

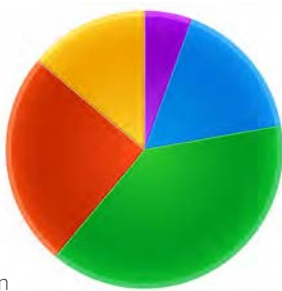


**Colour blindness is one of the world's most common inherited conditions affecting:**

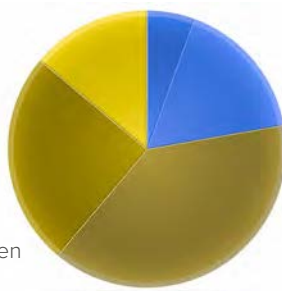
- ▶ 3 million people in the UK (320 million people worldwide)
- ▶ 1 in 12 males and 1 in 200 females
- ▶ At least 1 student in every (co-ed, mainstream) class of 30

### What is colour blindness?

We see colour through 3 specific types of cone cells in our eyes; one type absorbs red light, the second green and the third blue. With inherited colour vision deficiency (CVD) one cone type doesn't function normally. Most cases of CVD arise from a defect in the red or green cone types, this is commonly known as 'red/green colour blindness' (see *graphic below*). However, colour blindness can affect many other colour combinations.



Normal colour vision



Severe green deficiency

### Impact of CVD in the educational environment

While students with normal colour vision automatically understand information presented in colour, colour blind students are often unable to use colour to navigate information. For them, colour merely adds confusion so it can take them longer to make sense of teaching points made using colour. Sometimes they may simply miss the information altogether. Either way, the condition puts them at a distinct disadvantage in the classroom.

By identifying and supporting students with CVD in your classes, you are giving them the same chance to learn as every other student.

Images: left, normal colour vision, right, severe green deficiency

## Advice Sheet for Secondary School & FE College Teachers



## How to spot students with CVD

Although colour vision deficiency is recognised as a Special Educational Need and a disability, it remains undiagnosed in many cases as school entry eyesight tests no longer include mandatory CVD screening. Also, students with CVD are unlikely to say anything because they are often unaware that they see things differently or are reluctant to admit to any difficulty. So, it is often only a parent or teacher who can pick up on the signs of a student with colour blindness.

### Certain signs indicate possible colour blindness, for example if a student:

- Needs more time, or looks for other clues, to process information that uses colour
- Appears to often misunderstand instructions (is it because colour is involved?)
- Holds back in discussion when colour plays a key role e.g. experiments in Science, colour graphs and pie-charts in Maths/Economics/Geography/IBusiness Studies, resistors etc in DT, paintings in Art
- Uses minimal colour and struggles with colour formatting in coursework or uses incorrect colours
- Has difficulty with colour adjectives in MFL classes or coding programmes in ICT
- Gets unexpectedly poor marks for homework when required to use some software programmes
- Is confused about who is in their team when coloured bibs are used in PE lessons
- Appears confused by maps and flags in History and Geography

## Effective strategies to ensure your teaching is colour blind friendly

There are several strategies you can use to make sure your classroom and teaching methods are accessible to colour blind students

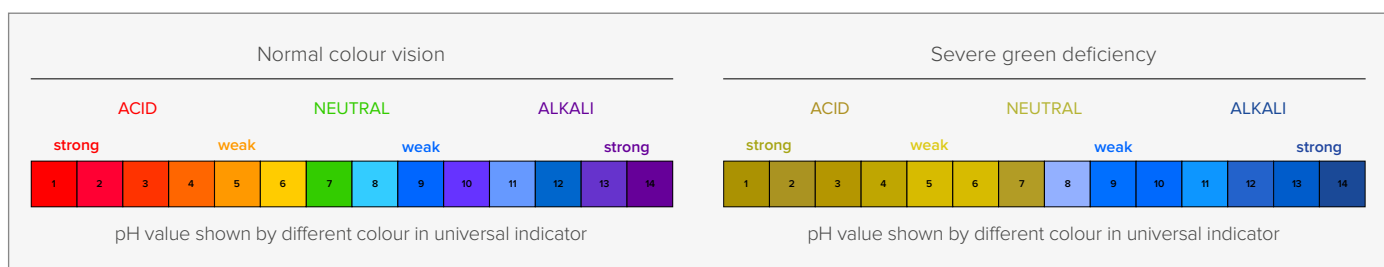
### Environment

- Label all drawing/writing equipment with the name of its colour

- For graphs and charts use secondary indicators in addition to colour e.g. patterns/shading/underlining
- Audit worksheets, textbooks, websites and other resources/equipment for potential problems. You can photocopy worksheets into black and white to see if the information works without colour. If the photocopy is suitable, give the black and white version to colour blind students
- If a student is diagnosed with CVD sit them in good natural light to work (but avoid bright sunlight or artificial light)
- Ensure students with CVD receive the correct support for external exams (note that being given more time or coloured charts or coloured overlays will not help and will add to confusion). See the Detailed Advice Sheet in the Teachers section of our website for more information
- Careers advice - for people with CVD certain careers (i) may not be possible e.g. sections of the Armed Forces or (ii) may be much more difficult e.g. web design

### Methods

- Avoid relying solely on colour to make teaching points or for marking, as CVD students may not be able to distinguish between the colours used. Always use secondary indicators
- Make sure you don't use colour alone to assess understanding
- Regularly ask diagnosed CVD students if they are experiencing difficulties at school/college that may be related to their condition – encourage them to voice any concerns
- Research and use accessible Apps/software for CVD students e.g. Chrome extension/iOS accessibility settings
- Traffic light schemes aren't suitable for CVD students without secondary indicators e.g. text



## Further information and resources

For more information and resources see [www.colourblindawareness.org](http://www.colourblindawareness.org) including downloadable information, classroom resources and links to videos, our online shop [www.colourblindawareness.org/about-us/online-shop/](http://www.colourblindawareness.org/about-us/online-shop/), plus articles in the Press/Education section. Visit [www.colourblindawareness.org/teachers/resources](http://www.colourblindawareness.org/teachers/resources) for a fully interactive Resource Guide.