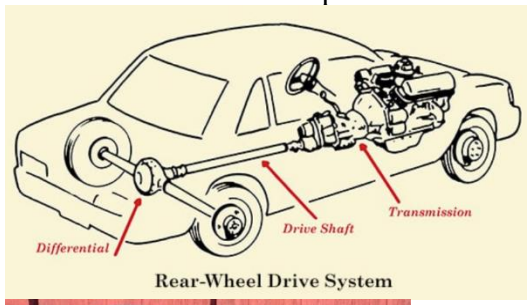
Christ the King Catholic Voluntary Academy
DT Medium Term Plan – Year 2 – Axles and Wheels

Name of Unit: "Can I design, make and evaluate a toy vehicle (product) for children (user) with an axle and wheels (purpose)?	Prior Learning: Science – Everyday Materials (Y1/Y2 Taught), Linking to Victorian knowledge in History		
NC Objectives:	**Resources**	**Term:**	**Start Date:**
Design: • Design purposeful, functional, appealing products for themselves and other users based on design criteria. • Generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology. **Make:** • Select from and use a range of tools and equipment to perform practical tasks [for example, cutting,	Card wheels x 400 Washers to secure wheels x 400 Dowel rods x 200 (cut up) Thick straws (to insert the dowel through) Small boxes and details to be collected in from children	QFLs + Resources + Specific DT skills being used. **Lesson 1 – Can I research what axles and wheels are?** ***Review – What do good designers do? This lesson we are going to look at 'seek solutions and research/develop'*** ***Seek solutions*** Discuss toys played with in Victorian times using pictures. Think about toys played with today and discuss similarities and differences. Discuss materials used to make toys today and how plastic can be produced more quickly than the wooden toys used in Victorian times. ***Research and Develop*** Teach children what an axle and wheel is (use diagrams like below to support and concrete objects). Explain to children they are going to be designing their own moving toy using an axle and wheel. Share design criteria with children. Discuss what transport or toys they know of that have wheels and axels.	Key Knowledge: - Children will know that replica toy cars are used to play with - Children know similar toys are used over time but the material used to make them may be different - Children know toys move to make them more engaging to play with and to be more similar to the real item. - Children will know an axle is a rod passing through wheels. - Children will know a wheel is a circular object which rotates on an axle.

shaping, joining and finishing. • **Select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics.** **Evaluate:** . **Explore and evaluate a range of existing products** • **Evaluate their ideas and products against design criteria** **Technical Knowledge:** • **Build structures, exploring how they can be made stronger, stiffer and more stable.** • **Explore and use mechanisms [for example, levers, sliders, wheels and axles], in their products.** **Design Criteria** **Your moving toy train/car should:** **-Have working wheels which rotate** **-Have wheels fitted with an axle**		Remove red labels from picture.  Rear-Wheel Drive System  **Lesson 2: QFL: Can I plan a moving toy using wheels and axles?** Review – previous lesson's learning and today's good designer foci Test and refine Using card wheels, dowels, washers and straws on tables, children explore how to assemble the resources together to make the axle and wheel complete. Discuss how the dowel must be inserted into the straw and the straw is attached to the chassis of a car. If this didn't happen, the axle could not rotate freely. Children can explore this for themselves.	- Children will know the design criteria for this project. - Children will know a successful product in this unit will have a working axle and wheels which can rotate.

-Have an appealing design which looks like a real train/car		<u>Plan</u> Children consider the resources they have either brought in/going to bring in. They draw their diagram of their product and label it using axle, wheel, chassis, washer (plus the resources they will bring in).	
		<u>Lesson 3: QFL: Can I create a toy using axles and wheels?</u> Review – good designers today's foci create and evaluate. Children to look back in booklets at their plan and discuss with partners how they're going to assemble their product. <u>Create</u> Children to refer to their plans and assemble the toy. Teacher to model assembling car model using vocab such as cutting, joining, finishing, fixed, moving, mechanism. <u>Evaluate</u> Children to play with their toys. They complete the evaluation form in their booklets against the design criteria. Teacher to assess 4 children as below:	**<u>Specific Key Vocabulary:</u>** Vehicle, wheel, axle, body, chassis Assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism