Broadway Junior School

Subject: Design Technology Topic: Mechanical Systems – Pop up book Year: 5 Term: Spring 2

NC Purpose of Study
Design and technology is an inspiring, rigorous and practical subject. Using creativity and imagination, pupils design and make products that solve real and relevant problems within a variety of contexts, considering their own and others' needs, wants and values. They acquire a broad range of subject knowledge and draw on disciplines such as mathematics, science, engineering, computing and art. Pupils learn how to take risks, becoming resourceful, innovative, enterprising and capable citizens. Through the evaluation of past and present design and technology, they develop a critical understanding of its impact on daily life and the wider world. High-quality design and technology education makes an essential contribution to the creativity, culture, wealth and well-being of the nation.

Intent	Implementation	Impact
At Broadway Junior School, Design and Technology inspires pupils to become creative, innovative and reflective problem-solvers. Through a progressive curriculum, children develop the knowledge, skills and confidence to design, make and evaluate purposeful products while considering the needs of others and the wider world. Pupils learn to take risks, think critically and apply technical knowledge across a range of contexts, including structures, mechanisms, textiles, electrical systems, the digital world and cooking and nutrition. We aim to foster resilience, resourcefulness and curiosity, enabling children to understand the impact of design and technology on everyday life and prepare them for future learning and careers.	Design and Technology is taught through the Kapow Primary scheme, which provides a carefully sequenced and progressive curriculum from Year 3 to Year 6. Learning follows the design process of design, make and evaluate, underpinned by the development of technical knowledge. Pupils revisit key areas throughout Key Stage 2, building on prior learning through a spiral curriculum approach. Lessons are taught over three half-terms each academic year and include practical, hands-on experiences, collaborative learning and opportunities for independent thinking. Knowledge organisers support vocabulary and knowledge retention, while differentiated activities ensure all pupils can access and achieve within the curriculum. Teachers are supported through high-quality planning and subject-specific professional development resources.	The impact of our Design and Technology curriculum is evident in pupils who are confident, creative and capable designers. Children develop a secure understanding of materials, tools, processes and healthy nutrition, applying their knowledge to create purposeful and innovative outcomes. They demonstrate increasing independence when designing, making and evaluating products and can reflect thoughtfully on how their work could be improved. Assessment is ongoing through observation, questioning and review of completed projects, enabling teachers to identify and address gaps in learning. By the end of Key Stage 2, pupils have the skills, knowledge and understanding required to meet National Curriculum expectations and succeed in the next stage of their education.

Key Vocabulary
Criteria design input mechanism model motion reinforce research

Knowledge	Skills
• To know that mechanisms control movement. • To understand that mechanisms can be used to change one kind of motion into another. • To understand how to use sliders, pivots and folds to create paper-based mechanisms. • To know that a design brief is a description of what I am going to design and make. • To know that designers often want to hide mechanisms to make a product more aesthetically pleasing.	• Designing a pop-up book which uses a mixture of structures and mechanisms. • Naming each mechanism, input and output accurately. • Storyboarding ideas for a book. • Following a design brief to make a pop-up book, neatly and with focus on accuracy. • Making mechanisms and/or structures using sliders, pivots and folds to produce movement. • Using layers and spacers to hide the workings of mechanical parts for an aesthetically pleasing result. • Evaluating the work of others and receiving feedback on own work. • Suggesting points for improvement

Learning Objectives/End Points			
Lesson 1: Pop-up book page design	Lesson 2: Making my pop-up book	Lesson 3: Using layers and spacers	Lesson 4: Writing and illustrating
To design a pop-up book.	To follow my design brief to make my pop-up book.	To use layers and spacers to cover the working of mechanisms.	To create a high-quality product suitable for a target user.

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Materials	Cautions
• A selection of pop-up/interactive books and greeting cards • A disassembled mechanism from a greetings card. • A demonstration model pop-up book • Colouring pencils • Sticky notes • A3 card • Rulers • Scissors • Glue sticks • Rubbers • Scrap or smaller pieces of card to create the mechanisms and structures • Split pins • Thick or corrugated card to make spacers.	• Remind the children of the school's safety rules around using scissors. • Instruct the children to use the technique shown in the Pupil video: Making my pop-up book when making holes in card using a rubber and a blunt pencil.

Cross-Curricular Links

Science - Forces

- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Careers

Linking Curriculum Learning to Careers

Discuss how the skills developed in this unit are used in a range of careers, including:

- Product Designer
- Paper Engineer
- Book Designer
- Illustrator
- Graphic Designer
- Packaging Designer
- Mechanical Engineer
- Publisher
- Animator

Transferable skills such as Designing for a target audience Creative thinking and storytelling Understanding mechanisms and movement, Planning and communicating ideas, Precision and accuracy, Problem-solving, Evaluating and improving products, Collaboration and responding to feedback, Combining creativity with technical skills

Learning from Career and Labour Market Information

- Explore how designers, engineers, illustrators and publishers work together to create interactive books and products.
- Learn that mechanisms such as sliders, pivots and folds are used in books, packaging, greetings cards, displays and educational resources.
- Discuss how designers create products for specific users by considering function, appearance and ease of use.

Encounters with Employers and Employees

- Explore how book designers, illustrators and paper engineers create interactive books using mechanisms and structures.
- Discuss how designers use storyboards, prototypes and testing to develop engaging products.

Experiences of Workplaces

- Visit a library, bookshop, printing company or publishing organisation (or explore virtual examples) to investigate how books are designed and produced.
- Explore how designers work in publishing houses, design studios and creative industries.