Our Intent is: To support our pupils in answering the question, "How do we design, make and evaluate solutions to real and relevant problems?" Using creativity and innovation, we inspire pupils to develop skills which impact on daily life.

Forton Primary School
Design and Technology

Nicky Nook Class Spring 1 Year B	N.C. LINKS: When designing and making, pupils should be taught to:
Key Concept: Mechanisms Focus: Wheels and axles Key Question: How does a wheel turn around?	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, 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

Our Intent is: To support our pupils in answering the question, "How do we design, make and evaluate solutions to real and relevant problems?" Using creativity and innovation, we inspire pupils to develop skills which impact on daily life.

<table>
<tr><td></td><td>

- 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

</td></tr>
<tr><td>

Unit Overview:

To design and make a vehicle with moving wheels, to fit a design specification.

</td><td rowspan="2">

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

</td></tr>
<tr><td>

Possible Outcome:

push/pull toys e.g. emergency service vehicle carnival float farm vehicle clown's car vehicle for imaginary/story character shopping trolley

</td></tr>
</table>

Our Intent is: To support our pupils in answering the question, "How do we design, make and evaluate solutions to real and relevant problems?" Using creativity and innovation, we inspire pupils to develop skills which impact on daily life.

Intended Users: themselves people who help us friends story character farmers/farm animals teddy class doll	
Building on Prior learning from EYFS: Key Learning linked to Designing and Making *Explore* - experiment and build with a range of construction resources, find out about the properties and functions of different construction materials. *Design* - talk about ideas, choose resources, tools and techniques with a purpose in mind. *Make* – make models using different construction materials (eg. construction kits, reclaimed materials), experiment with different ways to build, construct and join resources. *Evaluate* – talk about what they like/dislike about their models/constructions, say why and how they would change them. *Tools and equipment* – use equipment and tools to build, construct and make different models and constructions; use tools and equipment linked to food preparation. *Safety* – handle and use equipment appropriately and safely.	Building on Prior learning when A follows B: Assembled vehicles with moving wheels using construction kits. • Explored 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.

Our Intent is: To support our pupils in answering the question, "How do we design, make and evaluate solutions to real and relevant problems?" Using creativity and innovation, we inspire pupils to develop skills which impact on daily life.

Key Skills (Disciplinary)

Designing

- Generate initial ideas and simple design criteria through talking and using own experiences.
- Develop and communicate ideas through drawings and mock-ups.

Making

- Select from and use a range of tools and equipment to perform practical tasks such as cutting and joining to allow movement and finishing.
- Select from and use a range of materials and components such as paper, card, plastic and wood according to their characteristics.

Evaluating

- Explore and evaluate a range of products with wheels and axles.
- Evaluate their ideas throughout and their products against original criteria.

Technical knowledge and understanding

- Explore and use wheels, axles and axle holders.
- Distinguish between fixed and freely moving axles.
- Know and use technical vocabulary relevant to the project.

Sequence of Lessons:

1. Investigative and Evaluative Activities

Our Intent is: To support our pupils in answering the question, "How do we design, make and evaluate solutions to real and relevant problems?" Using creativity and innovation, we inspire pupils to develop skills which impact on daily life.

- Explore and evaluate a range of wheeled products such as toys and everyday objects. Through questioning, direct children's observations e.g. the number, size, position and methods of fixing wheels and axles. *How do you think the wheels move? How do you think the wheels are fixed on? Why do you think the product has this number of wheels? Why do you think the wheels are round?*
- Draw an example of a wheeled product, stating the user and purpose, and labelling the main parts e.g. body, chassis, wheels, axles and axle holders.
- Walk around the school building and grounds, recording how wheels and axles are used in daily life.
- Read a story or non-fiction book that includes a wheeled product. Use this to introduce relevant vocabulary and to emphasise user and purpose.

2. Focused Tasks

- Using construction kits with wheels and axles, ask children to make a product that moves.
- Demonstrate to children how wheels and axles may be assembled as either fixed axles or free axles.
- Show different ways of making axle holders and stress the importance of making sure the axles run freely within the holders.
- Ensure that children are taught how to mark out, hold, cut and join materials and components correctly.
- Using samples of materials and components they will use when designing and making, ask the children to assemble some examples of wheel, axle, axle holder combinations. Display the work completed as a reference for their DMEA

3. Design, Make and Evaluate Assignment

- Discuss with the children what they will be designing, making and evaluating within an authentic context.
- With the children identify a user and purpose for the product and generate simple criteria.
- Ask children to generate, develop and communicate their ideas as appropriate e.g. through talk and drawing. Talk about, evaluate and share ideas with other children/adults.
- Make their wheel and axle product using their design ideas and criteria as an ongoing guide.
- Discuss how the children might add finishing techniques to their product with reference to their design ideas and criteria. Direct the children to information and communication technology opportunities such as clip art, word processing, paint or simple drawing programs.
- Ask children to evaluate their finished product, communicating how it works and how it matches their design criteria, including any changes they made.

Our Intent is: To support our pupils in answering the question, "How do we design, make and evaluate solutions to real and relevant problems?" Using creativity and innovation, we inspire pupils to develop skills which impact on daily life.

Enhancements: Leyland transport Museum	End of Unit Outcome: A moving vehicle that can travel a prescribed distance.