NCH School Certificate in Philosophy

NAME:

School

Project Title: Is my blue the same as your blue?

Consent

This project is the student's own work.

Permission is granted for this work to be used to exemplify School Philosophy Certificate work and in the examining and moderation process.

Student signature (Student should add initials)

Teacher signature (Teacher should add initials)

Assessment

Grade 7 – 9	An impressively managed project, showing commitment and dedication throughout, with a clearly focused aim and careful thought about the choice of question. Sources are analysed carefully (not simply summarized) in connection with the chosen question. Sources are carefully and fully referenced and the bibliography is complete. The student shows care in their choice of sources and uses a good range (10 – 12; not simply easy to access websites but sources with good academic content). They explain the background to the question and summarize arguments for and against in a clear, logical manner. They state a clear conclusion which can be defended using the evidence provided.
Grades 4 – 6	Project management is reasonable, with some degree of commitment shown. There is a reasonably clear aim and some thought goes into the choice of question. There is some analysis of source material and it is largely relevant to their chosen question. There is a reasonable range of sources (7 – 9) and some of these have some reasonable academic content. The project includes some background and presentation of arguments for and against. There is a reasonably clear conclusion.
Grades 1 – 3	There is some evidence of project management and a limited degree of commitment is shown. An aim for the project is discernible and a question is chosen. Most of the source material is collated rather than analysed and some of it is not useful or relevant to the chosen question. The source range is modest (up to 6 sources) and the sources tend to be easy to access a website with only limited academic content. There is some presentation of arguments and a conclusion is given.

TOTAL MARK AWARDED	5

Supporting evidence (Drawn from written evidence submitted, creative work and judgements based on oral presentations.)

This was a reasonably well-managed project, with the candidate selecting an important scientific and philosophical debate. However, the candidate's interest and understanding of its importance alongside the precise aims of their project were not fully realised in the introduction. A solid range of relevant sources (10) have been used by the candidate in order to consider the questions posed. The candidate shows a reasonably assured understanding of the concepts and ideas with simple but effective summarising. The discussion sets out the broad scientific background to the question and some of the competing explanations as to why people's perception may differ. The discussion would have benefitted from a more balanced and explicit presentation of the arguments for and against the question. There is also scope for greater integration of the sources into the discussion chapter. The conclusion includes a clear judgement but lacks the development to be regarded as fully supported. As such, I believe the project falls into the middle of the second mark band.

Contents

Project Plan

Project Question: Is my blue the same as your blue

Form of project Report

Topic areas to research: light, colour, filters, biology and perception, light waves and photons

Initial ideas for resources websites, books, articles, magazines

If you are part of a group project, list the roles and responsibilities for each group member:

Introduction

(100 words - explain why your question is important, define keywords, outline what topics you will explore and what sort of project you plan to produce).

Is my blue the same as your blue? We are told from a young age one colour is that however, we have never questioned this. We do not know if what I see is actually what you see we are just told this. I have wondered about this for ages so I have decided to research this for my project. I would also like to find whether colour is the same for all of us and if our brains see the same as what someone else sees. Although I do think colours are the same. I think this is important so we can understand how we perceive the world.

Research

(10 - 12 sources. Up to 750 words. Summarize information in your own words. Include short quotations. Build a bibliography. Looks for facts, ideas, theories and quotations. For practical projects, look at examples of films, videos, presentations and use them for inspiration.)

https://www.britannica.com/science/color-colour is a certain wavelength our eyes can see. The radiation of a wavelength that is given off is from the electromagnetic spectrum; this wavelength is from the part known as the visible spectrum.

In dim light, a person won't be able to distinguish colour but when more light is introduced you are able to. This shows that light is necessary for colour so if the levels of light are slightly changed one colour could appear to be different

https://www.khanacademy.org/partner-content/exploratorium-ddp/light-and-color/colored-shadows/a/whats-going-on-human-color-perception the human eye has three colour receptors, blue, green and red when all these three colours are shining the colour appears to be white this because it reflects all light whereas black absorbs all light.

When you turn off different lights it creates different colours and different concentrations of colours can cause them to appear in different colours or shades of colours. This is what allows us to see millions of different colours and shades.

https://www.sciencefocus.com/science/what-determines-the-colour-of-an-object/ colour is wavelengths of light and the different lengths of wavelengths determine its colour. This is also determined by the arrangement of electrons in the atom these absorb and then re-emitted photons. Once your brain has received electrical signals from the retina the visual cortex how this part of your brain has to correct to look like the colour your brain thinks it should.

https://www.independent.co.uk/life-style/health-and-families/features/the-science-of-vision-how-do-our-eyes-see-10513902.html our eyes are very complex and control what goes in and out of our eye. When light passes through our cornea then through our lens it is focused, altering the light so. This causes our eyes to not properly see what is around us as it needs to be altered so we can see some of it

https://science.howstuffworks.com/light7.htm photons are emitted when electrons are energized this is called nuclear radiation. Electrons orbit the atoms and when they get energised they can move orbit to a higher orbit and a photon is produced whenever this happens and this photon has a specific frequency and colour which matches the distance it falls

https://www.wonderopolis.org/wonder/do-you-see-what-i-see some scientists think that what we perceive as colour can be affected by mood memories and feelings this is because what we see as colour is just wavelengths and if our physical parts of our body that detect light such as our photoreceptors and if they are damaged it could cause what we see to be very different

https://www.wired.com/2015/02/science-one-agrees-color-dress/this shows how some people who see the same thing see different colours. As this dress was only a single set of colours but many different people saw different colours. This is because we have evolved to see in daylight, however, daylight changes what certain colours so our eyes have adapted differently to see properly in daylight however this alters the image so we don't see.

http://scienceline.ucsb.edu/getkey.php?key2=719, our photoreceptors change from person to person and a small change such as a few nanometres can cause massive changes to what we see and can cause you to see colours as different things like red looking more like orange so it is very possible that we see different colours but just call them the same thing

https://www.bbc.com/future/article/20120209-do-we-all-see-the-same-colours some animals have receptors that can detect four different wavelengths which is one more than us which means there are some colours we can not see. Which means we are seeing the full picture so our brain will have to fill more of it in. along with this 8% of men and about 0.5%of women are colour blind without knowing this means there is a chance that you could be colour blind and not know so you see one colour as another

https://www.olympus-lifescience.com/en/microscope-resource/primer/lightandcolor/filter/

Colour can be altered through filters as well by absorbing the certain wavelengths that do not make up its colour and every object does this, however, most objects do not allow wavelengths to pass they reflect it which gives an object colour

Discussion / Development

(800 - 1000 words.)

For reports, explain your own point of view. Use your sources for supporting evidence. Consider counter-arguments and alternative viewpoints. For creative projects, explain the decisions you make about the design of your project. Include pictures, screen-shots etc.)

The question “is my blue the same as your blue” is a very hard question to answer mainly because we might never be able to see out of someone else's eyes. Colour, this is what defines so much of life from if something is ready to eat or whether we should move our vehicle on the road.

But what is colour? “colour is associated specifically with electromagnetic radiation of a certain range of wavelengths visible to the human eye”. This is then reflected or absorbed by objects to give it its colour. However, for a colour, you need light and this can only be produced in the atom when an electron is energised and moves to a higher orbit in this process photons are produced and without this, there can be no colour as when there is almost no light different colours are indistinguishable from each of showing this is necessary for colour.

As colour is determined by the wavelength of the visible light spectrum. So yes, we do see the same colour however our rods and cones are on our retinas. This is what determines what we actually see. as these vary from person to person and any amount of differences can have big changes and a change as small as around 5 nanometres “this slight shift in photoreceptor peak sensitivity can make all the difference in the world when it comes to perceiving colours like "red" versus "orange", or other colours” this is what causes some people to be colour blind.

Not only this our visual cortex plays a very important role in what we see and this is what deciphers the signals sent from the retina. ”The visual cortex of your brain has evolved to perform lots of context-dependent corrections to correct for the colour” However these signals are often incomplete and do not show the full picture so in order to correct for this our visual cortex fills in the blanks with what it thinks should be there.

However, there are also other factors: “scientists think that other factors, such as mood, feelings and even memories can affect our perception of colours”. but this cannot change colour too much so red will still be just a different shade and our moods, memories and feelings can change how this looks. So, it is very possible that my blue is much darker than yours or even make the red look much more like orange and so on.

Our eyes are very complex organs that have to process everything that goes into our eyes and our iris controls the levels of light that may enter the eye this is so the retina does not receive too much information at once. After this, it is then focused in the lens, then hits the retina which is covered in light-sensitive rods and cones. Which then sends an electrical message to your brain.

How does an object get its colour? It works by an object being able to absorb and reflect different wavelengths. We can see how this works through filters. For example, a green filter will absorb red and blue wavelengths. Through this, we can see how different objects create their colour by “objects that transmit some wavelengths and selectively absorb or reflect unwanted wavelengths” to give its colour and then once the object has reflected certain wavelengths.

Even though you think you know what colour is, many people are colour blind without even knowing it: “colour blindness, which affects around 8% of men and half of one percent of women.” so there's a chance that you are colour blind without even knowing and what you may see as red might actually be someone else's blue and you would never know. So there's a chance that you are colour blind and your blue is very different from mine.

When we look at an object and it has a colour, our brain instantly knows what it is without really needing to think however this comes from years of our brain seeing things and begins to be able to improvise improve how we see. When our visual cortex receives signals from our eyes it instantly knows what colour it is. It is able to improvise if something is incomplete and fill in the gaps from what it thinks should be there so that it seems we are seeing everything however through this it has to assume different colours, therefore, there is another possibility that when our brain does this the colour it improvises is very different from what the colour actually is.

There are many examples of people arguing over whether something is one colour or another. One of the most famous examples is the blue and black or white and gold dress from a couple of years ago.so many people saw different colours from each other. This is a perfect example of how people see different colour of the same object. One of the main reason for this was how the individual’s eyes have adapted to different light levels and how it is affected by colour and through this, some colour appears very different and proves some people who are not colour blind that their blue is different to someone else’s.

Conclusion

(50 - 100 words. Sum up what you have done in your project.)

In conclusion, I think we all see slightly different colours however I do not think it is a big difference I think it will just have a slight shade difference only in extreme cases like the dress where it needs special circumstances to look like different colours. But I do think all our colours are different from person to person.

Bibliography

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[2]https://www.khanacademy.org/partner-content/exploratorium-ddp/light-and-color/colored-shadows/a/whats-going-on-human-color-perception

[3]https://www.sciencefocus.com/science/what-determines-the-colour-of-an-object/

[4]https://www.independent.co.uk/life-style/health-and-families/features/the-science-of-vision-how-do-our-eyes-see-10513902.html

[5]https://science.howstuffworks.com/light7.htm

[6]https://www.wonderopolis.org/wonder/do-you-see-what-i-see

[7]https://www.wired.com/2015/02/science-one-agrees-color-dress/

[8]http://scienceline.ucsb.edu/getkey.php?key2=719

[9]https://www.bbc.com/future/article/20120209-do-we-all-see-the-same-colours

[10]https://www.olympus-lifescience.com/en/microscope-resource/primer/lightandcolor/filter/