



Raspberry Pi

Year 5 – Vector drawing

Unit introduction

In this unit, learners start to create vector drawings. They learn how to use different drawing tools to help them create images. Learners recognise that images in vector drawings are created using shapes and lines, and each individual element in the drawing is called an object. Learners layer their objects and begin grouping and duplicating them to support the creation of more complex pieces of work.

Note: This unit is planned using the Google Drawings application. All Google Drawings files are provided in the lesson plans (the links create a copy of the drawing that can be edited). However, if you wish to use a different vector drawing program, all of the resources are included in the folders as Google Slides presentations. The contents of these files can be copied across to your preferred program.

In order to demonstrate the tools and skills involved in vector drawings, it is recommended that you use a vector drawing program, such as [Vectr](#). While the resources could be used in the Google Slides files, it is important that learners recognise that true vector drawings are made using a vector drawing program.

Overview of lessons

Lesson	Brief overview	Learning objectives
1 The drawing tools	Learners are introduced to vector drawings and begin to understand that they are made up of simple shapes and lines. They use the main	To identify that drawing tools can be used to produce different outcomes

	<p>drawing tools within the Google Drawings application to create their own vector drawings. Learners discuss how vector drawings differ from paper-based drawings.</p>	<ul style="list-style-type: none"> ● I can recognise that vector drawings are made using shapes ● I can experiment with the shape and line tools ● I can discuss how vector drawings are different from paper-based drawings
2 Creating images	<p>Learners begin to identify the shapes that are used to make vector drawings. They are able to explain that each element of a vector drawing is called an object. Learners create their own vector drawing by moving, resizing, rotating, and changing the colours of a selection of objects. They also learn how to duplicate the objects to save time.</p>	<p>To create a vector drawing by combining shapes</p> <ul style="list-style-type: none"> ● I can identify the shapes used to make a vector drawing ● I can explain that each element added to a vector drawing is an object ● I can move, resize, and rotate objects I have duplicated
3 Making effective drawings	<p>Learners increase the complexity of their vector drawings and use the zoom tool to add detail to their work. They are shown how grids and resize handles can improve the consistency of their drawings. Learners also use tools to modify objects to create a new image.</p>	<p>To use tools to achieve a desired effect</p> <ul style="list-style-type: none"> ● I can use the zoom tool to help me add detail to my drawings ● I can explain how alignment grids and resize handles can be used to improve consistency ● I can modify objects to create a new image

4 Layers and objects	Learners gain an understanding of layers and how they are used in vector drawings. They discover that each object is built on a new layer and that these layers can be moved forwards and backwards to create effective vector drawings.	To recognise that vector drawings consist of layers <ul style="list-style-type: none"> ● I can identify that each added object creates a new layer in the drawing ● I can change the order of layers in a vector drawing ● I can use layering to create an image
5 Manipulating objects	Learners find out how to select and duplicate multiple objects at a single time. They develop this skill further by learning how to group multiple objects to make them easier to work with. Learners then use this knowledge to group and ungroup objects, in order to make changes to and develop their vector drawings.	To group objects to make them easier to work with <ul style="list-style-type: none"> ● I can copy part of a drawing by duplicating several objects ● I can recognise when I need to group and ungroup objects ● I can reuse a group of objects to further develop my vector drawing
6 Create a vector drawing	Learners use the skills they have gained in this unit to create a vector drawing for a specific purpose. They reflect on the skills they have used to create the vector drawing and think about why they used the skills they did. Learners then begin to compare vector drawings to freehand paint program drawings.	To apply what I have learned about vector drawings <ul style="list-style-type: none"> ● I can create a vector drawing for a specific purpose ● I can reflect on the skills I have used and why I have used them

		<ul style="list-style-type: none">• I can compare vector drawings to freehand paint drawings
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Progression

This unit progresses learners' knowledge and understanding of digital painting and has some links to the Year 3 'Creating media – Desktop publishing' unit, in which learners used digital images. In this Year 5 unit, learners create images that could be used in desktop publishing documents.

Please see the learning graph for this unit for more information about progression.

Curriculum links

[National curriculum links](#)

- Select, use, and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems, and content that accomplish given goals, including collecting, analysing, evaluating, and presenting data and information.

Assessment

Formative assessment

Assessment opportunities are detailed in each lesson plan. The learning objectives and success criteria are introduced in the slide decks at the beginning of each lesson and then reviewed at the end. Learners are invited to assess how well they feel they have met the learning objective using thumbs up, thumbs sideways, or thumbs down.

Summative assessment

Please see the assessment rubric document for this unit. The rubric can be used to assess student’s work from lessons 3 to 6.

Subject knowledge

Teachers need a good understanding of the tools available in their chosen software. These tools include shape and line drawing tools, fill, undo and redo, select, and delete. In the unit, learners also need to move, resize, and rotate shapes, including the use of size and alignment guides. Many of these tools are available in presentation software such as Google Slides and Microsoft PowerPoint.

Teachers need to know that vector drawings are created using shapes and lines. In vector drawings, all these shapes and lines are called objects. Within vector drawings, each object is created using a new layer. These can be rearranged using the menu tool, which allows the objects to be sent backwards and forwards (one at a time) or sent to the back or front. Objects within these programs can be grouped, which enables the objects to be treated as though they are a single object. It is important to recognise that although they act as though they are a single object, grouped objects are still a number of individual objects.

Teachers need to have an understanding of how digital images can be made. This could be using shapes and lines in a vector drawing, or using pixels in a freehand paint program.

Enhance your subject knowledge to teach this unit through the following training opportunities:

Online training courses

- [Raspberry Pi Foundation online training courses](#)

Face-to-face courses

- [National Centre for Computing Education face-to-face training courses](#)

Resources are updated regularly — the latest version is available at: ncce.io/tcc.

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