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 A	N.C. LINKS: When designing and making, pupils should be taught to:
Key Concept: Structures Focus:– Free Standing Structures Key Question: How can I make my structure not wibble and wobble?	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

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- 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
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Unit Overview:

To build a freestanding structure, using a range of materials and techniques.

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Vocabulary:

cut, fold, join, fix

structure, wall, tower, framework, weak, strong, base, top, underneath, side, edge, surface, thinner, thicker, corner, point, straight, curved

metal, wood, plastic

circle, triangle, square, rectangle, cuboid, cube, cylinder

design, make, evaluate, user, purpose, ideas, design criteria, product, function

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Possible Outcomes:

enclosures for farm or zoo animals playground/park/garden furniture bridge for Billy Goats Gruff playground equipment furniture for the Three Bears other – specify

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Intended Users:

themselves school community friends

children of different ages general public older people story

characters teddy animal other – specify

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.

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Building on Prior learning when A follow B:

Experience of using construction kits to build walls, towers and frameworks.

- Experience of using of basic tools e.g. scissors or hole punches with construction materials e.g. plastic, card.
- Experience of different methods of joining card and paper.

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Key Skills (Disciplinary)

Designing

- Generate ideas based on simple design criteria and their own experiences, explaining what they could make.
- Develop, model and communicate their ideas through talking, mock-ups and drawings.

Making

- Plan by suggesting what to do next.
- Select and use tools, skills and techniques, explaining their choices.
- Select new and reclaimed materials and construction kits to build their structures.
- Use simple finishing techniques suitable for the structure they are creating.

Evaluating

- Explore a range of existing freestanding structures in the school and local environment e.g. everyday products and buildings.
- Evaluate their product by discussing how well it works in relation to the purpose, the user and whether it meets the original design criteria.

Technical knowledge and understanding

- Know how to make freestanding structures stronger, stiffer and more stable.
- Know and use technical vocabulary relevant to the project.

Sequence of Lessons:

1. Investigative and Evaluative Activities
    - Go on a walk and/or look at photographs of the local area to explore structures such as playground equipment, street furniture, walls, towers and bridges e.g. *What are the structures called and what is their purpose? Who might use them? What*

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materials have been used? Why have these been chosen? How have the parts been joined together? How have the structures been made strong enough? How have they been made stable?

- Where possible, ask the children to draw or photograph the structures they have been exploring and label with the correct technical vocabulary in relation to the structure, materials used and shapes e.g. wall, tower, framework, base, joint, metal, wood, plastic, brick, triangle, square, rectangle, cuboid, cube.

2. Focused Tasks (FTs)
    - Demonstrate measuring, marking out, cutting, shaping, joining and finishing techniques with a range of tools and new and reclaimed materials that children are likely to use to make their structures. Discuss the suitability of materials for their products according to their characteristics.
    - Ask the children to build and explore a variety of freestanding structures using construction kits, such as wooden blocks, interconnecting plastic bricks and those that make frameworks e.g. *How can you stop your structures from falling over? How they can be made stronger and stiffer in order to carry a load?* Children could make models of the structures they have seen in school and the local area.
    - Ask children to fold paper or card in different ways to make freestanding structures, using masking tape where necessary to make joins. Encourage them to think about how folding materials can make them stronger, stiffer, stand up and be more stable e.g. *Can they support an object on top of their structures without it falling over or breaking?*
3. Design, Make and Evaluate Assignment (DMEA)
    - Discuss with the children what structure they will be designing, making and evaluating e.g. *Who will your product be for? What will be its purpose? What materials will you use? How will you make it strong and stable?*
    - Generate some simple design criteria with the children e.g. the structure should stand up on its own, it should be strong enough to carry Teddy.
    - Encourage the children to develop their ideas through talking, drawing and making mock-ups of their ideas with construction kits and other materials.
    - As a whole class, plan the order in which the structures will be made. Children could make their final products from construction kits, new and reclaimed materials or any combination of these, according to their characteristics.
    - Ask children to evaluate their developing ideas and final products against original design criteria.

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Enhancements: Trip to park walk around village	End of Unit Outcome: A stable structure.