



**Cedar. Cherry, Rowan,
3D Designers**

Lesson	IPC Learning Goal	NC Coverage	Activities	Resources / Vocabulary / Personal Goals
Entry Point			<p>Watch a short 3D film – order 3D glasses</p> <p>Look at some famous buildings around the world: Where are they? What are they made of? Are there any interesting or notable features? Google Earth to locate them.</p> <p>Tinkercad - https://www.tinkercad.com</p> <p>‘Tinkercad’ is a free, easy-to-use 3D CAD design tool. The children can use the drag-and-drop tools to create 3D models of the buildings.</p> <p>Minecraft: provide the children with laptops or tablets loaded with a trial version of Minecraft. Minecraft is a Lego style adventure game where players can create their own structures and contraptions out of textured cubes made of different materials such as dirt, rock, sand and lava. minecraft.net – the website offers a free trial version of the game which lasts for five in-game days, or about 100 minutes.</p>	Laptops
Knowledge Harvest			<p>Recall the entry point and compare the different activities the children explored. In pairs or small groups ask them to discuss:</p> <p>Which activity they enjoyed the most and why?</p> <p>Was it easier to locate the buildings using Google Earth or reference books?</p> <p>Did they prefer to draw and design with a mouse or a pencil?</p> <p>Was it easier to build and create using digital tools or real Lego?</p> <p>What were the advantages/disadvantages of using the computer over completing the activities practically?</p> <p>RECAP ON E-SAFETY</p>	Laptops

			<p>SketchUp -</p> <p>To find models in SketchUp: Open the SketchUp short cut on your desktop</p> <p>Click on 'Choose Template'</p> <p>Select one of the templates (any will do) and click Start using SketchUp</p> <p>Click on the 'Get Models' option in the main toolbar (hover over the icons in the toolbar to find the correct one)</p> <p>Type the name of a famous building in the search box, for example 'St Paul's Cathedral'</p>	
Big Picture		<p>We live, work and play in and around all sorts of structures, but have you ever stopped to think about how these buildings are created? Throughout history great structures have been designed using only paper and drawing tools. But times have changed, and computers have transformed the work of architects and engineers. In this unit we'll be using ICT and computing to find out how.</p>		
ICT 1	<p>Understand that all aspects of ICT and computing need to be used safely, respectfully and responsibly, recognizing unacceptable behaviour and reporting concerns.</p>	<p>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>Show a PPT of buildings around the world and discuss.</p> <p>What is an architect?</p> <p>Tell the children that before a building can be built, designs need to be carefully drawn up and agreed on. Once the owner of the land has decided on their 'brief' for a building, they sometimes invite architects to present their ideas for what the building could look like before deciding on which design they'd like to have built. Preparing 3D models is therefore a crucial part of the design process.</p> <p>SketchUp – research a building</p> <p>Explain that they are going to research its background and history including:</p> <p>Who designed it and when What the building looks like (for this they will need to download photos)</p> <p>Where it is located in the world Whether its country and location has influenced its design in anyway</p> <p>What it was/is used for Who uses it today</p> <p>Discuss the following:</p> <p>Do the headings look relevant for what we were looking for? Does the content seem up to date?</p> <p>How can we tell? Where does the content originate? How can we tell? Is the content easy to read and understand? Is it suitable for</p>	Laptops

			children? Does it provide all the information that they need? Are any web links, if included, useful? Does it present a one-sided point of view? How do they think the results of their search have been ranked?	
ICT 2	Understand the importance of considering audience and purpose when presenting information	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration	Make a short film documentary about their chosen building. See p27/28 on the topic PDF.	iPads
ICT 3	Be able to use ICT and computing-based models and simulations, working with various inputs and outputs	Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration	Continue with the filming and editing of their documentary.	iPads Understand Scratch before next lesson
ICT 4	Be able to design and write programs to accomplish specific goals, working with sequence, selection and repetition to control events	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	Their 3D design task is going to be in two parts: first they are going to create a 3D model of their dream house using SketchUp and then they are going to use this model as the setting for a computer game that they will be designing using Scratch.	Laptops
ICT 5	Be able to design and write programs to accomplish specific goals, working with sequence, selection and repetition to control events	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	Continue their 3D design from the last activity.	Laptops
ICT 6	Know about an increasing number of ICT and computing applications	Use sequence, selection, and repetition in programs; work with	Explain that in this session we will be learning to use the 'SketchUp 3D Warehouse' to add different components to models of our own	Laptops

	for leisure, communication and work	variables and various forms of input and output	bedrooms. Explain that 'components' are finished models which other users have created using SketchUp and uploaded for others to use. Thousands of components exist on the site and it is possible to search the database using exact criteria. For instance rather than searching for 'lamp' they could use exact terms such as 'white, metal floor lamp' to find specific items.	
ICT 7	Know that the study of ICT and computing is concerned with applying technology to gather, use and exchange information safely and create, design and publish appropriate content	use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Show the Cat and Dog game on Scratch. In pairs the children should now try to begin replicating the Cat and Dog game that they have just been shown. Distribute colour copies of the PDF to pairs to support them with their programming. They will need to refer carefully to the instructions in the PDF to replicate the code exactly, as programming is an exact science that requires precise instructions to work in an ordered sequence	Laptops
ICT 8	Be able to use ICT and computing-based models and simulations, working with various inputs and outputs	use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Explain that today they will be learning to create a 'variable' for our computer game. A variable is a template or container, which holds specific pieces of data in your computer's memory. The variable that they are going to create is going to hold the data about racing. Children should complete Steps 3 to 5 in the Cat and Dog Race PDF (found in the resources section of the unit). When the games are completed children should swap computers to test each other's games and feedback on any bugs or glitches. Returning to their computers the children should be able to clearly articulate what is not working in their game and which part of the script they need to scrutinise for bugs. Any children who have completed their games can either support others with their de-bugging or proceed to the next task.	Laptops

ICT 8	Know about an increasing number of ICT and computing applications for leisure, communication and work	use sequence, selection, and repetition in programs; work with variables and various forms of input and output	<p>This final Scratch session assumes that the children have finished following the instructions in their handout and that their games have been debugged and are working correctly. Open some examples of children's programming and ask them to explain what bugs they found and what strategies they used in order to solve any problems.</p> <p>Explain that during this task they are going to customise their finished games in order to make them unique. The finished games will then be uploaded to the Scratch website where they will be available for other users to play. Discuss what is meant by the term 'customise' and ask the children to brainstorm what ideas they have for adapting and modifying their games.</p> <p>Extension</p> <p>Explain that some of the younger children in the school are also learning to program with Scratch so it would be really helpful to record a 'top tips' video for Scratch using the filming, presenting and editing skills that the children learnt earlier in the unit. They could use tablets or video cameras to shoot short films aimed at teaching other classes what they have learnt about coding with Scratch.</p>	Laptops
International 1	Know about the key features related to the lives of people in their home country and, where appropriate, their parents' home countries		<p>Introduce the lesson by playing 'Spin the Globe' using Google Earth. To do this type the name of your host town or village into the search bar and watch the virtual planet Earth spin and zoom to the given location. If applicable, use some of the children's home towns and cities as destinations. First visit the country, hover over the town/village, then use their postcodes to identify the streets on which they live. Compare different types of buildings in different parts of the local area, country or world. For example, they could</p>	<p>Laptops/iPads</p> <p>Google Earth</p>

			compare schools, private houses, hospitals, museums, train stations, etc. How do they differ and in what ways are they similar? Explore children's ideas about why these similarities or differences might exist - thinking about climate, economics, geographical features, consumer need, etc.	
Exit Point	Tell the children that they are going to use SketchUp and their new 3D drawing skills to design an entire dream house for some very important clients - their parents and teachers! Create a 'marketplace' so that children can share their designs with parents. Send out invitaions.			
Reflection				