Obama Evokes Space Race in Naming US Challenges.* http://www.space.com/10692-obama-speech-space-race-nasa.html

"The Decision to Go to the Moon – President John F. Kennedy May 25, 1961 before a Joint Session of Congress." http://history.nasa.gov/moondec.html

JFK Library. Mary Lou Reitler, Letter to President Kennedy. http://www.jfklibrary.org/Asset-Viewer/gLQPx4-1Gky60QY6nmXEjA.aspx

"The Nation's Space Effort" President John F. Kennedy, September 12, 1962. http://www.historyplace.com/speeches/jfk-space.htm

Web Sites:

JFK Library http://www.jfklibrary.org/Education.aspx

Smithsonian National Air and Space Museum. The Space Race. http://www.nasm.si.edu/exhibitions/gal114/gal114.htm

Handouts (to supplement print resources and sources)

Graphic Organizer: John F. Kennedy's Vision for the U.S. Space Race.

Author(s) of Unit/Lesson Plan

Steve Radulski and Christopher J. Koschak

National Aeronautics and Space Administration
NASA History Office
http://history.nasa.gov/moondec.html

The Decision to Go to the Moon:
President John F. Kennedy May 25, 1961
before a Joint Session of Congress

"I believe this nation should commit itself to achieving the goal, before this decade is out, of landing a man on the Moon and returning him safely to the Earth. No single space project in this period will be more impressive to mankind, or more important for the long-range exploration of space, and none will be so difficult or expensive to accomplish."

President John F. Kennedy, speech to U.S. Congress, May 25, 1961.

Summary and Analysis

On May 25, 1961, President John F. Kennedy announced before a special joint session of Congress the dramatic and ambitious goal of sending an American safely to the Moon before the end of the decade. A number of political factors affected Kennedy's decision and the timing of it. In general, Kennedy felt great pressure to have the United States "catch up to and overtake" the Soviet Union in the "space race." Four years after the **Sputnik** shock of 1957, the cosmonaut **Yuri Gagarin** had become the first human in space on April 12, 1961, greatly embarrassing the U.S. While **Alan Shepard** became the first American in space on May 5, he only flew on a short suborbital flight instead of orbiting the Earth, as Gagarin had done. In addition, the Bay of Pigs fiasco (the failed US attempt to invade and overthrow the Cuban government of Fidel Castro) in mid-April 1961 put unquantifiable pressure on Kennedy. He wanted to announce a program that the U.S. had a strong chance at achieving before the Soviet Union. After consulting with Vice President Johnson, **NASA** Administrator James Webb, and other officials, he concluded that landing an American on the Moon would be a very challenging technological feat, but an area of space exploration in which the U.S. actually had a potential lead. Thus the cold war is the primary contextual lens through which many historians now view Kennedy's speech.

The decision involved much consideration before making it public, as well as enormous human efforts and expenditures (financial spending) to make what became **Project Apollo** a reality by 1969. Only the construction of the Panama Canal in modern peacetime and the Manhattan Project [the US effort to develop atomic weapons in the 1940s during WWII] in war were comparable in scope. NASA's overall human spaceflight efforts were guided by Kennedy's speech; **Projects Mercury** (at least in its latter stages), **Gemini, and Apollo** were designed to execute Kennedy's goal. His goal was achieved on July 20, 1969, when **Apollo 11** commander Neil Armstrong stepped off the Lunar Module's ladder and onto the Moon's surface.

"We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too.

John F. Kennedy, Address at Rice University in the Space Effort, September 12, 1962

Obama Evokes Space Race in Naming US Challenges.

By Denise Chow, SPACE.com Staff Writer

updated 1/26/2011 1:16:59 PM ET

President Obama's State of the Union address last night (Jan. 25,2011) outlined an ambitious roadmap for the country in terms of jobs, industry, education and energy policy. But his lofty goals for the future also echoed the sentiments of the U.S.-Soviet space race of more than 50 years ago, with the president calling today's challenges "the Apollo projects of our time."

Obama likened America's current need to advance research and innovation to the famous race between the United States and what was then the Russian-led Soviet Union for supremacy in space exploration.

"Half a century ago, when the Soviets beat us into space with the launch of a satellite called Sputnik, we had no idea how we would beat them to the moon," the president said. "The science wasn't even there yet. NASA didn't exist. But after investing in better research and education, we didn't just surpass the Soviets, we unleashed a wave of innovation that created new industries and millions of new jobs."

Sputnik of the 21st century

The United States, Obama said, stands at a crossroads.

"This is our generation's Sputnik moment," he said, referring to challenge that was presented to the U.S. in 1957 when the Soviet Union launched the world's first orbiting artificial satellite, Sputnik 1. "Two years ago, I said that we needed to reach a level of research and development we haven't seen since the height of the Space Race. And in a few weeks, I will be sending a budget to Congress that helps us meet that goal."

"We'll invest in biomedical research, information technology, and especially clean energy technology – an investment that will strengthen our security, protect our planet, and create countless new jobs for our people," he added.

"Tonight President Obama delivered a powerful State of the Union message to the nation," NASA chief Charles Bolden wrote in a blog posted on NASA's website late yesterday. "His focus on innovation, education and building are the foundations for our future success as a nation – and the key to economic recovery and long-term fiscal stability."

President's vision for space?

While Obama did not specifically refer to his administration's space plan for NASA (one aimed at landing astronauts on an asteroid by 2025 and Mars in the 2030s), his mention of the agency's role in building up the country's scientific prowess was significant, some experts say.

Bolden compared Obama's speech to John F. Kennedy's in 1961.

"Fifty years ago, another young president propelled a fledgling space agency on a bold, new course that would push the frontiers of exploration to new heights," Bolden wrote. "The 21st-century course that President Obama has set our agency on will foster new industries that create jobs, pioneer technology innovation, and inspire a new generation of explorers through education – all while continuing our fundamental mission of exploring our home planet and the cosmos."

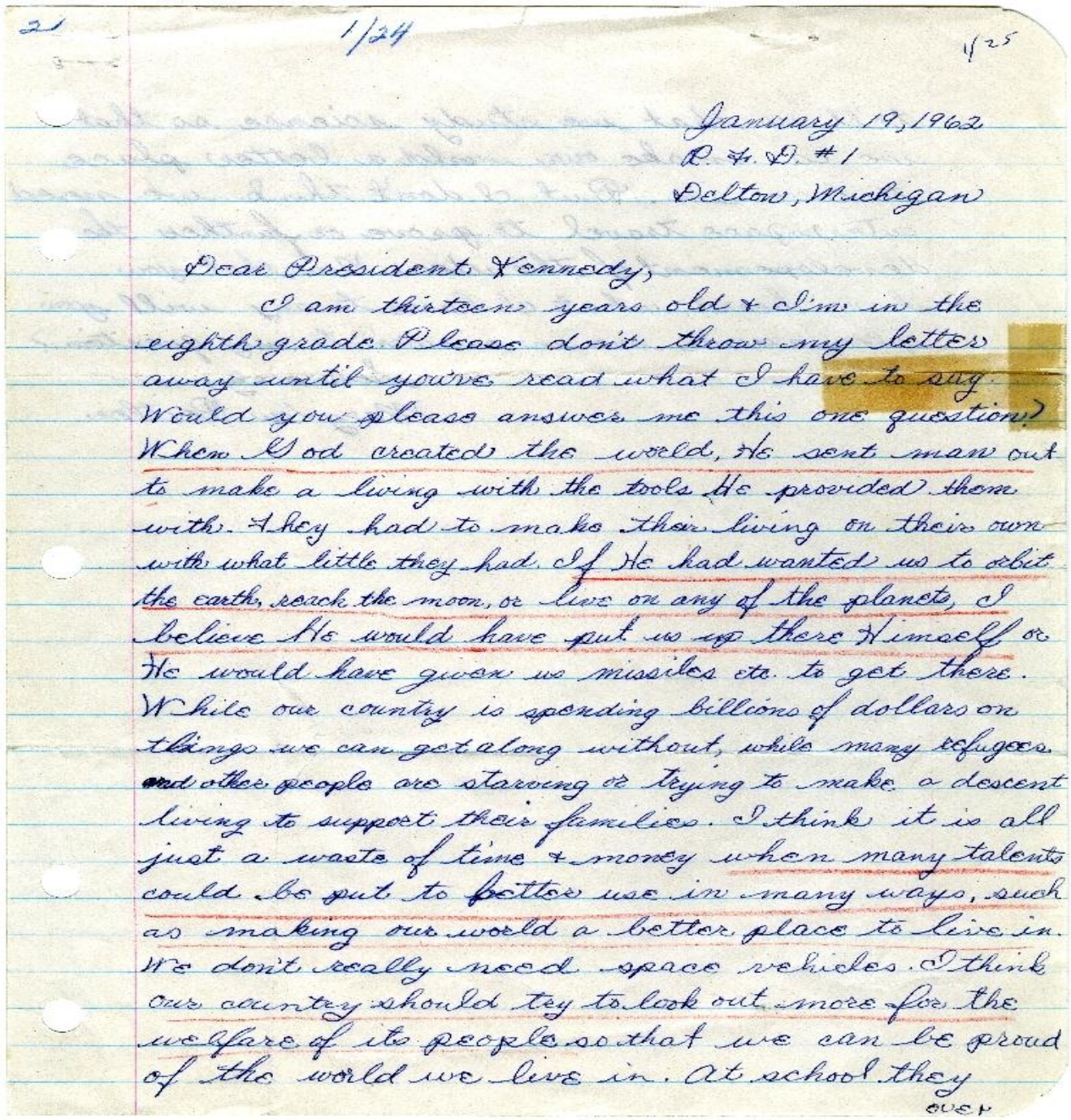
Obama also spoke about improving the nation's education, saying, "We need to teach our kids that it's not just the winner of the Super Bowl who deserves to be celebrated, but the winner of the science fair."

Fostering education, Bolden wrote, is a key goal at NASA.

"We're making contributions in all of these areas," Bolden wrote yesterday. "Tonight's message of opportunity and inspiration will guide us as we reach even higher, building a better tomorrow and ensuring that we win the future for this generation and generations to follow."

http://www.space.com/10692-obama-speech-space-race-nasa.html

Letter to John F. Kennedy from Mary Lou Reitler



1/24

1/25

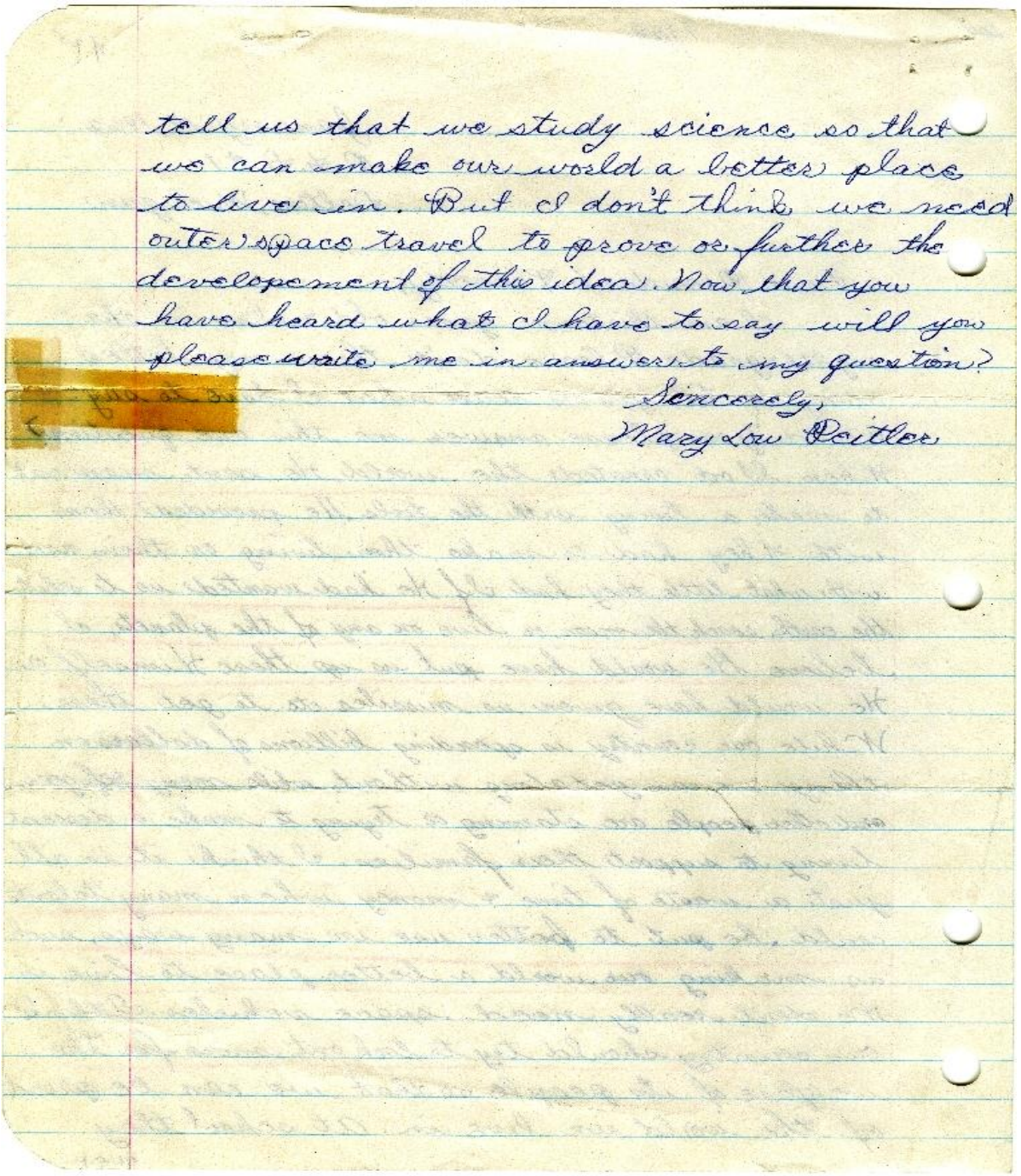
January 19, 1962
R. 4. D. #1
Delton, Michigan

Dear President Kennedy,

I am thirteen years old & I'm in the eighth grade. Please don't throw my letter away until you've read what I have to say. Would you please answer me this one question? When God created the world, He sent man out to make a living with the tools He provided them with. They had to make their living on their own with what little they had. If He had wanted us to orbit the earth, reach the moon, or live on any of the planets, I believe He would have put us up there Himself or He would have given us missiles etc. to get there. While our country is spending billions of dollars on things we can get along without, while many refugees and other people are starving or trying to make a descent living to support their families. I think it is all just a waste of time & money when many talents could be put to better use in many ways, such as making our world a better place to live in. We don't really need space vehicles. I think our country should try to look out more for the welfare of its people so that we can be proud of the world we live in. At school they

over

LESSON PLAN TEMPLATE



tell us that we study science so that we can make our world a better place to live in. But I don't think we need outer space travel to prove or further the developement of this idea. Now that you have heard what I have to say will you please write me in answer to my question?

Sincerely,
Mary Lou Peitler

LESSON PLAN TEMPLATE

The Nation's Space Effort

President John F. Kennedy, September 12, 1962 (excerpted)

President Kennedy gave this speech at Rice University in Houston, Texas on September 12, 1962. In it, Kennedy challenges the people of America to set a goal of reaching the moon before the decade was out. With his assassination the following fall, the country vowed to make Kennedy's dream a reality.
http://cicerohistory.com/

President Pitzer, Mr. Vice President, Governor, Congressman Thomas, Senator Wiley, and Congressman Miller, Mr. Webb, Mr. Bell, scientists, distinguished guests, and ladies and gentlemen:

…I am delighted to be here and I'm particularly delighted to be here on this occasion.

We meet at a college noted for knowledge, in a city noted for progress, in a state noted for strength, and we stand in need of all three, for we meet in an hour of change and challenge, in a decade of hope and fear, in an age of both knowledge and ignorance. The greater our knowledge increases, the greater our ignorance unfolds.

Despite the striking fact that most of the scientists that the world has ever known are alive and working today, despite the fact that this Nation's own scientific manpower is doubling every 12 years in a rate of growth more than three times that of our population as a whole, despite that, the vast stretches of the unknown and the unanswered and the unfinished still far outstrip our collective comprehension.

…man, in his quest for knowledge and progress, is determined and cannot be deterred. The exploration of space will go ahead, whether we join in it or not, and it is one of the great adventures of all time, and no nation which expects to be the leader of other nations can expect to stay behind in this race for space.

Those who came before us made certain that this country rode the first waves of the industrial revolution, the first waves of modern invention, and the first wave of nuclear power, and this generation does not intend to founder in the backwash of the coming age of space. We mean to be a part of it--we mean to lead it. For the eyes of the world now look into space, to the moon and to the planets beyond, and we have vowed that we shall not see it governed by a hostile flag of conquest, but by a banner of freedom and peace. We have vowed that we shall not see space filled with weapons of mass destruction, but with instruments of knowledge and understanding.

Yet the vows of this Nation can only be fulfilled if we in this Nation are first, and, therefore, we intend to be first. In short, our leadership in science and industry, our hopes for peace and security, our obligations to ourselves as well as others, all require us to make this effort, to solve these mysteries, to solve them for the good of all men, and to become the world's leading space-faring nation.

*We set sail on this new sea because there is new knowledge to be gained, and new rights to be won, and they must be won and used for the progress of all people. For space science, like nuclear science and all technology, has no conscience of its own. Whether it will become a force for good or ill depends on man, and only if the United States occupies a position of pre-eminence can we help decide whether this new ocean will be a sea of peace or a new terrifying theater of war. I do not say that we should or will go unprotected against the hostile misuse of space any more than we go unprotected against the hostile use of land or sea, but I do say that space can be explored and mastered without feeding the fires of war, without repeating the mistakes that man has made in extending his writ around this globe of ours.

*There is no strife, no prejudice, no national conflict in outer space as yet. Its hazards are hostile to us all. Its conquest deserves the best of all mankind, and its opportunity for peaceful cooperation many never come again. But why, some say, the moon? Why choose this as our goal? And they may well ask why climb the highest mountain? Why, 35 years ago, fly the Atlantic? Why does Rice play Texas?

*We choose to go to the moon. We choose to go to the moon in this decade and do the other things, not because they are easy, but because they are hard, because that goal will serve to organize and measure the best of our energies and skills, because that challenge is one that we are willing to accept, one we are unwilling to postpone, and one which we intend to win, and the others, too.

It is for these reasons that I regard the decision last year to shift our efforts in space from low to high gear as among the most important decisions that will be made during my incumbency in the office of the Presidency.

In the last 24 hours we have seen facilities now being created for the greatest and most complex exploration in man's history. We have felt the ground shake and the air shattered by the testing of a Saturn C-1 booster rocket, many times as powerful as the Atlas which launched John Glenn, generating power equivalent to 10,000 automobiles with their accelerators on the floor. We have seen the site where five F-1 rocket engines, each one as powerful as all eight engines of the Saturn combined, will be clustered together to make the advanced Saturn missile, assembled in a new building to be built at Cape Canaveral as tall as a 48 story structure, as wide as a city block, and as long as two lengths of this field.

LESSON PLAN TEMPLATE

Within these last 19 months at least 45 satellites have circled the earth. Some 40 of them were made in the United States of America and they were far more sophisticated and supplied far more knowledge to the people of the world than those of the Soviet Union.

The Mariner spacecraft now on its way to Venus is the most intricate instrument in the history of space science. The accuracy of that shot is comparable to firing a missile from Cape Canaveral and dropping it in this stadium between the 40-yard lines.

Transit satellites are helping our ships at sea to steer a safer course. Tiros satellites have given us unprecedented warnings of hurricanes and storms, and will do the same for forest fires and icebergs.

We have had our failures, but so have others, even if they do not admit them. And they may be less public.

To be sure, we are behind, and will be behind for some time in manned flight. But we do not intend to stay behind, and in this decade, we shall make up and move ahead.

The growth of our science and education will be enriched by new knowledge of our universe and environment, by new techniques of learning and mapping and observation, by new tools and computers for industry, medicine, the home as well as the school. Technical institutions, such as Rice, will reap the harvest of these gains.

And finally, the space effort itself, while still in its infancy, has already created a great number of new companies, and tens of thousands of new jobs. Space and related industries are generating new demands in investment and skilled personnel, and this city and this state, and this region, will share greatly in this growth. What was once the furthest outpost on the old frontier of the West will be the furthest outpost on the new frontier of science and space. Houston, your city of Houston, with its Manned Spacecraft Center, will become the heart of a large scientific and engineering community. During the next 5 years the National Aeronautics and Space Administration expects to double the number of scientists and engineers in this area, to increase its outlays for salaries and expenses to $60 million a year; to invest some $200 million in plant and laboratory facilities; and to direct or contract for new space efforts over $1 billion from this center in this city.

To be sure, all this costs us all a good deal of money. This year's space budget is three times what it was in January 1961, and it is greater than the space budget of the previous eight years combined. That budget now stands at $5,400 million a year--a staggering sum, though somewhat less than we pay for cigarettes and cigars every year. Space expenditures will soon rise some more, from 40 cents per person per week to more than 50 cents a week for every man, woman and child in the United States, for we have given this program a high national

priority--even though I realize that this is in some measure an act of faith and vision, for we do not now know what benefits await us. But if I were to say, my fellow citizens, that we shall send to the moon, 240,000 miles away from the control station in Houston, a giant rocket more than 300 feet tall, the length of this football field, made of new metal alloys, some of which have not yet been invented, capable of standing heat and stresses several times more than have ever been experienced, fitted together with a precision better than the finest watch, carrying all the equipment needed for propulsion, guidance, control, communications, food and survival, on an untried mission, to an unknown celestial body, and then return it safely to earth, re-entering the atmosphere at speeds of over 25,000 miles per hour, causing heat about half that of the temperature of the sun--almost as hot as it is here today--and do all this, and do it right, and do it first before this decade is out--then we must be bold.

However, I think we're going to do it, and I think that we must pay what needs to be paid. I don't think we ought to waste any money, but I think we ought to do the job. And this will be done in the decade of the Sixties. It may be done while some of you are still here at school at this college and university. It will be done during the terms of office of some of the people who sit here on this platform. But it will be done. And it will be done before the end of this decade.

And I am delighted that this university is playing a part in putting a man on the moon as part of a great national effort of the United States of America.

Many years ago the great British explorer George Mallory, who was to die on Mount Everest, was asked why did he want to climb it. He said, "Because it is there."

Well, space is there, and we're going to climb it, and the moon and the planets are there, and new hopes for knowledge and peace are there. And, therefore, as we set sail we ask God's blessing on the most hazardous and dangerous and greatest adventure on which man has ever embarked.

Thank you.

President John F. Kennedy - September 12, 1962

http://www.historyplace.com/speeches/jfk-space.htm

LESSON PLAN TEMPLATE

The Space Race Exploration America in 2011 and 1962

A. Comparing President Obama's and President Kennedy's views

I. Denise Chow Article (dtd 1/26/2011) ***Obama Evokes Space Race in Naming US Challenges.***

a. What did President Obama mean when he said "This is our generation's Sputnik moment"?

b. According to President Obama and NASA Chief Charles Bolden, what areas must the US focus on in order to be successful in the future?

c. Hypothesize and write down 2 ways or examples of how space exploration might help the US in the future.

II. Read the NASA History reading: "The Decision to Go to the Moon – President John F. Kennedy May 25, 1981 before a Joint Session of Congress"

b. How did the launching of Sputnik, the actions of Yuri Gagarin, and the Bay of Pigs influence Kennedy's thinking regarding space exploration?

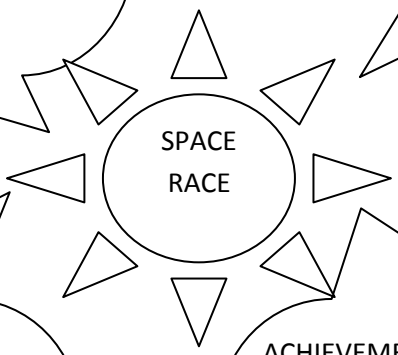
c. Identify and list the three US "projects" that would eventually result in the US landing a man on the moon.

III.

LESSON PLAN TEMPL

COSTS

BENEFITS



John F. Kennedy's Vision of the US Space Effort

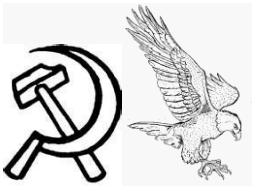
CHALLENGES

ACHIEVEMENTS AS OF 1962

LESSON PLAN TEMPLATE

THE SPACE RACE

Advantage?



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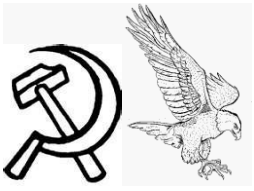

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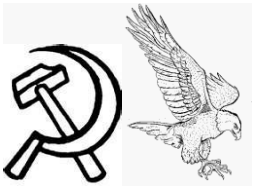

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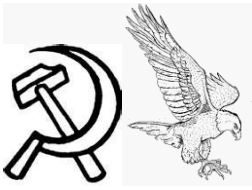

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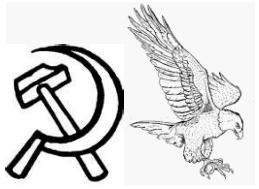

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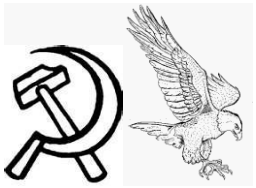

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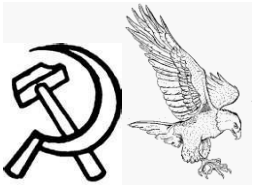

LESSON PLAN TEMPLATE

	Accuracy of Declarative Knowledge	Explanation of Significance	Project elements
4 Advanced	Demonstrates an outstanding understanding of content and uses it appropriately in describing the event. Addresses in depth and accurately the who, what, when, why and where of all events.	Group clearly explains the immediate effect and the significance each of the events to the impact of the Space Race	Group has a visual for each of the events; Layout and design are neat and pleasing to the eye
3 Proficient	Demonstrates a solid understanding of content and uses it appropriately most of the time in describing the event. Addresses accurately the who, what, when, why and where of the events; may be missing information for 1 of the events	Group adequately explains the effect of each of the events and the their significance to the Space Race. Group may be missing 1 event's significance	Group is missing 1 visual; layout and design are generally pleasing to the eye.
2 Basic	Demonstrates a satisfactory understanding of content; Addresses some of the who, what, when, why and where of the events; may be missing information for 2 to 3 events	Group attempts to explain the impact of the events and its significance on the Space Race, but doesn't accurately explain it. Group may be missing between 2 and 3 events.	Group is missing 2 to 3 visuals; layout and design detract slightly from the overall impressing of the project.
1 Below Basic	Demonstrates little understanding of the content. Missing information for more than 4 events.	Group fails to address the impact or significance of the events. Group did not address the significance of events	Group is missing more than 4 visuals; layout and design detract significantly from the overall impression of the project.

LESSON PLAN TEMPLATE