How Does Saturation Affect A Photo's Quality?

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Table of Contents

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Purpose

My purpose is to see how different colors react with the original picture and how they improve

the original's quality.

Hypothesis

If I use saturation, brightness, and hue to improve a photo's colors, some of the photo's quality

will change because different colors react differently in editing pictures. The change will be

noticeable if the original colors are compatible with saturation, brightness, or hue.

How does saturation in pictures affect the quality of the photo? Many things contribute to a photo's quality, including saturation, brightness, and hue. Photography has come a long way since the first time the camera was used. The quality of the camera and quality of the picture keeps evolving and getting better. Another thing that has evolved is the editing of pictures. Today, there are thousands of editing apps that allow for anything from changing the background of the photo and photoshop, to making a picture brighter and adding more color.

In 1816, Nicephore Niepce started experimenting with photography. Back then he called it heliography. Heliography means the early process of photography. (Merriam Webster, 2020) He used light to practically make a photographic picture. He tried many different materials to print the pictures, for example, bitumen and pewter. Niepce placed an engraving onto a material and let light hit it. The chemicals would react making the picture. The process took about 8 hours and it would fade based on the materials used. (Jade, 2019)

In 1839, Louis Daguerre, a past partner with Niepce created an easy process using a daguerreotype. The process was taking a silver plated sheet that was made of copper and glazed with iodide. When hit by light it would make an image. In 1885, George Eastman started to create paper film. The Kodak camera was made by Eastman later in his career. (Jade, 2019)

Oskar Barnack started to investigate how to make a smaller camera that was easy to use. The first immediate picture camera was developed in 1948, by the brand Polaroid. Kodak released a high-tech camera in 1991 which would be the first of many to come. People still use cameras today, but many just use their mobile phones when taking pictures. (Jade, 2019)

What is saturation and what effect does it have on photos? Saturation is the strength of the color used. The more bold the color is, the higher the saturation. The more faint and bleak,

the lower the saturation. To use vibrance means to improve the details of a picture. Vibrance overrides saturation meaning, saturation effects color by forcefully changing the color levels while vibrance helps manage other key components while editing a photo. Some of these key components include the color of the background and skin color. (Medium, n.d.)

Another thing that contributes to editing pictures is brightness and hue. Brightness, also called lightness, is lighting up the picture and overall making it brighter. (MH Sub I, LLC dba Internet Brands, 2020) Brightness helps lighten up the photos shadows without affecting the highlights in the photo. If a picture is dark, brightness works to make the background of the picture lighter to fake the sun or a light source. (Color as Hue, Saturation, and Brightness, n.d.)

Hue is the color balance in a photo. Hue uses the primary colors and sometimes the secondary colors. Colors that were not included in these are created by mixing the primary or secondary colors together. (Andor Communications Private Limited, 2020) The color value will change when using hue. Hue helps control white balance and other colors not needed. (Photo Processing Basics, 2019) Many people in today's society use their mobile phones instead of cameras to take pictures.

The name of a good app is Adobe Lightroom. Lightroom can be downloaded on a mobile phone or be used on a computer. The app Lightroom on the phone is an easy and effective way to edit pictures. Any pictures on the phone can be uploaded to the app and then edited. To use Lightroom on a computer, photos have to be downloaded to the computer and then put through the app. The third way to get the app is by installing the app on Google Play. (Adobe, 2020)

Lightroom was made in the year 2007. Different updates of it come out every couple of months to keep the app advanced and running smoothly. (Adobe Systems, n.d.) When allowed,

Lightroom will take all photos from a camera roll and automatically upload them into the app for ease when editing. The app itself is free, but certain features in the app cost money. These features are called "Premium Features" and include precise editing tools used for editing detailed photos. (Shotkit, 2020)

The free features on the app include light, saturation, hue, and others like crop. Crop can cut the picture to be smaller or make the photo straighter. There are eight colors on Lightroom that work with light, saturation, and hue. These colors can be adjusted separately from others. They can also be mixed together to target a certain spot in the picture.

Many other editing apps like Lightroom have been made and Lightroom is used by many. Different editing apps cover different edits and styles. The app VSCO is an editing app and social media app mostly used by teenage girls. The app is about positivity towards all women. PicsArt, another editing app, has some of the same features as Lightroom but has more graphic edits. In PicsArt, a user is able to put stickers or borders on a picture to edit it with.

Pictures, cameras, and editing apps have changed dramatically throughout time. Technology has kept evolving to get where we are today. These changes have helped us manipulate and develop photographs. Cameras and photo qualities will continue to improve as we advance in technology over time.

Materials

1. iPhone
2. Lightroom App
3. Walgreens Photo App
4. Photo Paper
5. Printer
6. Colored Ink
7. Photographs

Procedure

1. First, download the app Lightroom to a mobile device.
2. Allow access to your camera roll.
3. Choose your one photo that you will use for the entire experiment.
4. Click on the photo so that all the editing tools are right under it.
5. Click the "light'' button and move the bar to +50 and screenshot, then +100, then screenshot, then move the bar to -50 and screenshot, finally -100 and screenshot.
6. Now, go to the saturation button and hit the red circle, for your first primary color.
7. Slide the bar to +100 and screenshot, then slide the bar to -100 and screenshot.
8. Repeat the process for the other two primary colors, blue and yellow.
9. Once you've finished, go back to red and move the hue bar to +100 and screenshot, then move the bar to -100 and screenshot.
10. Repeat this process for yellow and blue.

Photograph	Quality of Saturation
1	6
2	1
3	3
4	5
5	4
6	2

Photograph	Quality of Brightness
1	4
2	3
3	2
4	1

Photograph	Quality of Hue
1	2
2	4
3	6
4	5
5	1
6	3

Results

My results show that most of the photos' changes were unnoticeable to the average eye while others had very noticable changes. Certain colors in the picture seemed to change color more often based on saturation, brightness, and hue. Other colors seemed to be consistent and not change or had very subtle changes. Hue seemed to change the photo most from the original one. It showed greater color manipulation. Brightness simply changed how dark or how bright the photo was. Saturation had minimal changes but still enough differentiation from the original photograph.

Conclusion

In conclusion, brightness, saturation, and hue affect a photo's quality. Each of these factors changes a component in the picture. Some of them have a barely noticeable change, while other components change most of the picture's color or brightness. Most pictures looked decent after the editing process had taken place, but some did not turn out right or did not look appealing to the eye.

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Variables

Independent Variable- the changes in brightness, saturation, and hue
Dependent Variable- the appearance/ coloration of the picture
Control Variable- the original photo

Source of Error

My source of error may have been that, in the Lightroom app, I did not correctly move the bar over for saturation, brightness, and hue. Another source of errors could have been that I did not correctly label the pictures causing them to be incorrectly graphed 1-6.