Title: Marie Curie: First Person to Wine Two Nobel Prizes	
Writer: Carla Ruffer	**Grade Level:** 5
School:	**Subject Area(s):** English Language Arts
	Time:

Objectives/ Essential Questions:
Who is Marie Curie? What did she discover? The student will use the presentation information and create exploratory questions for the subject. The student will conduct a little research to answer their partner's exploratory questions in a creative manner as the subject.

Standards/ Benchmarks:
LAFS.5.W.1.3: Write narratives to develop real or imagined experiences or events using effective technique, descriptive details, and clear event sequences.

LAFS.5.W.2.4: Produce clear and coherent writing in which the development and organization are appropriate to task, purpose, and audience

LAFS.5.W.2.6: With some guidance and support from adults, use technology, including the Internet, to produce and publish writing as well as to interact and collaborate with others; demonstrate sufficient command of keyboarding skills to type a minimum of two pages in a single sitting.

LAFS.5.W.3.7: Conduct short research projects that use several sources to build knowledge through investigation of different aspects of a topic.

Cultural Context/ Background:
"Marie Curie was born in Warsaw, Poland, in 1867. After working as a governess to support her sister's education, it was Marie's turn. She traveled to Paris to study at the Sorbonne, where she met Pierre Curie, a fellow scientist and greatest love.

Scientist Henri Becquerel had discovered a mysterious glow coming from uranium salts. Scientists didn't seem too interested in the effect, but Marie was fascinated by the glow and wanted to know what it was and why it was happening. In a study shed, Marie and Pierre went to work. Using Pierre's electrometer, Marie examined "glowing" compounds and discovered that the energy being produced came from the uranium atom itself! We now know that atoms with an unstable nucleus emit particles and release energy. Marie started calling the effect "radioactivity." To find the source, she and Pierre ground up and filtered down other radioactive materials, like the mineral ore uraninite. Through this process Pierre and Marie discovered 2 new radioactive elements: polonium and radium. Together, the Curies received a Nobel prize in physics in 1903 for the discovery of radiation. Later, in 1911, Marie won a second Nobel prize in chemistry for her discovery of and research into polonium and radium.

Pierre and Marie made an amazing team. Sadly, they realized that the radiation from their experiments was making them sick. Pierre would do tests with radium on his own arm that left large burns. Their long-term exposure made them both tired and achy – we now understand that the

effects of radiation poisoning are deadly. In 1906, Pierre was killed in a horse-carriage accident. Despite her grief and the danger involved, Marie continued their important work and discovered that radium could be used as a cancer treatment. She spent hours collecting radon gas to send to hospitals even through it left her feeling weak.

In 1914, France was invaded during World War I. With her daughter Irene, she created a unit of mobile medical X-ray trucks, which they heroically drove onto the battlefields to help wounded soldiers.

Marie Curie did scientific work because she loved it and dangerous work because the world needed it. Her life and work continue to inspire scientists today." Page 29

Reference

Ignotofsky, Rachel. (2016). *Women in Science; 50 Fearless Pioneers Who Changed the World.* Speed Press.

Key Terminology:

"*Atom* – The smallest particle of an element that still has all the properties of that element and cannot be broken down further by chemical means.

Electrometer – An instrument used for measuring extremely low electric charges.

Element – A substance in which all atoms have the same number of protons, or atomic number.

Nobel prize – …annual awards to recognize outstanding work in may scientific and literary fields.

Radioactivity – The spontaneous change from an unstable atomic nucleus as it transforms itself in order to shed energy; the breakdown or disintegration of atomic nuclei, which gives off harmful radiation"

O'Quinn, Amy. M. (2017). *Marie Curie for Kids: Her Life and Scientific Discoveries.* Chicago Review Press Incorporated. Pages 65 and 122-124

Activities:

1. PowerPoint about Marie Curie.
    - Marie is from Warsaw, Poland
    - Marie learned of the discovery of the glow from uranium salts by Henri Becquerel and wanted to know why they glowed.
    - "Using Pierre's electrometer, Marie examined 'glowing' compounds and discovered that the energy being produced came from the uranium atom itself! We now know that atoms with an unstable nucleus emit particles and release energy. Marie started calling the effect "radioactivity." To find the source, she and Pierre ground up and filtered down other radioactive materials, like the mineral ore uraninite. Through this process Pierre and Marie discovered 2 new radioactive elements: polonium and radium." Ignotofsky, Rachel. (2016). *Women in Science; 50 Fearless Pioneers Who Changed the World.* Speed Press. Page 29.
    - Marie & Pierre won a Nobel Prize for discovering radiation, and Marie won a separate Nobel Prize for discovering the 2 new elements.
    - Radiation caused Marie & Pierre to be sick
    - Radium can be used against cancer

- World War One X-ray trucks run by Marie & her daughter Irene

Reference
Ignotofsky, Rachel. (2016). *Women in Science; 50 Fearless Pioneers Who Changed the World.* Speed Press.

2. Interview Marie Curie
    1. Pretend you are hosting a talk show and you will interview Marie Curie.
    2. Write out 5 questions you would ask her using “what” “where “when” “how” and “why”

3. Be interviewed as Marie Curie
    1. Trade interview questions with a partner
    2. Pretend you are Marie Curie and answer the interview questions. Research the answers if unknown.

Assessments/ Assessment Grading Criteria (please attach copies of any assessment handouts to the end):

The teacher will use a proficiency scale to grade the interview questions

4	The student created 5 questions covering what, where, when, how, and why. The questions were creative / outside of the obvious. The student incorporated the information from the PowerPoint presentation into the questions.
3	The student created 5 questions covering what, where, when, how, and why. The questions were creative / outside of the obvious.
2	The student created 5 questions covering what, where, when, how, and why.
1	The student created 5 questions.

The teacher will use a proficiency scale to grade the interview answers

4	The student provided correct answers with researched information in a creative manner with clear and coherent writing.
3	The student provided correct answers with researched information in a creative manner.
2	The student provided correct answers with researched information.
1	The student provided correct answers.

Materials (please attach copies of any handouts to the end of the lesson):
- PowerPoint – Marie Curie: First Person to Win Two Nobel Prizes

References:
O’Quinn, Amy. M. (2017). *Marie Curie for Kids: Her Life and Scientific Discoveries.* Chicago Review

Press Incorporated.

Ignotofsky, Rachel. (2016). *Women in Science; 50 Fearless Pioneers Who Changed the World.* Speed Press.

Attachments:

- PowerPoint – Marie Curie: First Person to Win Two Nobel Prizes