

SEND: Teaching learners with special educational needs and additional support needs

Compiled by Rob Butler

Teaching learners with sensory difficulties relating to vision

The last meeting of the Inclusive Science Group had a focus on visually impaired students (we expanded this definition to include learners with sensory difficulties related to vision).

Some suggestions from the group included:

- Reduce glare by keeping blinds closed and use overhead lighting instead (this can also help reduce distractions for other learners in the class);
- Focus on contrast – for example, marking ends of tubes, and using indicator to colour acids/alkalis. Elastic bands (or loom bands) can be used on measuring cylinders so that learners can see or feel to where they must fill up;
- Tools such as a digital thermometer can make it easier to take readings than using an analogue version with a linear scale. It is also possible to buy a talking balance that reads the mass out loud;
- Consider the grouping in practical lessons to provide additional support for learners who might need extra assistance;
- Microscopes can be hard to access. Digital models such as a wi-fi microscope or a USB model can be used so that all learners see the same image on the screen or interactive board. This can make it easier for learners who struggle with the focus. Make sure your microscope has fine and coarse

focus knobs and, for learners who struggle with focusing on a specimen, try focusing on the edge of the cover slip, then



moving the slide. Digital microscopes also allow you to capture and process the image – either altering the contrast/recolouring the image, or converting into a 3D model using a special printer. It is also possible to buy microscopes with two eyepieces, called demonstration microscopes, which could be useful in some situations;

- Reader pens can read out text to learners who struggle; some can even store passages of text. Check with your SENDCO, as these are commonly used by learners as part of examination access requirements;
- For chemistry experiments, it is possible to use an app to speak the name of a colour: for example, for learners who have colour vision deficiency. Consider the indicator that you use – if learners can't see the start/end points, they will struggle with the experiment;
- 3D models of cells can help students to appreciate structures for biology and there are banks of templates for those lucky enough to have a 3D printer in their department. It is also possible to get a printer with special ink to print tactile diagrams; and
- It is possible to do chromatography with essential oils so that learners can smell the chromatogram

to assess the separation of the chemicals.

As with most adaptations, we've focused on removing barriers to learning, which could help all the learners in your classes and not just those with special needs.

Links

<https://www.rnib.org.uk/insight-online/making-tactile-graphs-and-diagrams>

<https://www.rnib.org.uk/services-we-offer-advice-professionals-education-professionals/education-resources>

<https://www.colourblindawareness.org/about-us/1ineveryclassroom/>

<https://www.iop.org/sites/default/files/2020-02/Colour-vision-deficiency.pdf>

<https://play.google.com/store/apps/details?id=com.hempton.colorid>

<https://apps.apple.com/us/app/color-identify/id541662665>

*The Inclusive Science Group is made up of interested educators, from all phases and sectors, who have an interest in teaching students with special educational needs. It is organised by Rob Butler (ASE Field Officer) and Jane Essex (ASE Futures and RSC member), who both have an interest in this area of science education. Membership of this group is open to anyone and we meet roughly every two months, although attendance at the online meetings is optional. Notes are taken during the discussion and these will be shared with the whole group (individual contributions are not identified so everyone can speak freely). **You can sign up to be part of this group by going to <http://www.ase.org.uk/ise>***