Annotated Bibliography

Primary

Albert Einstein (1879-1955) German-Swiss mathematician: Relativity: Einstein in 1905 aged 26. Photography. Britannica ImageQuest, Encyclopædia Britannica, 25 May 2016. quest.eb.com/search/300_2282211/1/300_2282211/cite. Accessed 16 Jan 2020. This image of young Einstein was used in the website home page, so that the viewer has a visual of the genius who put the mass energy equivalence equation together, the age he did and published his papers.

Atomic Bomb Test, 1946. Atomic bomb test at Bikini Atoll in the Pacific Ocean, 25 July 1946. Photograph.

Britannica ImageQuest, Encyclopædia Britannica, 31 Aug 2017. quest.eb.com/search/140_1799580/1/140_1799580/cite. Accessed 15 Jan 2020. This image was found in a database, and it is of a test of the atomic bomb a year after the bomb on Hiroshima dropped. This image was used to show a visual of the large scale of the detonation of the bomb.

A Great Scientist. 1936. *Chronicling America*, chroniclingamerica.loc.gov/lccn/sn91068695/1936-06-18/ed-1/seq-5/#date1=1789&index=5&rows=20&words=Curie+Marie&searchType=basic&sequence=0&state=&date2=1963&proxtext=marie+curie&y=0&x=0&dateFilterType=yearRange&page=1. Accessed 4 Mar. 2020. This newspaper found in the database of Chronicling America, was used both

as an informational source, and a source to quote in the website. There were contents about Marie Curie in this website.

Cavendish laboratory. Photography. Britannica ImageQuest, Encyclopædia Britannica, 25 May 2016. quest.eb.com/search/139_1909564/1/139_1909564/cite. Accessed 2 Mar 2020. The image is found in an image database, and it is of one of the scientific labs of one of the important scientists.The scientist is Ernest Rutherford. The image became cropped and edited a little bit so it could become one of the web page headings.

Chavan, Lucien. *Einstein patent office full*. 1905. *Wikipedia Commons*, commons.wikimedia.org/wiki/File:Einstein_patentoffice_full.jpg. Accessed 10 Mar. 2020. This image was found on a database but was taken by Einstein's friend. This image is of Einstein in his patent office, the place where he used to work. It is placed next to the section about his difficulties with work and money in the website.

Gende, Dolores. *After 110 Years: The Legacy of Marie Curie*. Her quotes were present in the article by Marie Curie, The College Board, apcentral.collegeboard.org/courses/resources/after-110-years-legacy-marie-curie. Dolores Gende is a teacher, has a degree in chemical engineering, and taught physics for 22 years. She is a Table Leader for the AP Physics Exam, an AP workshop consultant, and a Web designer; she is a contributor to CollegeBoard. She wrote an article on this website that

holds quotes from Marie Curie, an important female scientist, that was used in the website.

Einstein, Albert. Albert Einstein Quotes. BrainyQuote, www.brainyquote.com/quotes/albert_einstein_121099. This quote is from a quote database. Since these sources can be unreliable, I checked through other sources if this quote was legitimate, and it turned out to be. The quote is used in the thesis page to prove the claim that mental barriers are also broken to break important historical barriers.

Einstein, Albert. *Albert Einstein Quotes*. Wisdom Quotes, 17 Feb. 2020, wisdomquotes.com/albert-einstein-quotes/. Here in this source lies a quotation from Einstein that I used on my website. The quotation is used to back up the claim that Einstein didn't like school and was rebellious. Since quote databases might be unreliable I check to make sure the quotation was legitimate. Also there was a quotation from Max Brod, a journalist from the 20th century (Einstein's time), that described Einstein that was also used in the project(website). There also a quotation from Eisenhower, a former US president acknowledging his importance.

Einstein, Albert. *Einstein-Szilard Letter*. Atomic Heritage Foundation, 2 Aug. 1938, www.atomicheritage.org/key-documents/einstein-szilard-letter. This letter was found in a website, and it is the letter of Einstein to the president to work on making the atomic

bomb. This was a crucial step to the formation of the atomic bomb, and it acknowledges Einstein's importance to the atomic bomb outside of his equation, so it was added to the website.

Eisenstaedt, Alfred. *A group of children and adults left homeless warm their hands over a fire on the outskirts of Hiroshima.*. 1945. "hiroshima aftermath pictures."*ATI*, allthatsinteresting.com/hiroshima-aftermath-pictures#13. Accessed 20 Feb. 28.This image was taken by an American photographer of the 20th century. The picture shows homeless people affected by the atomic bomb huddling over a fire. It is a tragic sight to see, so it is added on the website to emphasize the true destruction and devastation of the atomic bomb.

ETH-Mainbuilding (Semperbau) around 1890. 1890, mavt.ethz.ch/the-department/historical-background.html. This image of the college Einstein went to was found on the college's own website. It was taken around 1890, around when Einstein attended college. This image was used as a visual of a college and it is positioned next to the paragraph in Einstein's webpage talking about Einstein's struggle in early life and college.

Linde. *Otto Hahn Kernspaltung*. 1979. *Wikipedia Commons*, 17 Aug. 2010, commons.wikimedia.org/wiki/File:DBP_1979_1020_Otto_Hahn_Kernspaltung.jpg. A high resolution photo of one of the nobel prize winner stamps. Was used during the part

in the website stating that Hahne took full credit for the discovery/development of nuclear fission.

Lise Meitner and Otto Hahn. "Lise Meitner – the forgotten woman of nuclear physics who deserved a Nobel Prize," by Timothy J. Jorgensen. *The Conversation*, 7 Feb. 2019, theconversation.com/lise-meitner-the-forgotten-woman-of-nuclear-physics-who-deserved-a-nobel-prize-106220. This is an image of Mietner and Hahn, it is used as a visual in the website. The article it sits next to is about Meitner, however Hahn was important in the article as well and they were lab partners so it seemed best to use a picture of them working.

Marie Curie. Photography. Britannica ImageQuest, Encyclopædia Britannica, 25 May 2016. quest.eb.com/search/139_1950576/1/139_1950576/cite. Accessed 19 Feb 2020. This image is of Marie Curie, an important contributor to physical science, just like Einstein was, and their ideas connected and backed each other up. The photograph shows her working, and this gives the viewer the impression that she is indeed a hard working scientist, because that is what she is.

National Archives and Records Administration. *A survivor whose skin had been burned in a pattern corresponding with that of the kimono she'd been wearing at the time of the blast.* "hiroshima aftermath pictures." *ATI*, allthatsinteresting.com/hiroshima-aftermath-pictures#7. Accessed 28 Feb. 2020. This

image was originally found in the National Archives but was put into an image gallery on a website, where I found it. The image shows burns from the blast of the Hiroshima bombing, and it put into an image collection of the devastation that the atomic bombs did to Japan.

National Archives and Records Administration. Blast victims recover in a fly-infested, makeshift hospital in a bank building.. 1945. "hiroshima aftermath pictures." ATI, allthatsinteresting.com/hiroshima-aftermath-pictures#24. Accessed 20 Feb. 28. This image was kept in national archives, but is displayed on a website that I looked at. This picture shows poor victims recovering in an unclean makeshift shelter, and similar to the other pictures of Japan after the atomic bomb, is used in the website to emphasize the devastation that occurred because of the bomb.

ULLSTEIN BILD. *A young Albert Einstein sits at his desk. Einstein wasn't an inventor but his work led to many important advances*. "What Did Albert Einstein Invent?" by Marie Willsey. *HowStuffWorks*, 12 Jan. 2011, science.howstuffworks.com/innovation/famous-inventors/what-did-albert-einstein-invent.htm. This image is of young Albert Einstein and it was found on a website. This image got edited and darkened so it could be one of the header images of the webpage about Einstein in the website.

Universal History Archive. *World War II, after the explosion of the atom bomb in August 1945*.

1945. "Why the United States Dropped Atomic Bombs in 1945," by David Kaiser. *Time*, 25 May 2016, time.com/4346336/atomic-bombs-1945-history/. This image was found on a website, and it is derived from another source, an archive. This image is of the destruction of the atomic bomb on Hiroshima, and it will be used in the section about the atomic bomb to show the viewers that the atomic bomb was indeed a devastation for Japan.

U.S. Department of Defense. *Aerial images of Hiroshima before and after the bombing, with ground zero noted by bullseye.* "hiroshima aftermath pictures." *ATI*, allthatsinteresting.com/hiroshima-aftermath-pictures#10. Accessed 28 Feb. 2020. This image(s), really showed that the atomic bomb drastically changed the city of Hiroshima, a city in Japan that got bombed by the US. This drastic change was important to emphasize on my website, because no one should overlook the importance and impact of the atomic bomb.

"Woman Who Found Atom Secret Named C.U. Visiting Professor." *The Sunday Star* [Washington D.C], State, 4 Nov. 1945. *Chronicling America*, chroniclingamerica.loc.gov/lccn/sn83045462/1945-11-04/ed-1/seq-25/#date1=1789&index=6&rows=20&words=Lise+LISE+Meitner+MEITNER&searchType=basic&sequence=0&state=&date2=1963&proxtext=lise+meitner&y=0&x=0&dateFilterType=yearRange&

page=1. This is a newspaper from the database Chronicling America. A quotation was taken from part of it. The article in the newspaper relating to the website is about Lise Meitner, one of the most important scientists that contributed to nuclear fission.

Young Albert Einstein At Lectern. Photograph. Britannica ImageQuest, Encyclopædia Britannica,

9 Jul 2018.

quest.eb.com/search/315_2688660/1/315_2688660/cite. Accessed 3 Feb 2020. This image was found in a reliable database and was used as the image on the home page. It shows young Albert Einstein working, and it was taken around the time that he discovered the theory of relativity, the topic of the website. It shows the viewers that Albert Einstein is an important contributor to the project at the beginning.

Secondary

"1955: Albert Einstein dies." *BBC*, MMVIII,

news.bbc.co.uk/onthisday/hi/dates/stories/april/18/newsid_3721000/3721783.stm. Accessed 4 Mar. 2020. This was just one of the sources that I used to check whether one of the quotations from those quote databases were legitimate.

"3 everyday inventions Einstein made possible." Gemalto, 12 Nov. 2015,

www.gemalto.com/review/Pages/3-everyday-inventions-einstein-made-possible.aspx. This was another website that provided examples of how Einstein's equation is relevant to today. The application of the equation is what drives the legacy to live on. So finding examples were really important for the project (the website).

"400 Albert Einstein Quotes." *Wisdom Quotes*, 27 Jan. 2020, wisdomquotes.com/albert-einstein-quotes/. In this collection of quotes, holds one of Einstein's famous quotes. This quote in particular displays his ambition to contribute, and I used it in the home page to give the readers that as their first impression on him.

"Albert Einstein." *Gale in Context*, go.gale.com/ps/basicSearch.do?inputFieldNames%5B0%5D=OQE&inputFieldValues%5B0%5D=albert+einstein&nwf=y&searchType=BasicSearchForm&userGroupName=bedf0311&prodId=SUIC&spellCheck=true&method=doSearch&dblist=&limiterFieldValues%5BAC%5D=y&_limiterFieldValues%5BAC%5D=on&_limiterFieldValues%5BRE%5D=on. Accessed 14 Feb. 2020. This database was found in the list of available databases that my high school uses. It was used to give me a general overview and some details about Einstein, the person who actually put together the equation. This information will be used in the webpage specifically about Einstein.

"Atomic Bomb." Gale In Context Online Collection, Gale, 2017. Gale In Context: High School, https://link.gale.com/apps/doc/IRHYFK980861499/SUIC?u=bedf0311&sid=SUIC&xid=72a32ce5. Accessed 28 Feb. 2020. This is a general overview of the Atomic bomb, found in an online database. This was used for background information so there is correct factual information on the website.

Bonadis, David. *E=mc²: A Biography of the World's Most Famous Equation*. Author Walker & Company, 2000. This is a chapter book written by a futurist, speaker, business advisor, David Bonadis. This book holds lots of information on the development of the theory of relativity. It broke up each component of the equation and explained its origin and the scientists to make it come to be. Though it didn't hold all the information, it gave a good general view of it all, with a good enough amount of details to figure out which topics to look further into in research.

Chalkboard writing, e=mc², www.universetoday.com/114617/a-fun-way-of-understanding-emc2/.

This is an image found on a website from a search in google images, of the equation e=mc² written out on a chalkboard. This image is used in the thesis page of the website,

because e=mc² is the equation and topic of the whole website, so it had to be emphasized that it was important by putting it on one of the main beginning pages of the website.

Curiosity rover, artwork. Photograph. Britannica ImageQuest, Encyclopædia Britannica, 26 Mar 2018. quest.eb.com/search/132_1550584/1/132_1550584/cite. Accessed 11 Mar 2020. This image was found in a database and it provides a visual of a rover on space because space developments rely on e=mc^2.

GPS satellite, artwork. Photography. Britannica ImageQuest, Encyclopædia Britannica, 25 May 2016. quest.eb.com/search/132_1248337/1/132_1248337/cite. Accessed 2 Mar 2020. This image is from a database, and it was one of the many inventions that was able to be made because of the greater understanding in science, from Einstein's equation.

Edge Lit LED Exit Sign w/ Battery Backup - Single Face - Adjustable Angle. 21th century, www.superbrightleds.com/moreinfo/lighted-led-exit-signs/edge-lit-led-exit-sign-w-battery-backup-single-face-adjustable-angle/5363/. This is one of the images of the useful inventions that were able to be made because of the equation $e=mc^2$. It was found in one

of those online store websites but it is an image not a source of information so it is okay to use.

Einstein's Big Idea. Producer by Gary Johnstone, story creator by David Bodanis, Nova, PBS, 18 Aug. 2005. *Youtube*, uploaded by UniverseTV, 23 Sept. 2014. This is a documentary based on the book by Bonadis, made and published by Nova, PBS. This documentary was important because it summarizes the development of the equation. It touches upon the many scientists who made discoveries that led up to the equation.

"Einstein's Relativity Explained in 4 Simple Steps." *National Geographic*, 16 May 2017, www.nationalgeographic.com/news/2017/05/einstein-relativity-thought-experiment-train-lightening-genius/. This website is from National Geographic, a trusted reliable source and it is written by Mitch Waldrop, someone with a PhD in physics. Some of its content is used in the Albert Einstein page.

Einstein's Thought Experiment. Public Broadcasting Service (PBS), 25 Nov. 2016, www.pbs.org/video/einsteins-thought-experiment-at11fk/. This is a video clip from one of NOVA PBS' documentaries. It was used in the website as a demonstration of one of Einstein's thought experiments.

"How Pioneering Physicist Lise Meitner Discovered Nuclear Fission, Paved the Way for Women in Science, and Was Denied the Nobel Prize." *BrainPickings*, www.brainpickings.org/2016/10/27/lise-meitner/. Accessed 5 Mar. 2019. This website had many quotations from Lise Meitner, but I also used a quote from the author of the article herself too. This website was incredibly helpful for the section on Meitner in the website.

Image of Einstein in front of paper, www.aip.org/history-programs/einstein-centennial-2015#slideshow-1. This image is of Einstein and his papers on his famous theory of relativity. This is an important visual to show the viewers of the website that there were multiple works and papers for his discovery, and that he was young when he did make the discovery. This image was found in the website of The American Institute of Physics, which is an educational platform, so they, of course, have useful visuals that I can incorporate into my own website.

Kaiser, David. "Who Did What When? A Timeline of E = mc2." *Nova*, WGBH Educational Foundation, www.pbs.org/wgbh/nova/teachers/activities/3213_einstein_06.html. Accessed 7 Feb. 2020. This timeline in the website was helpful to not only confirm if my research of the scientists were correct, but also to check to see if the states were correct.

The writer of this page is a professor and lecturer at MIT so he is qualified and reliable when it comes to researching. One of his quotations were used on the website.

Laser. Photography. Britannica ImageQuest, Encyclopædia Britannica, 25 May 2016. quest.eb.com/search/139_2005498/1/139_2005498/cite. Accessed 2 Mar 2020. This image is found in an image database, and it is of the laser, one of the many technological developments that came out of the equation and the work that followed it.

"Michael Faraday." FamousScientists, 2020, "Michael Faraday." Famous Scientists. famousscientists.org. 24 Nov. 2014. Web. 2/6/2020 . The website has the information of the specific date (year) that the concept of e (energy), was developed by Faraday. This website was used for that information and not necessarily for general information of Faraday, as I used a different, more reliable and content filled, source for that. I used this information to make my timeline, an important visual aid for my website.

NASA. Apollo 11 astronauts took this photo of Earth. 1969. "28 iconic photos of the Earth from space that will make you feel puny and insignificant," by Dave Mosher. Business Insider, Insider, 9 Nov. 2018,

www.businessinsider.com/best-photos-earth-moon-from-deep-space-2017-3. This is an image or earth in space and it is used as a header image for the Impacts and Legacy page. This is because the impacts of the equation are huge and universal, and that can easily be symbolised by the earth in space.

Nuclear power plant on Rhone River Valley. Photography. Britannica ImageQuest, Encyclopædia

Britannica, 25 May 2016. quest.eb.com/search/139_1948277/1/139_1948277/cite. Accessed 6 Mar 2020. This is an image of a nuclear power plant and it is used to be shown as one of the examples of innovations that came to be because of the equation $e=mc^2$.

Photo essay from hospital.Department of Nuclear Medicine of the Gustave Roussy Institute.

Photograph. Britannica ImageQuest, Encyclopædia Britannica, 25 May 2016. quest.eb.com/search/181_765757/1/181_765757/cite. Accessed 11 Mar 2020. This is an image of a PET scan and it is located next to the quote about how PET scans are one of the developments that were able to occur because of the equation.

PhysLink. "How was the speed of light determined and who found it, when? How close was the

estimate of 186,000 mps to the 'actual' speed of light?" www.physlink.com/education/askexperts/ae22.cfm. Accessed 6 Feb. 2020. This is a website that provided the date (year) that the concept of c (celeritas), was developed by Olaus Roemer. This website was used for that information and not necessarily for general information of Roemer, as I used a different, more reliable and content filled, source for that. I used this information to make my timeline, an important visual aid for my website.

Representation of an oxygen atom. Photography. Britannica ImageQuest, Encyclopædia Britannica, 25 May 2016. quest.eb.com/search/139_1936147/1/139_1936147/cite. Accessed 10 Mar 2020. This is an image of an atom and it is used as a symbol during the part that nuclear energy was ignored.

"Robert Recorde." *Encyclopædia Britannica*, 28 May 2019, www.britannica.com/biography/Robert-Recorde. This article is from a database and it is used to gain information, more specifically, the date (year) in which the contribution was made from Robert recorde, a contributor to the equation, $e=mc^2$ for the timeline on the website. It includes the date of when he developed the new symbol of the equals sign, the contribution.

"The Centennial of Einstein's General Theory of Relativity." The American Institute of Physics, www.aip.org/history-programs/einstein-centennial-2015#slideshow-1. Accessed 14 Feb. 2020. This website provided me with an image, and it gave me more information of the actual work Einstein did regarding his famous theory of relativity. This source is heavily based on fasts and adheres to scientific principles.

Tyson, Peter. "The Legacy of E = mc2." Nova, science programming on air and online, PBS, June 2005, www.pbs.org/wgbh/nova/einstein/legacy.html. This website article provides lots of examples on how $e=mc^2$ is used today, especially in technology. These technologies are very important and it holds most of the equations legacy, so it was important that my website provided many of these examples. The website (the source) also provided the examples with description and context, and this was helpful information to weigh and filter with examples would be the most relevant for my website.

Vinyl Photography Backdrop / Science Chalkboard / Formula Scientist. *Pinterest*, www.pinterest.com/pin/625578204465056915/. Accessed 30 Jan. 2020. This image was found in a database, and it was used as a header image for the thesis page. It is an image of a math filled chalkboard, and gives the impression to the viewer that the topic, the theory of relativity, has a lot to do with math.

Westinghouse Science Honors Institute. Science Web Header,

www.westinghousenuclear.com/about/community-and-education/science-honors-institute. This header image is found in a website, and the header in the website became cropped and edited to match the theme and aesthetic to become a web page header in my website. The header has mini drawings of things relating to science, and with this is perfectly matched the webpage it is supposed to be on, “scientific developments”.

Wilson, Mark. Phone Clock,

www.fastcompany.com/90147003/the-google-pixel-2s-best-feature-its-clock. This is an image of a phone clock. Since GPS satellites are able to locate objects such as phones nowadays, people can easily check the time using their phone. This innovation is largely credited to $e=mc^2$ and it is shown on the website as one of the many inventions and innovations of $e=mc^2$.