An essay I wrote for AP Literature comparing the Enlightenment and Romanticism periods:

For generations, Europe had been plagued by devastating wars, corrupt monarchies, and dishonesty in the Church. Finally, in the 18th century, philosophers and intellectuals alike had come together with enough sentiment to end these troubles, and with lasting impact. This would come to be known as The Enlightenment. The Enlightenment changed the way society looked at science, religion, and politics. It looked to eliminate traditional values and ignorance through the use of reason, that the only way to reach clarity was through absolute truths. Soon after came the Romanticism period, which viewed things differently than The Enlightenment. Though the two movements had similar views on subjects such as individualism and social reform, they primarily differed on feelings toward philosophy, literature, religion, society, and nature.

For the most part, the pairs view on philosophy can be summed up as reason versus emotion. The Enlightenment thinkers favored a strict adherence to reason while the Romantics favored entertaining, imaginative expression. Enlightenment philosophers came from a time that had been exploited by a church and state which imposed dogmas based on cultural habit. (Brians, "The Enlightenment") As a result, Enlightenment thinkers strived for truth, that is they only wanted law based on absolute observation, drawn from the senses. As the Enlightenment era came to an end, Romantics were tired of a firm attachment to rationalism and wanted to entertain the mind with emotion.

Literature, for the Enlightened, mostly followed the same pattern. Rationalism required a simple yet thorough format that paralleled the scientific method, which allowed nothing to be left unnoticed. This format was a perfect template to be followed by intellectuals. For example, volumes and volumes of encyclopedias such as those by Diderot, scientific papers like the ones of Newton, and philosophical works all followed similar schemes. On the contrary, literature of the Romanticism era was highly diverse in form and content, all meant to evoke emotion. And sometimes the most irrational of emotion like horror. The Gothic aspect of Romanticism very much contrasted the ideals of Enlightenment. Gothic literature focused on emotions of horror and suspense. (Brians, "Romanticism") From an Enlightened point of view, these emotions were unnecessary and almost a polar opposite of what rationalism stood for; however, it is exactly what Romanticism stood for, unnecessary, idealistic literature purely for emotion. Emotion comes from the imagination, which opposes fact. Where Enlightenment tried to define reality, Romanticism tried to make up reality.

Another way Romanticism opposed The Enlightenment was over religion. The Enlightenment intellectuals had worked to eliminate the irrationalities of organized religion. Discoveries that the earth was not the center of the universe had sparked notions that the Catholic Church was not the source of truth. This caused a great deal of philosophers to question the church and come up with their own answers to religion. One common belief that became popularized was deism, the belief that there is evidence of a god but one such god has no interaction in the universe. (Pailin, "Deism") There were people considered extreme Enlightenment thinkers who postulated the existence of no god, but overall most of the philosophers agreed that humans were a product of god. Romanticism, however, promoted that every man is divine in his own right. Again, Romantics used emotion rather than logic to express their opinions. The art of the Romantic era emphasized the individual and portrayed the human in an idealized way. Paintings like The Morning by artist Philipp Runge displayed humans in heavenly settings conveying the divinity of mankind.
Next, the Enlightenment thinkers still thought government was effective when ran correctly, using the aristocracy that started the French Revolution as a warning of what not to do. Philosophers theorized new forms of government, many of which were democratic in nature. For example, Montesquieu proposed a three branch system of government in his essay *The Spirit of the Laws* and Rousseau presented the idea of a social contract. The three branch system allowed for checks and balances, ensuring that no branch became too powerful. This philosophy has been influential in the governments of numerous modern countries. Rousseau’s social contract advocates for a society in which the individual consents to give up some freedoms in order for the state to protect his rights, another key idea in modern government. Once more, the philosophy of a free market, *laissez faire*, crafted by Adam Smith had made its way into emerging societies. Most of the Enlightenment ideology could be found in American government, scattered throughout the Declaration of Independence. (Ray and Murfin, "Enlightenment") Enlightenment thinkers thought that with logic and reason, a better society could be created. On the other hand, Romanticism was intrinsically in distrust of society. This is because Romantics embraced primitivism, "that people are good by nature but corrupted by civilization," so it is government that corrupts the individual. (Ray and Murfin, "Romanticism")

Nature was handled much differently between the two eras. The chaotic essence of nature had perplexed scientists of the Enlightenment period. The philosophers were motivated to discover and publish the ways in which nature worked: how the planets moved, how earth was molded into what it was, how chemicals reacted. Additionally, the Enlightenment thinkers were well aware of the powers of nature and the dangers it proposed. On the contrary, Romantic artists were aware of the inherent power, but they were not concerned of dangers, but the beauty and spiritualness of nature. They looked to capture the awe of nature with fantastic paintings. Many authors wrote of the cleansing aspect of nature. Transcendentalist works like Thoreau’s Walden highlighted the benefits nature had on the human mind. It showed nature could serve as a vehicle for self reflection which could improve one’s character. Overall, the Romantics opposed the Enlightenment thinkers will to define how nature worked and instead cherished the complexity of nature.

Romanticism had been a reaction to the excess of strict rationalism of the Enlightenment period just as The Enlightenment had been a reaction to a state and church overrun with ignorance. While the Enlightenment movement had thought faith and feeling distorted truth, the Romantics felt truth destroyed emotion. (Dimario-Brooks, "Romanticism and Enlightenment") Inherently, each’s ideals were opposite. Nonetheless, out of the two came Modernism, a different movement that used both reason and emotion to create change; a time where science and art could coexist. Modernism, like the previous periods, had devoted itself to overturn traditional values. New inventors and scientist like Edison and Einstein revolutionized the world with their discoveries, and radical new forms of art, experimental in nature, were popularized by people such as Picasso. In addition, Modernism rejected religion as its conformity limited scientific progress and human feeling. ("History of Modernism") Lastly, once again, the Modernist period promoted the individual just as Romanticism and Enlightenment had done before. The uniqueness of humankind was emphasized and progress was made. Romanticism had opposed the Enlightenment, yet a combination of the two had been produced.
A lab I did for AP Chemistry Junior year. I was very proud of this one:

**Purpose (Procedure 1):** Build a calorimeter and determine a calorimeter constant for it with three trials.

**Purpose (Procedure 2):** Using the calorimeter constant, determine the heat of fusion for ice and compare it to the actual heat of fusion.

**Purpose (Procedure 3):** Using the calorimeter constant, determine the heat of reaction of Zinc Chloride when reacting with Hydrochloric acid and compare it to the actual heat of reaction.

**Materials:** Styrofoam coffee cups, Pasco temperature probe, Pasco data logger, 60-75 grams of room temperature water for each trial, 40 grams of boiled water, beaker, bunsen burner.

**Procedure:**

**a. Water**
1. Assemble the coffee cup calorimeter by nesting the 2-20 ounce cups
2. Fill with 60.x to 75.x grams of tap water.
3. Cover
4. Obtain a reliable temperature for the tap water (over 30 seconds)
5. Heat water 40.x grams to near boiling
6. Remove from heat
7. Obtain a reliable temperature for the hot water
8. Swirl
9. Record temperature for the hot water
10. Add to calorimeter
11. Swirl
12. Record temperatures periodically over several minutes
13. Record the highest temperature for the hot water
14. Repeat twice for a minimum of 3 discrete trials
15. Record your data in your lab notebook

**b. Ice**
1. Assemble the coffee cup calorimeter by nesting the 2-20 ounce cups
2. Fill with the same mass (as close as feasible) as when the calorimeter constant was calculated
3. Cover
4. Obtain a reliable temperature for the tap water (running average over 30 seconds)
5. Add a known mass of ice which has been patted as dry as possible. It is important that the mass is the actual net mass of ice that will melt (Not ice plus water)
6. Record the temperature periodically until all of the ice has melted
7. Record the lowest temperature after ice is no longer visible
8. Calculate the specific heat of fusion for ice

**c. HCl**
1. Assemble the coffee cup calorimeter by nesting the 2-20 ounce cups
2. Fill with the same mass of 6M hydrochloric acid as we used of water
3. Obtain a reliable temperature for the room temperature calorimeter
4. Add 1-2 grams of zinc
5. Record the temperature periodically until all zinc has reacted
6. Record the highest temperature
7. Calculate the molar heat of reaction for zinc and hydrochloric acid
8. Repeat twice for a total of three trials  

*(source: Mr. Kortermier, AP Chemistry Lab 5.3)*

### Data:

#### Water:

<table>
<thead>
<tr>
<th></th>
<th>Mass of Cool water (g)</th>
<th>Starting temp. of cool water (°C)</th>
<th>Ending Temp. after mixing (°C)</th>
<th>ΔT of cool water (°C)</th>
<th>Mass of hot water (°C)</th>
<th>Starting temp. of hot water (°C)</th>
<th>ΔT of hot water (°C)</th>
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<tbody>
<tr>
<td>Trial 1</td>
<td>68.00</td>
<td>22.4</td>
<td>40.1</td>
<td>17.7</td>
<td>40.0</td>
<td>70.0</td>
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<td>22.4</td>
<td>42.0</td>
<td>19.6</td>
<td>40.1</td>
<td>71.3</td>
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<tr>
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<td>23.1</td>
<td>42.1</td>
<td>19.0</td>
<td>39.9</td>
<td>70.1</td>
<td>-28.0</td>
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#### Ice:

<table>
<thead>
<tr>
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<th>Ending Temp. of Calorimeter (°C)</th>
<th>Starting temp. of ice (°C)</th>
<th>ΔT ice (°C)</th>
<th>Calorimeter Constant</th>
<th>Energy Lost by calorimeter (J)</th>
<th>Starting ice (g)</th>
<th>Starting water (g)</th>
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<tr>
<td>Trial 1</td>
<td>10.7</td>
<td>22.7</td>
<td>10.7</td>
<td>259.8J/(°C)</td>
<td>-3,117.6</td>
<td>10.10</td>
<td>68.10</td>
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<tr>
<td>Trial 2</td>
<td>10.3</td>
<td>23.4</td>
<td>10.3</td>
<td>259.8J/(°C)</td>
<td>-3,403.4</td>
<td>10.21</td>
<td>68.50</td>
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<tr>
<td>Trial 3</td>
<td>10.5</td>
<td>22.9</td>
<td>10.5</td>
<td>259.8J/(°C)</td>
<td>-3,221.5</td>
<td>10.07</td>
<td>68.23</td>
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</table>

#### HCl:

<table>
<thead>
<tr>
<th></th>
<th>Ending Temp of Calorimeter (°C)</th>
<th>Starting Temp of Calorimeter (°C)</th>
<th>ΔT Calorimeter (°C)</th>
<th>ΔH absorbed by Calorimeter (J)</th>
<th>Mass of Zinc (g)</th>
<th>Moles of ZnCl₂ produced</th>
<th>H_rxn (per mole of ZnCl₂) (KJ/mole)</th>
<th>Starting HCl (g)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trial 1</td>
<td>39.6</td>
<td>23.8</td>
<td>15.8</td>
<td>4,104.84</td>
<td>1.57</td>
<td>0.024</td>
<td>171.04</td>
<td>67.94</td>
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<td>Trial 2</td>
<td>39.2</td>
<td>23.9</td>
<td>15.3</td>
<td>3,974.94</td>
<td>1.60</td>
<td>0.025</td>
<td>158.99</td>
<td>68.00</td>
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<tr>
<td>Trial 3</td>
<td>39.3</td>
<td>23.9</td>
<td>15.4</td>
<td>4,000.92</td>
<td>1.65</td>
<td>0.025</td>
<td>158.55</td>
<td>67.83</td>
</tr>
</tbody>
</table>
Data Summary:
Using the equation $\Delta H = mC_p \Delta T$, we were able to determine the calorimeter constant from our trials for water: $40.0\text{g} \times 4.184\text{J/g}^\circ\text{C} \times 29.9^\circ\text{C} = 5,004.1\text{J}/17.7^\circ\text{C} / 68.0\text{g} = 4.157\text{J/g}^\circ\text{C}$
Repeat for the other two trials, and the average Calorimeter constant was $3.827\text{J/g}^\circ\text{C}$ or $259.8\text{J/}^\circ\text{C}$. Error Average: $(4.184-3.287)/4.184 = -8.5\%$ error.

Using the equation $\Delta H = (mH_f) + (mC_p \Delta T)$, we are able to determine the heat of fusion ($H_f$) for ice: $-3,117.6\text{J} = (10.1\text{g}H_f) + (10.1\text{g} \times 4.184\text{J/g}^\circ\text{C} \times 10.7^\circ\text{C}) = -381.44\text{J/g}$.
Repeating this two more times, our average heat of fusion for ice was $-374.06\text{J/g}$. Error Average: $(-333.55-374.06)/-333.55 = -11.6\%$ error.

$\text{Zn} + 2\text{HCl} \rightarrow \text{ZnCl}_2 + \text{H}_2$ (1 mole of Zn to 1 mole of ZnCl$_2$)
Multiplying our calorimeter constant by the change in temperature, we can get the heat of the reaction for Zinc Chloride in joules. Then, we can divide by the GFW to find the amount of moles. Lastly divide the joules by moles to achieve the heat of reaction for Zinc Chloride per mole: $259.8 \times 15.8 = 4,104.84\text{J} = 1.5\text{g Zn x 1 mole})/65.39\text{g} = 0.024\text{ moles}$
$4,104.84/0.024 = 171,035/1,000 = 171.04\text{ KJ}$
Repeating this for the other two trials, we come up with an average heat of reaction of ZnCl$_2$ as $162.86\text{ KJ}$
Error average: $(153.89-162.86)/153.89 = -5.8\%$ error.

Analysis:
After conducting three trials for all three procedures, we managed to come up with suitable figures. We obtained an -8.5% error on Procedure 1, -11.6% error on Procedure 2, and only a -5.8% error on Procedure 3. These errors can most likely be attributed to:

1. Water
   a. Heat loss of water during transfer from beaker to calorimeter. The temperature slightly dropped while transferring the boiling water to the calorimeter, this would cause the results to be lower.
   b. Inefficiency in Calorimeter. The calorimeter had a hole in it which contributed to it being less efficient. In addition, styrofoam is only so efficient and still releases heat to the outside environment. This would cause results to be lower.

2. Ice
   a. Melting of Ice. The ice was not completely dried before weighing, and this caused the mass to be higher than what was actually placed inside the calorimeter; therefore, a lower result. Furthermore, the ice could have further melted on the transfer over from the scale to the calorimeter.
   b. Inefficiency in Calorimeter. Again, the calorimeter had a hole in it, causing it to lose heat more rapidly, causing a lower result.
c. Continuation of previous error. The error in the water procedure was used to find the Heat of Fusion. Due to the errors causing the Calorimeter constant to be lower in the first procedure, our Heat of Fusion for ice was consequently lowered as well.

d. Different amounts of water used. We didn’t have exactly the same amounts of water used in the trials of Procedure 1 as in the trials of Procedure 2. In our case, we had more water in this procedure, causing the ice to cool the water slightly less; thus, lowering the results.

3. Zinc Chloride

a. Different amount of HCl used than water. We were supposed to use the same amounts of water in Procedure 1 as HCl in this procedure, which was not achieved because it is hard to pour precisely the right amount in the test tube. In this case, we used slightly less HCl than water, causing the results to be higher because it was easier for the zinc to raise the temperature of the HCl.

b. Continuation of previous error. The errors in Procedure 1 transcended into this Procedure because, again, we used the calorimeter constant, which was a little low, to determine the Heat of Reaction for ZnCl\(_2\). This would cause a lower result.

c. Inefficiency in Calorimeter. This by far was the biggest error in this Procedure because of how long the reaction took. The large amount of time allowed much more of the outside air to affect the temperatures inside the calorimeter. This would cause the results to be lower.

d. Inconsistent stirring of the calorimeter. We forgot to stir the cup for the first minute the reaction was taking place. Then we started swirling the cup, which made a noticeable difference in the data logger. This would cause results to be lower because the rate of temperature decreased when we started stirring it. After linearly extending the line, we would of had a higher temperature with a higher rate of temperature decrease.

*Keep in mind the Pasco probe might have been off but is unlikely (indeterminate)

Conclusion:

In this lab, we were able to come up with a relatively accurate Calorimeter Constant, especially considering we made the calorimeter out of styrofoam cups. Using this calorimeter constant, we could find the heat of fusion for ice and the heat of reaction for zinc chloride. We conducted three trials for each procedure giving us a more precise average. Our errors were fairly insignificant, and could be fixed with more time and more trials. It was fascinating to be able to attain our own calorimeter constant, which we could compare to known results. This lab helped me learn about Thermodynamics in many different ways because the lab required different equations and applications of the calorimeter constant.
A mock grant proposal I did for AP Government (it was for practice, I’m not the executive director for the American Foundation for the Blind):

Date: December 19, 2016
To: Mark R. Rosekind, Ph.D.
   Administrator
   National Highway Traffic Safety Administration
From: Stuart McElhany
   Executive Director
   American Foundation for the Blind
Subject: Proposal for intersection crosswalk retrofitting funding

Purpose:
The purpose of this proposal is to request funding for the retrofitting and installment of improved pedestrian crossing lights and a beeping device to many of the major intersections and crosswalks in Carson City in order to increase the safety of pedestrians and bicyclists that are crossing.

Summary:
After numerous reports to the local public works and friends of mine telling me that they almost got hit by a motor vehicle and recent cases of pedestrians being hit by cars (some fatal), I have decided to request funding to change the system currently in place and make it safer. The current system uses a dull light on each side of the street that is hardly visible to oncoming motorists. Therefore, if a driver is paying little attention, he or she will likely drive right through the intersection or past the crosswalk oblivious to the fact of there being a pedestrian. These cases are even more common in the dark as pedestrians are practically hidden to motorists.

I’ve conducted some research and found that a relatively cheap and extremely reliable solution exists. It involves the retrofitting of traditional intersection crosswalk lights, instead of the dull ones that we have now, brighter light emitting diodes (LEDs) will be put in place of the current lights and aimed both at the road and the crosswalk so pedestrians know when to go and motorists know when to stop. The LED lights are not only more noticeable because they are brighter but they will flash when activated making it hard for drivers to miss. In addition, the installment of a small speaker that beeps upon the activation of a walker will help drivers turning onto the road tell that there is someone crossing the road. Furthermore, an audible system will assist with the safe crossing of blind pedestrians.

Implementing this new system would allow safer passage across streets in the Carson City area. Ideally, these improvements would be put at most busy intersections like along most of Carson Street and parallel streets to it, especially around the downtown area. Overall, studies have shown that this newer system results in less deaths and enhanced conditions for blind individuals. After, finishing the project, I would like to conduct a follow up study headed by two professors of esteemed Universities to analyze the effects of such an upgrade. Considering the current data, retrofitting Carson City crosswalks could save many lives. Every life matters as fatalities affect much more than just the victim’s direct family. Funding to make this change would greatly benefit the community.
Introduction:
In 2015, 92 pedestrians were killed and more than twice as many were seriously injured while crossing streets in Nevada (Brown, 2016). With funding, this plan could severely lower the amount of accidents.

The tasks to put this plan into action includes:

- Assessing the importance of implementing better technology
- Scheduling with Carson City and Nevada Department of Transportation (NDOT)
- Notifying the public of plans to improve pedestrian crossing
- Installment of new components
- Follow up studies to analyze effect of change

Proposed Tasks:
With funding, I will complete the following tasks (note some tasks have already been completed such as scheduling possible dates for installment and possible publication of notice to public).

Task 1. Assessing the importance of improved crosswalks
There are multiple benefits that come with improving the pedestrian crossing areas. First, the crosswalks would be safer for the general public, reducing casualties. The new system has shown to get motorists attention much more effectively than the old system. According to a study done by the city of San Jose and the California Department of Transportation, an intersection that had been retrofitted with a Light Guard Systems LED crosswalk had increased driver yielding percentage to 48% in the day and 64% at night (Malek, 2007). Second, because these improved systems increase public safety, there is a general rise to be expected in confidence while crossing streets, and this is especially important concerning children going to school. Better crosswalks could equate to more children walking to school which leads to many other benefits. A 2008 study conducted in partnership with the Center for Disease Control (CDC) found that traffic danger was a noticeable barrier keeping children from walking to school, 9% of the focus group said that traffic danger kept them from walking to school (Beck & Greenspan, 2008). Third, another benefit gained from adding an audible signal to crosswalks is improved accessibility to blind individuals. This kind of signal is referred to as an accessible pedestrian signal (APS) and it can help guide blind or vision impaired people across a street. In a 2010 study conducted in Charlotte, North Carolina found that adding an audible chirp noise to the other side of a street increased likelihood of blind individuals from staying inside the crosswalk zone from “23% to 77%” (Barlow, Scott, & Bentzen, 2009). The audible noise also adds a layer of protection in that drivers are likely to hear it within their car and are able to deduce that a person is crossing and should slow down while approaching the intersection.

Task 2. Scheduling with Carson City and NDOT
I have already been in contact with Carson City Public Works. I first notified Darren Schulz, Director of Carson City Public Works, of my problem and asked him that if I were to receive grant money could I have new light and sound systems retrofitted to multiple intersections. I also asked if they would be willing to close down portions of streets for a couple of hours to allow the NDOT to perform the upgrade. Schulz approved the project and directed me towards NDOT to confirm the scheduling. Next, I contacted Anita Bush, Chief Maintenance Engineer at NDOT, describing the crosswalk problem in Carson City and asked that if I were to
receive grant money, could NDOT come install the new systems over the course of a couple months. In addition, I inquired the costs required to do such a project and she gave me some estimates of labor costs (see Task 4. Install). We also worked out possible dates to perform the install, concluding that twice a week (on Tuesdays and Thursdays) workers would come to two different intersections and install the new systems, and depending on the costs it would last for two months, one month minimum. I confirmed the scheduling with Carson City Public Works and as of now the plan looks to modernize at least sixteen different intersection crosswalks over the course of four weeks (see Schedule).

Task 3. Notifying the public of plans to improve pedestrian crossing

I have constructed a plan to notify the public of pedestrian crossing improvements. In order to do so I have contacted Brooke Warner, General Manager at the Nevada Appeal, and he agreed to add a frontpage announcement of the plan to renovate crosswalk lighting and sound systems upon the approval of funding.

Task 4. Installment of new components

Upon approval of funding, I will purchase the new lighting system and beeping mechanism from a company named Electronic Evolution Technologies (EET). They sell a flashing LED light and beeping device systems that can be installed into any intersection. Each system costs $250 and is capable of retrofitting one crosswalk. The cost of maintenance is very low as the LEDs are guaranteed to last over 20 years and the beeping mechanisms even longer. In fact, a study in Portland found that all 53 of the intersections that had been renovated throughout the 1990s required no maintenance what so ever using nearly identical technology (Kloos & McRobbie, 2003). As far as labor, EET has quoted that it takes two hours to install the system per intersection, requiring three people. NDOT estimated it would cost no more than $500 an hour for three workers and adequate equipment. Carson City Public works has decided to provide safety cones and signs at no cost. Assuming there are four crosswalks per intersections, and the primary goal is to complete a large portion of Carson Street, the total cost to install sixteen intersections (64 crosswalks) would be $32,000 (see budget for more detail).

Task 5. Follow up studies to analyze effect of change

After the installation, I would like to include a follow up study to conclude whether the addition of audible pedestrian crossing accessibility and improved LED lighting has increased the safety of pedestrian crossing. I would hire two scientists to conduct this study, that will look at many things. First, the control will be intersections on Carson Street that purposefully have not been retrofitted. Then, using previous pedestrian accident data and the control, the scientists will compare the yield percentage of motorists at intersections with the upgrade and without. Additionally, the scientists will reperform the study done in Charlotte to see how much the beeping mechanism helps blind individuals cross the street; again, using the streets that have not been retrofitted as a baseline. I would contract these scientists to perform the study over a six month period, paying them $40,000 each for their efforts. I have already contracted two scientists who are willing to conduct this study, Dr. Hoffman and Dr. Robert. Their study could provide valuable information to other cities to retrofit their crosswalk systems and save many lives and increase crosswalk crossing confidence.
**Schedule:**

The total plan is projected to run from January to June. The following is a Gantt Chart of the tasks and completion dates.

*Study will run till June*

<table>
<thead>
<tr>
<th>Jan 17</th>
<th>Feb 17</th>
<th>Mar 17</th>
<th>Apr 17</th>
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- Schedule with Carson City Public Works and NDOT
- Notify the public of plans to improve intersections
- Install new systems
- Follow up retrofitting with studies*

**Budget:**

The total cost of the project is outlined below:

<table>
<thead>
<tr>
<th>Task Number</th>
<th>Cost</th>
<th>Notes</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>$0</td>
<td>Research</td>
</tr>
<tr>
<td>2</td>
<td>$0</td>
<td>Contacting city officials</td>
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<tr>
<td>3</td>
<td>$0</td>
<td>Nevada Appeal will publish notice for free</td>
</tr>
<tr>
<td>4</td>
<td>$32,000</td>
<td>64x systems ($250 each) - $16,000 64x systems ($250 each) 32x of labor ($500 per hour) - $16,000</td>
</tr>
<tr>
<td>5</td>
<td>$80,000</td>
<td>2x scientists ($80,000 a year for half a year each) - $80,000</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$112,000</strong></td>
<td>To retrofit 16 intersections</td>
</tr>
</tbody>
</table>

**Experience:**

- Dr. Elizabeth Hoffman, professor of Statistics at Cornell for over 20 year. Dr. Hoffman worked on the study conducted in Charlotte, North Carolina. She has worked with the American Foundation for the Blind for many years as well, being a great help and trying to benefit the blind community. She is brilliant at setting up sensors to record data not to mention she is proficient in analyzing the data.
- Dr. Jon Robert, professor of Civil Engineering at California Institute of Technology for over 30 years. Dr. Robert was influential in designing many of Davis, California’s agriculture and public spaces. He is highly qualified with assessing civil projects.
- I, Stuart McElhany, received a Doctorate in Public Health from the University of California Berkeley. I’ve been working for the American Foundation for the Blind for over 20 years. My employer, the American Foundation for the Blind, has many necessary
buildings for research and is glad to assist with projects that help the blind community and save lives.

**Conclusion:**
The implementation of new LED light systems and beeping devices would greatly benefit the community of Carson City. Rising pedestrian crossing accident rates have showed that a change needs to be made to crosswalks in the city. Many of my friends have discussed the need for improved lighting systems as they have almost been caught in an accident before. In addition, recent accidents in the city have supported the need for an upgrade.

The suggested system manufactured by Electronic Evolutions Technologies has been shown by multiple studies to lower the amount of mishaps at crosswalks. This would save many lives and increase crosswalk crossing confidence, allowing a greater amount of children to walk to school, which would make more children healthier and lower carbon emissions. Furthermore, adding an audible signal at crosswalks would help blind individuals in the city and considering the escalating population of elderly citizens who are more likely to be vision impaired, it is another advantage of retrofitting.

The LED technology is much brighter than the current system in place. It also flashes which greatly increases the chance of being seen by motorists. The case studies performed in San Jose have shown that the new technology greatly increases driver yield percentage. Overall, this new retrofit could save many lives in Carson City and make the community a better place. The funding of $112,000 would go to installing the new lighting/beeping system and a follow up study to recognize the effects of such change.