Unit 333: Creating and applying colour

# Delivery guide

Unit information

This unit is about interpreting information and adopting safe, healthy and environmentally responsible work practices. It covers the skills and knowledge required to create and apply colour in relation to painting and decorating work.

Learners may be introduced to this unit by asking themselves questions such as:

* How would I plan and prepare the work area?
* How would I choose a suitable ground coat for a decorative effect?
* What colours will complement a chosen wallpaper?
* How do I use appropriate equipment and techniques to produce a desired effect?

Learning outcomes

1. Understand colours required to create a colour wheel
2. Understand colour organisational systems and terminology
3. Comply with the given contract information to carry out the work safely and efficiently to the required specification

Suggested resources

Textbooks

* Cook, A., Fearn, C., Walter, S., Yarde, B. (2014) *Textbook: Painting and Decorating for the Level 1 Diploma.* Hodder Education.   
  ISBN 978-0-85193-295-8
* Cook, A., Fearn, C., Walter, S., Yarde, B. (2014) *Textbook: Painting and Decorating for the Level 2 Diploma.* Hodder Education.  
  ISBN 978-0-85193-296-5
* Fulcher, A., Rhodes, B., Stewart, B., Tickle, D., Windsor, J., Butterfield, D. (2005) *Textbook: Painting and Decorating,* 5th Edition*.* Blackwell Publishing. ISBN 1-405-1254-9

Websites

* [British Standards | Homepage](https://www.bsigroup.com/en-GB/)
* [NCS Colour | Homepage](https://ncscolour.com/)
* [RAL Colours | Homepage](https://www.ral-farben.de/en/)

Manufacturers

* [Akzo Nobel](https://www.akzonobel.com/)
* [Crown Paints](https://www.crownpaints.co.uk/)
* [Dulux](https://www.dulux.co.uk/en)
* [Johnstone's Paints](https://www.johnstonespaint.com/)

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
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| 1. Colours required to create a colour wheel | * 1. Purpose of a colour wheel | * Learners will understand the colour wheel and its relationship to colour such as: * a rotating disc with sectors of different hues which, when rotated at speed, should (theoretically) turn white in ‘colour’ * being pigmented, the colours produce a ‘subtractive’ effect, meaning that the wheel does NOT turn white when rotated at speed * a static disc, it merely shows the relationship between the colours used * it can also show the primary, secondary and tertiary colours in relation to each other. |
| * 1. Colour mixture in a colour wheel | * Learners should be tasked with producing a completed colour wheel (e.g. using poster / gouache paints) to include the following: * Primary colours (these will be the pigment primaries); red, yellow, blue * Secondary colours (made from a mixture of twoprimary colours) * Tertiary colours (made from a mixture of twosecondary colours). * Learner to use paints for worksheets to enable them to see the ‘staining power’ of coloured pigments and enhance their hand skills when carrying out detailed work at later stages of their apprenticeship. * Learners must be able to explain the main source of natural light and how we see ‘colours’ in relation to: * visible spectrum (‘rainbow’ colours) * reflected light * absorbed light. * Learners must be able to name red, yellow and blue as pigment primary colours and explain why they are called that. * Learners must be able to name orange, green and purple as secondary coloursand explain why they are called that. * Learners must be able to name citrine, olive and russet as tertiary   colours and explain why they are (traditionally) called that.   * Learners should know that there is an alternative method used by some when describing tertiary colours, as follows: * yellow – green * blue – green * blue – purple (indigo) * red – purple (violet) * red – orange * yellow – orange * Learners to understand that the above are achieved by mixing the primary with the secondary in the ratio of 2:1. * Learners should produce both tertiary variances as described above by mixing paints (e.g. poster paints / gouache) to produce both types and review the resultant examples. The methods to use are as follows: * traditional method – ratio of 1:1 * modern method – ratio of 2:1. |
| * 1. Schemes of colours on the colour wheel | * Learners should be able to define the following terms and be given worksheets to complete using paints (poster paints / gouache or digital / I.T. resources) which show each type of colour scheme: * analogous / harmonious * complimentary * monochromatic * achromatic. * Learners to use worksheets which include domestic dwelling and commercial premises interior rooms, or exteriors which will enable the learner to apply colour schemes which suit each location. |
| 1. Colour organisational systems and terminology | * 1. Organisational systems used in industry | * Learners will understand the following ‘systems of colour’ and how they are organised to be of use in industry, by interaction / discussion with tutors: * BS 5252 – Framework for Colour * Co-ordination for Building Purposes * BS 4800 – Paint Colours for Building Purposes (British system) * Munsell Colour System (American) * NCS System (Scandinavian) * RAL Design System (German) * Learners must be able to explain why each system uses a ‘referencing system’ rather than just colour ‘names’ and be able to decipher each system to recognise individual colours. * Learners should be able to utilise the information provided by the ‘SYSTEM Reference Number / Code’ when mixing colours. |
| * 1. Terminology used in industry | * Learners to be able to describe the following terminology: * Hue – another term for ‘colour’ * Value – lightness / light reflectance * Chroma – purity of a colour or hue * Greyness – similar to ‘value’; tone of a colour * Weight – strength of a colour, similar to ‘purity’ * Natural order – the arrangement of pure colours in a circle in an orderly progression from light to dark tone (greyness) * Saturation – strength / purity / intensity * Learners will be able to provide examples of where, and by whom, the terms may be used in industry: * job specifications * colour schedules * architect's specifications * manufacturers' colour consultants. * Learners should produce colour schemes to given specifications (using poster paints / gouache) to meet the following colour criteria: * warm colours * advancing colours * cool colours * receding colours * and be able to explain the benefits of their use in given situations. |
| * 1. Mixing colours | * Learners should be able to describe the effects on the hue / chroma by the addition of white / grey / black to a colour, and where they would be beneficial in use, including tints and shades. * Learners should be able to use the Munsell Colour System to calculate the ‘Reflectance Factor / Value’ of selected sample colours from the BS4800 Range. * Learners to be able to use the formula *V(V-1) = RF/RV* (where V = Munsell Colour Value) and be able to provide examples of where this knowledge would be useful. |
| * 1. Effects of light on colour | * Learners should be able to describe the effects on colour by using the following related terminology: * natural / white light * visible spectrum (rainbow) * metamerism (and its effect on colours / schemes). * Learners should be able to describe the effects on colour when the following artificial light sources are used: * tungsten – yellow / red rays * fluorescent – ultra violet rays * sodium – yellowish light rays * LED – similar to tungsten rays * halogen – ultraviolet > deep infrared rays * ECO – similar rays to fluorescent. * Learners should know that the type of light rays given off by any light source will enhance the pigment colour of similar hue and tend to negate any contrasting colour in a scheme. For example, tungsten light will enhance red pigment colours, but make green almost colourless / black in appearance. * Learners must know that lighting technology enables manufacturers to ‘alter’ the light rays given off by modern lighting (e.g. halogen lamps). |
| 1. Comply with the given contract information to carry out the work efficiently to the required specification | * 1. Demonstration of work skills to identify, select, mix and adjust | * Learners must know that the ‘mixing’ of colour to produce a required hue is a specialised area of decorating which they will not be called upon to use very often. This is due to the wide range of colours in most types of water-borne and solvent-borne pigmented coatings. * Learners must be made aware however, that they may have to call on these skills when preparing specific colours to match existing furnishings / wallcoverings, etc. in a room. * Learners must be aware that the best method is to use an existing close matching colour from the proprietary colour palette of a paint manufacturer, making any alteration a minimalist change in hue / tone. * Learners must also know that when ‘matching’ colours, cognisance must be given not only to the pigmentation used, but also that the type of binder / medium of water-borne and solvent-borne coatings will also have a differing effect on the dried colour. * Learners must be aware of the factors which could influence any colour mixing processes and influence the final colour matched samples, including: * lighting in mixing area * lighting type in application area * type of binder. * Learners must know that samples should be agreed with the client before any application of the material to surfaces. * Learners, working in pairs, should be given a sample of a wallcovering (e.g. full width and 1 full pattern repeat) and be tasked with producing a simple ‘Mood Board’. This will also have an attached colour scheme, relative to and including the wallcovering, for a given type of domestic room situation (e.g. kitchen, lounge, dining room, bedroom, etc.). * Scheme to include colours for ceiling, walls, door, windows / linear work, feature areas, etc. * The scheme should be one from the listed types (analogous, complimentary, monochromatic) to include hues in the advancing / receding, warm / cool ranges where appropriate. * Using the same wallcovering sample, the colour scheme can be changed for each pair of learners to accommodate other types of colour / decorative schemes. * Each pair to present one mood board / colour scheme to the others in their group (acting as the customer) and explain their choices of colour relating to the specification given as above. |
| * 1. Use and maintain hand tools and associated equipment to apply agreed colour schemes to internal surfaces by brush and/or roller | * Learners will be able to decant an appropriate (minimal) quantity of paint sample required to apply to one door and alter it as a tint / shade as directed by the specification given. * Learners will be able to apply colour schemes to surfaces using brush and roller, with minimal defects, as per specification. * Learners should be able to match the samples accurately to take into account the lighting source in the work area. * Learners should select appropriate access equipment and safely work from it. * Learners to demonstrate how to appropriately clean, maintain and store all equipment. |