Ashtree Primary School and Nursery Medium Term Plan for DT

EYFS - Reception – Mechanisms

Key Vocabulary

Mechanisms: moving, materials, models, join, connect, push, pull, slow, squeeze, wind up, Make: join, cut, equipment, materials, design: plan, purpose Evaluate: strong, weak

Key Knowledge

Children can be taught key knowledge by following the steps below:

Identify and explain how these mechanisms work
Investigating gears by creating a simple gear system using cardboard or plastic gears
Exploring cams by creating a cam mechanism and observing how it moves
Designing and making a more complex mechanism – using construction kits
Predicting the outcome of a cause and effect situation, such as predicting how far a toy car will travel after it is pushed
Identifying and solving more complex problems, such as designing a mechanism to move an object from one place to another
Experimenting with different variables to create cause and effect situations, such as changing the weight of a toy car to see how it affects its movement
Begin to understand how machines work, exploring simple machines such as levers and pulleys and learning about cause and effect relationships. (interactive books, construction kits, toys etc).
With support begin to incorporate moving parts in to models. For example, use split pins to make body parts move.
Encourage children to take apart and put together these mechanisms to see how they work.
Provide materials for children to design and build their own simple machines, such as cardboard boxes, tape, and scissors.

Children will learn how to join materials together in different ways, exploring how some ways of joining allow the parts to move. They will apply this knowledge in order to create products with moving parts throughout the year

Key Skills

Development Matters 2020 – Reception

Physical Development

- Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
- Use their core muscle strength to achieve a good posture when sitting at a table or sitting on the floor.

Expressive Arts and Design

- Explore, use and refine a variety of artistic effects to express their ideas and feelings.
- Return to and build on their previous learning, refining ideas and developing their ability to represent them.
- Create collaboratively, sharing ideas, resources and skills

ELG – Expressive Arts and Design

- Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. • Share their creations, explaining the process they have used

ELG – Physical Development

- Use a range of small tools

Curriculum Enhancements

Incorporate real-life experiences: Provide opportunities for children to explore and investigate real-life mechanisms such as clocks, bicycles, or toy cars, encouraging them to ask questions and make observations. **Provide a variety of materials:** Offer a range of materials and resources for children to construct and deconstruct mechanisms, including gears, wheels, levers, pulleys, and simple tools such as screwdrivers and pliers. **Foster creativity and problem-solving skills:** Encourage children to use their imagination and problem-solving skills to create their own machines and mechanisms, offering prompts and challenges such as "Can you make a machine that moves objects from one place to another?" or "Can you create a device that makes a sound?" **Incorporate literacy and numeracy skills:** Integrate literacy and numeracy skills into mechanisms play, such as labelling parts of machines or counting the number of gears or wheels used in a construction. **Collaborative play and communication skills:** Encourage children to work together in small groups, sharing ideas and resources, communicating their plans and ideas, and supporting each other in their constructions. **Outdoor play opportunities:** Offer outdoor play opportunities, such as exploring and building mechanisms with natural materials such as sticks, rocks, and leaves, or building simple machines using water and sand. Children will be looking at mechanisms from the real world and they will show an understanding of how design and technology has helped to shape the world around them. **Exploring mechanisms in the environment:** children can go on a nature walk or around the school to explore the mechanisms in their environment, such as doors, locks, and hinges, and encourage them to discuss and investigate how they work. **Investigating moving toys**: provide children with a range of moving toys such as wind-up toys, pull-back cars, and robots, and guide them in investigating how they work

Possible Misconceptions.

Thinking that machines and mechanisms work by magic or have a mind of their own.
Believing that machines and mechanisms only work in one particular way and cannot be changed or modified. Assuming that all machines and mechanisms are controlled by a person, rather than by the interaction of different parts.

Suggested Activities/Questions

Can you name some machines you use in your everyday life?
How do you think machines work?
Can you describe how a lever or a pulley works?
Can you name some simple machines you have seen or used before?
What happens if you turn the gear in a different direction?"
What would happen if you added more wheels to your machine?"
Can you create a machine that can move a toy car up a ramp?"
How can you change the design of your machine to make it work better?"
Why did you choose to use those materials?"

This will lead to . . .

In reception, children may start with basic exploration of mechanisms, such as pushing and pulling, and progress to more complex investigations of how machines work. They may also begin to use tools such as screwdrivers and pliers to construct and deconstruct toys. As they progress, children may develop more advanced understanding of mechanisms and begin to create their own simple machines using a range of materials.

In Year 1 children will be able to construct simple levers and sliders in a moving picture book.
Join levers to make linkages to create moving parts.
Generate ideas based on a design criteria. Explore and talk about books containing flaps and moving pictures. Deconstruct simple sliders and describe how they work using technical vocabulary.