

Colour in the Classroom

More and more schools throughout the country are realising that children with specific reading difficulties can be helped by the use of colour, either in the form of coloured overlays or as individually prescribed coloured spectacle lenses. By **Tim Noakes**

The children who are most likely to benefit from colour will often show visual discomfort while reading by exhibiting one or more of the following symptoms:

- complains of headaches during or after reading;
- complains of sore eyes while reading (eye-strain);
- rubbing eyes;
- watering or red eyes;
- a marked dislike of bright light (photophobia);
- a tendency to constantly shift or alter the position of text while reading;
- complains of fatigue after short periods of close-work, i.e. one or two pages;
- print appearing blurred, to be moving, flickering, fading, appearance of patterns in the print, colours appearing around the letters and doubling of words and letters.

Care needs to be taken with children when asking about the clarity of print, because they will often assume that the way they see the print is 'normal' and that although they may have difficulty deciphering words, the words must appear the same

way to others. For example, if the child sees the words and letters jumping, he or she may assume that everyone sees the words and letters jumping, but that the others can still read them. When questioning a child regarding the appearance of print, leading questions should be avoided as far as possible, and reports of distortions may only be given once the child has appreciated what clear text is.

Most of the symptoms listed above may also be associated with several of the types of visual problems that have been treated for many years by optometrists, who are often referred to as ophthalmic opticians. Ideally, all children should undergo a full eye examination with a qualified person, but this is particularly important for those with specific learning difficulties.

Very often, the child's teacher can successfully carry out the initial investigation of potential from colour in the school situation. Coloured overlay assessment sets are relatively inexpensive, with step-by-step instructions to enable anyone experienced in working with children to successfully determine whether colour will be helpful.

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A coloured overlay is a transparent sheet of plastic tinted to a specific colour. You also need a sample of random text (letters laid out to resemble words, but not making known words). The reason for the use of random text, is to ensure that the subject's concentration is on the clarity and comfort of the text, rather than attempting to comprehend it. If desired, the assessor can replace the provided text with print from a book that is of a suitable reading age for the subject, provided the print consists of black text on a white background.

Children who use overlay(s) for a period of a few weeks or longer are felt to do so due to a true benefit from colour, as motivations caused only by placebo effect would rapidly diminish. For the children who persist in using overlays or show a significant improvement in reading speed from tests using the Wilkins Rate of Reading Test, the possibility of coloured spectacle lenses, individually and precisely prescribed, is recommended.

Glasses have the advantage that they can be used for blackboard work and writing, as well as reading. In addition, for many children the definition of the optimum tint is very precise and, with over 100,000 colours available, the optimum colour is more easily matched.

Following extensive research trials, this system is considered evidence based. There are reports of outstanding benefits for many children, including cases where pupils who were expected to leave school after GCSE have stayed on to obtain

A'levels, with plans to go on to university. Others report reduction of eye strain and reading for pleasure for the first time in their lives. Most of those with the lenses are continuing to use them happily, although in a few cases, the lenses will act as a stepping stone to better reading and many no longer be needed after six months or a year. Some optical practitioners report over 90% success rate when measuring success in terms of continued use and patient satisfaction.

Research is still in progress to determine deeper knowledge of the effects of colour. However, we feel that given the present awareness of this subject, every child should be offered the opportunity to find out whether learning can be made easier by the use of colour. Assessment with overlays is straightforward and relatively inexpensive. With the teacher's knowledge of how to communicate with children and their unique position to watch reading and writing strategies, they are ideally placed to carry out this initial screening of the children. Optometrists make the ideal multi-disciplinary team for this aspect of helping those with specific learning difficulties, but it can make it possible for the child to see the work clearly and comfortably, so enabling longer periods of concentration coupled with increased comprehension. **TEX**

Further reading:

1. Wilkins AJ, Evans BJW, Brown J, Busby A et al. *Double masked placebo controlled trial of precision tinted spectral filters in children who used overlays.* Ophthalm. Physiol. Opt. 1994: 14:365-370
2. Evans BJW, Drasdo N, Richards IL. *Investigations of accommodative and binocular function in dyslexia.* Ophthalm. Physiol. Opt. 1994:14: 5-19
3. *Lightstone A., Lightston T., Wilkins A.J. *Both coloured overlays and coloured lenses can improve reading fluency, but their optimal chromaticities may differ.* Ophthalm. Physiol. Opt. 1999 19:279-285

For further details of the Cerium Overlays and Intuitive Colorimeter, the Wilkins Rate of Reading Test and a list of optometrists able to offer colorimetry, contact:
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