**Youth Explore Trades Skills Design and Drafting – 3D Modelling (Architectural CAD)**

# Exploring SketchUp Make

## Description

In this activity, the teacher will demonstrate how to open up a template in SketchUp Make; how to create and modify a 3D shape; and then how to import and modify items from the 3D Warehouse.

## Lesson Objectives

The student will be able to:

* Open up a template
* Use basic 2D drawing tools
* Use 3D modelling tools
* Modify a 3D shape
* Import an item from the 3D Warehouse
* Modify items from the 3D Warehouse

## Assumptions

The student will:

* Know how to login to a computer and open up the software
* Know how to save work

## Terminology

**3D Warehouse**: an online distribution platform to share SketchUp models. Any person can post models to this website, including students, businesses, architects, etc. Any person can also download files posted to this site.

**Floor plan**: a scale drawing of the arrangement of a building.

**Follow Me**: a tool in SketchUp that allows you to draw a 2D path and select a 2D surface, and then pull the surface along the path to create a 3D shape.

**Offset**: a command that creates a copy of an entity (line, circle, etc.) a specified parallel distance away from the current object(s) selected.

**Push/Pull**: a tool in SketchUp that allows you to select a surface and push or pull it into 3D. You can also use this tool to push or pull a shape to create a negative space in a surface.



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**Scale**: a drawing that is enlarged or reduced from its original size, usually expressed as a fraction in imperial measurement. The most common architect’s scale is ¼ inch to the foot, expressed

as Scale ¼" = 1'-0". In metric measurement, scale is expressed as a ratio (e.g., 1:50, meaning

1 mm in the drawing equates to 50 mm in the actual work). The actual building measure would be multiplied by the scale factor.

**SketchUp Make**: 3D software originally developed by Google to assist in creating Google Earth. Google released the software for free to users and called it Google SketchUp. SketchUp was later purchased by Trimble, and is now software available for purchase, although it is free to teachers and students.

**Template**: a file in a specific unit of measurement with pre-set parameters that can possibly include layers, textures, material, blocks, etc.

## Estimated Time

30 minutes

## Recommended Number of Students

20, based on *BC Technology Educators’ Best Practice Guide*

## Facilities

Computer lab installed with CAD software (SketchUp Make, AutoCAD, etc.)

## Tools

Projector with computer and speakers, Internet access

## Materials

Student activity with instructions

## Resources

Instructional video for teacher and students to follow:

* 13.1: Exploring SketchUp Make

## Teacher-led Activity

Use a computer with a projector and demonstrate the following:

* Open an imperial/inches SketchUp file
* Use 2D drawing and modification tools
* Use 3D drawing and modification tools
* Import items from the 3D Warehouse
* Modify items from the 3D Warehouse

**2** Youth Explore Trades Skills

## Student Activity

Students will follow the video tutorial and the Student Activity “Setting Up Your Model Space” and will explore the SketchUp software.

## Extension Activity

Have students draw a specific object, like a children’s playground, a doghouse, etc.

## Assessment

Students will show the teacher what they have created, before moving on to the Creating a Simple Architectural Structure activity.

Youth Explore Trades Skills **3**

# Student Activity: Setting Up Your Model Space

Using the software, explore the 2D and 3D drawing and modification tools, including “importing objects from the 3D Warehouse.” The video to support the lesson is located under Resources.

## Procedure

1. Open up your SketchUp Make software, and as the software loads watch tutorial video 13.1, “Exploring SketchUp Make.” Once the software has loaded, select a feet and inches template.
2. Once the drawing file is open, check out your toolbars. If your software does not display the same toolbars, go to the View tab, select Toolbars, then select whatever toolbars you wish to display.
3. Next explore the software as demonstrated in the video. Feel free to try out any icon in the toolbars.
4. Lastly, try to import an object from the 3D Warehouse. Then try to scale and rotate that object.
5. Show your instructor before moving on to the next activity.

**4** Youth Explore Trades Skills