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| **Year:** 2 **Program of Study:** Mechanisms – Wheels and axles**N.C POS:*** *Design purposeful, functional, appealing products for themselves and other users based on design criteria.*
* *Generate, develop, model and communicate their ideas through drawing and mock-ups.*
* *Select from and use a range of tools and equipment to perform practical tasks [for example cutting, 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.*
* *Explore and evaluate a range of existing products.*
* *Evaluate their ideas and products against design criteria.*
* *Explore and use mechanisms [for example levers, sliders, wheels and axles], in their products.*

**Concept:** technology, impact, legacy, change, inventions, innovation, application, cause and effect.**Key Vocabulary:** vehicle, wheel, axle, axle holder, chassis, body, cab, assembling, cutting, joining, shaping, finishing, fixed, free, moving, mechanism, names of tools, equipment and materials used, design, make, evaluate, purpose, user, criteria, functional.**Prior Learning:** Simple sliders and leavers in Year 1.Assembled vehicles with moving wheels using construction kits. Explore moving vehicles through play. Gained some experience of designing, making and evaluating products for a specified user and purpose. Developed some cutting, joining and finishing skills with card.**Future Learning:** Year 3 Mechanical Systems Levers and Linkages including fixed and loose pivots. |
| **Core Knowledge- non-negotiable****Explore*** Design, make and evaluate a [*product*] for [*user*] for [*purpose*].***Product ideas:*** *shopping trolley, cart, emergency service/farm vehicle*
* Explore and evaluate a range of products with wheels and axles.
* Assemble vehicles with moving wheels using constriction kits.

**Designing*** Generate initial ideas and simple design criteria through talking and using own experience.
* Develop and communicate ideas through drawings and mock-ups [*CAD*, *construction kits, lego, mobilo, k’nex, everyday items]* and be able to label main parts, justifying choices/purpose of features included.

**Making*** Plan by suggesting what to do next using their design ideas and criteria as an ongoing guide.
* Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing [*hacksaw, vice, tape, scissors, glue gun, card drill, ruler].*
* Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics and be able to justify their choices and materials.

**Evaluating*** Evaluate their ideas and design choices throughout and their final product against original criteria by writing how well it works in relation to the purpose and the user using key vocabulary.
* **Assessment questions:** How does it work? What materials and components did they use and why? How does it meet the design criteria? What changes did they make? How would they make it better next time?
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| **Wider Influences*** Walk around local community/school – hunt for everyday use of wheels and axles
* Transport – emergency services, farming, shopping trolley
* Primary DT – DT specialist
* Construction Toys Kits
* Car manufacturer visits – Jaguar Land Rover Halewood
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| **Enduring Understanding*** Know how to make and use wheels, axles and axle holders.
* Distinguish between fixed and freely moving axles.
* Know and use technical vocabulary relevant to the project
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