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# Science Team I: Final Report

This semester we dove into light pollution and learned what it is, how we can prevent it, and current issues causing it. After doing some research on light pollution, we learned that light pollution is the brightening of the sky due to unnatural sources of light bouncing off of the Earth and into the sky. The brightness of the sky is called skyglow, which is typically caused by the sunlight bouncing off of the moon and Earth, a low grade aurora in the upper atmosphere, zodiacal light, starlight scattered in the atmosphere, and background light from unresolved stars. Light pollution increases skyglow which makes it more difficult to see the stars at night. Sky brightness is also a key factor and it is what scientists measure to determine the amount of light pollution in a given area. There are many different factors in determining light pollution, including light trespass, clutter, and glare. All of these components are important vocabulary to know when discussing light pollution.

The next step we took in Science Team I was to decide what steps we could take to help prevent more light pollution. A big topic of discussion was to educate the community on light pollution. It is difficult to help in the prevention of something if you are not aware of what it is. Making a poster that is visually appealing that could be hung up and handed out would be a great option in doing this. Another measure we discussed taking was to measure the light pollution in Northeast Missouri. It is much easier to measure light pollution of a more defined area so we

decided that just measuring a few different small areas in Kirksville would work. In order to measure the light pollution we were going to use an app on our smartphones.

The first actual action that we took was to walk around campus and identify the different types of light fixtures being used on campus. Below is the map I drew of my area, around Ryle, Dobson, and Magruder, and there is a key to the right. The lights lined all of the sidewalks and the majority of them were unshielded light fixtures. I also have attached a table that I put together that goes into more detail on each fixture. I found a total of 47 in my given area and they were mostly off-white and unshielded. This is not good because the off-white color puts out much more light and therefore more light pollution. The lights being unshielded is also not good as the light is just being projected upward toward the sky and creating more light pollution. About 34% of the lights were unshielded retrofitted which is slightly more efficient than the other lights. These lights were around Magruder, a science building, which I found made sense.

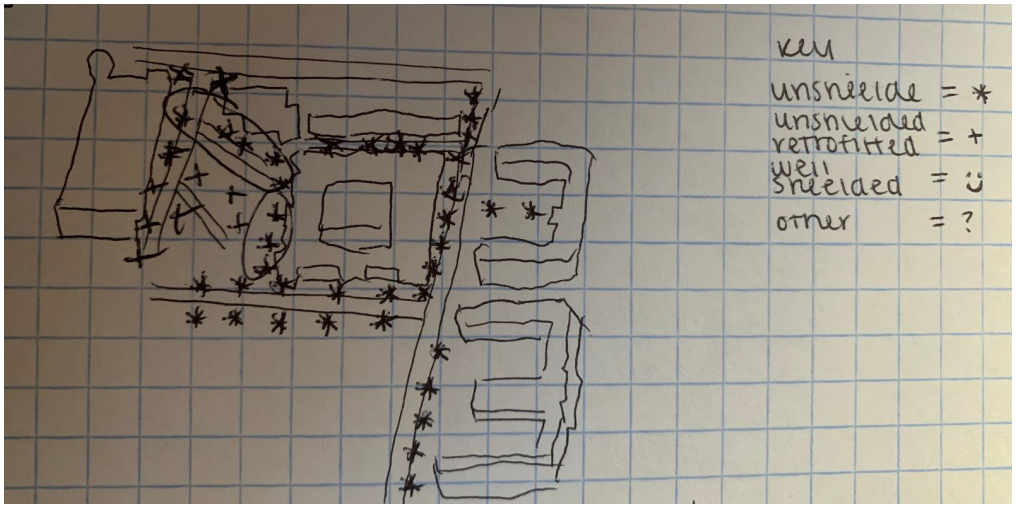


**Figure 1**. Map of Campus' Outdoor Light Fixtures

| Type of Fixture | Location | Type of Light Bulb | Comments |
|---|---|---|---|
| | X5 In front of Ryle | yellow | Some tree coverage |
| | X10 in front of Violet | off-white | none |

| | | | |
|---|---|---|---|
| Unshielded | X6 on right of Violet | off-white | Mostly covered by trees |
| | X2 in front of Dobson | off-white | none |
| | X4 next to health center | off-white | Some tree coverage |
| | X4 behind violet | off-white | Some tree coverage |
| Unshielded Retrofitted | X4 on left on Violet | off-white | Some tree coverage |
| | X5 on right of MG | yellow | none |
| | X3 in front of power plant | yellow | none |
| | X4 in between MG and Violet | yellow | Some tree coverage |
| Total Lights: | 47 | | |

**Table I.** Table of Fixtures and Descriptions

I actually learned a lot in this course and found it very interesting. I love stargazing so it is important to me that people begin to take a harder look at what they are doing that could be affecting the light pollution around them. I think that around campus we should start changing out light fixtures to be more environmentally friendly, it would be a step in the right direction. From this course I will be taking a lot of useful information that I can share with others and help to educate more people about light pollution. I have already begun telling my friends all that they can do to help and how important it is. Over break I plan on finding good stargazing spots and bringing along family to show them how beautiful the sky can be without the pollution we create. I valued this course and I am glad I chose to take it this semester, I can’t wait to help create change.