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Which phone app emits the most light via the LED display and its effect on the eyes?

Abstract

This research was conducted to find out how different phone apps emits different light intensity thus, same model of phones were used. Placed on a box with a square hole, as an opening, the LED display of phone with maximum light intensity would shine through it and the light intensity would be captured by the light sensor in the box. The higher the amount of light sensed, the higher the intensity. From the results, we concluded that Instagram gave out the highest light intensity.

Introduction

Nowadays, teenagers and children are more prone to getting myopia, and that is possibly due to the increased usage of mobile devices with LED screens especially phones as they have become a more convenient and most used mobile device among teenagers and children. According to a new study by Pew research centre, at least ¾ teenagers have or have access to a smartphone. Knowing this would discourage some from using too much of their smart phones and possible help reduce children having myopia. Our aim is to investigate which phone app (namely Snapchat, WhatsApp and Instagram) emits the most light and its effect on the eyes.

Theoretical backgrounds

In the research done by Lanum (1978), he concluded that exposure to light posed no permanent damage to the eyes. However, exposing the animal to large amounts of light directly could lead to blindness with first the vision blurring. Over a sustained period of time, constant exposure to high intensity light ultimately harmed the retina but it was temporary.

Procedures

A box of length 37.4cm had a hole cut from it to act as the place where the experiment is carried out.

1. The light sensor is then placed directly below the hole of distance 25.5cm between the hole and the sensor.
2. The phone's light intensity switched to the maximum, with the snapchat app, the screen will face inwards when placed at the hole of the box such that the light sensor is able to read the recordings.
3. Steps 1-2 are repeated with the same phone but different app.
4. The entire experiment is then carried out again with another set of phone of the same model used, for a more accurate result.

Results and discussion

Type of app	Light Intensity/ lux
WhatsApp (chat screen)	13
Instagram	17.5
Snapchat (main screen)	14

These three apps were chosen as a result of a survey conducted. These three apps were most commonly used among teenagers.

From the average of the data we collected (as shown in the table above), it shows that the Instagram app has the highest light intensity. In the research by Lanum(1978), "The Damaging Effect of Light on the Retina Empirical Findings, Theoretical and Practical Implications", he concluded that the intensity and duration of the light were very important in determining what types of structural changes were affected. This research though not tested on humans, the longer the tested animals were exposed to artificial lights the more their eyesight decreased. Thus, over long periods of time, having phones a distance from the eye with maximum light intensity could prove to be harmful to one's eyesight. Further research on correlation between light intensity and the extent of damage on a human eye can be conducted. The eye of an animal which is more similar to a human's eye could also be used.

Conclusion

In conclusion, WhatsApp and Snapchat have a lower light intensity than Instagram and are less harmful to the eye. In the research by Weale(1962), he concluded that such low intensity does not affect the eyes, but research on any long term effects have not been carried out (Lanum, 1978). Hence, when one is using the phones, one should increase the distance between the eyes and the LED screen. One should also monitor our own usage of the phones.

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