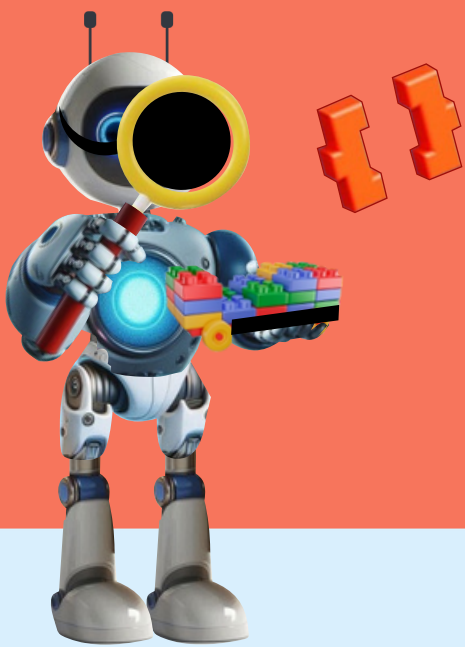
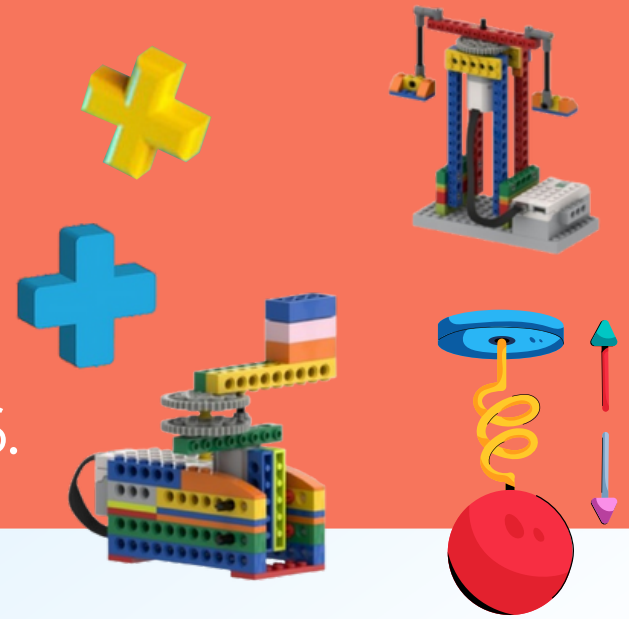


Ranker

Recommended for Age 5-6.



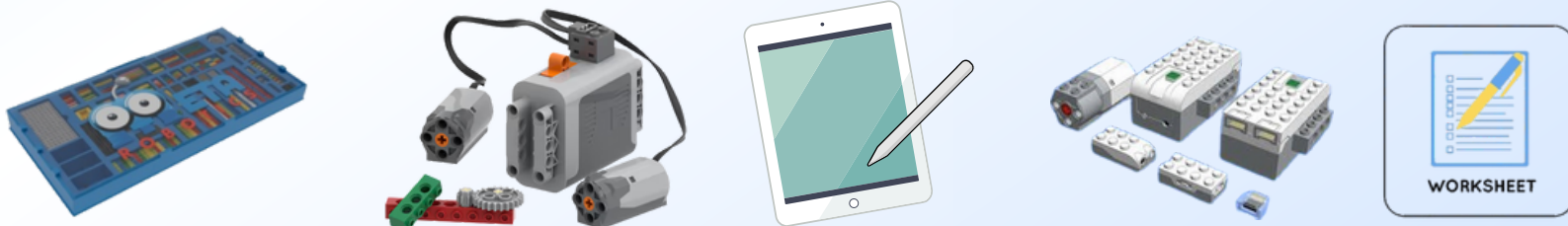
OBJECTIVES

The **Ranker Programme** is designed to provide a comprehensive and engaging educational experience for young learners by combining three distinct modules: **Robotics STEM**, **Robotics Coding**, and **Games and Animation Computing**. Each module is carefully crafted to build foundational skills in **Science, Maths, Coding, and Design**, ensuring a well-rounded development for the **students**. By integrating these three modules, students will not only develop a **strong foundation** in STEM but also enhance their **creativity and problem-solving abilities**. The programme ensures that students are well-equipped with the essential skills needed for future **academic success and career opportunities** in technology and design.

SKILL ACQUIRED

- | | |
|----------------------------|----------------------------|
| ✓ Fine Motor Skills | ✓ Problem-Solving |
| ✓ Visual Spatial Awareness | ✓ Creativity |
| ✓ Mathematical Skills | ✓ Conceptual Understanding |
| ✓ Social Skills | |

EDUCATION TOOLS



SOFTWARE

- LEGO® Education WEDO 2.0 App
- MIT Scratch Junior

STUDENT'S OUTCOME

- ✓ Adaptability to New Technologies
- ✓ Boost Creativity
- ✓ Increase confidence
- ✓ Foundation for future learning
- ✓ Improved Science & Mathematics
- ✓ Enhance problem solving
- ✓ Build patience and focus
- ✓ Entrepreneurial skills

LESSON OUTLINE



Theoretical Introduction

- ★ **Robotics STEM:** Introduction to Science, Math and Engineering concepts through LEGO® prototypes.
- ★ **Robotics Coding:** Overview of coding principles applied to LEGO® models.
- ★ **Games and Animation:** Learning design concepts for games and animations in computing projects.



Construction & Visual Spatial Perception

- ★ **Visual Spatial Skills:** Learning to identify and assemble 3D LEGO® pieces from 2D instructions
- ★ **Motor Skills:** Developing fine motor strength, precise object manipulation, and coordination.
- ★ **Apply for Robotics Modules only**



Experiments

- ★ **Logical Reasoning:** Engaging in logic-based activities aligned with lesson objectives.
- ★ **Project Evaluation:** Analyzing and evaluating projects to meet specific requirements.



Problem Solving Tasks

- ★ **Progressive Challenges:** Tackling three tasks of increasing difficulty.
- ★ **Assessment:** Evaluating problem-solving abilities and creative thinking.



Knowledge Play

- ★ **Fun Facts:** Enhancing general knowledge with science, technology, engineering, and math facts.



Soil Ploughing Truck



Tower Crane



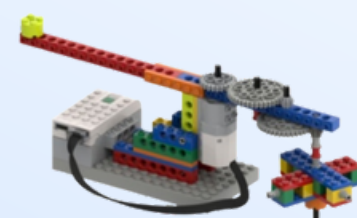
Road Roller



Voice Control Fan



Carousel



Top Spinner

Science Topics

- ✓ Shadow
- ✓ Colour
- ✓ Friction
- ✓ Force
- ✓ Motion
- ✓ Material
- ✓ Gravity
- ✓ Energy

Maths Topics

- ✓ Learn to count from 1-50
- ✓ Learn to compare double digits
- ✓ Basic addition and subtraction



Instill a love for science and math in a fun, engaging way while cultivating motor and spatial visual skills through building LEGO® models to illustrate realworld principles. This structured program aims to make learning science and math enjoyable while building essential cognitive and social skills



Junior builder



Jeep

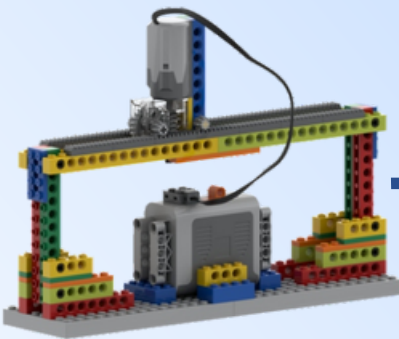
- 1. Push the LEGO® Eco Collector on different surfaces and observe how it moves.
- 2. Measure the distance the truck travels on each surface before it stops.
- 3. Discuss how friction force affects the truck's movement on different surfaces.

Friction is a force that opposes the motion of an object when it is in contact with another surface. It acts in the opposite direction to the movement and can slow down or stop the motion of an object.

- 1. Counting from 1-50
- 2. Basic addition and subtraction

- 1. Friction generates heat, which is why rubbing your hands together makes them warm.
- 2. Without friction, it would be impossible to walk or drive a car.
- 3. Friction is used in sports, such as soccer cleats providing grip on the field.

Experiment



SkyTrain

- 1. Place a LEGO® figure at the top of a roller coaster or swing.
- 2. Release the figure and observe how gravity pulls it downwards.
- 3. Discuss how gravitational force affects the speed and motion of the rides.

Gravity is the attraction between two objects due to their masses. It pulls objects towards each other and is what keeps us on the ground.

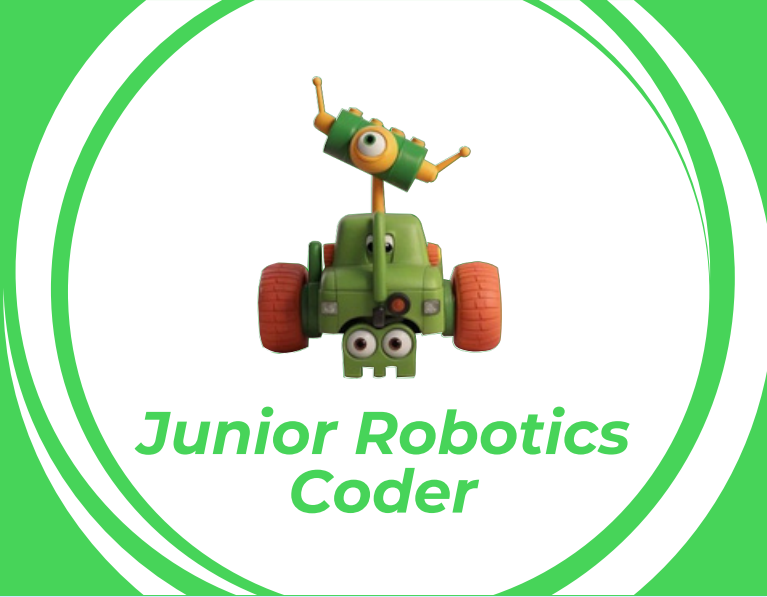
- 1. Counting from 1-50
- 2. Learn to compare double digits

- 1. Gravity on the moon is about 1/6th as strong as gravity on Earth, so astronauts can jump higher on the moon.
- 2. The force of gravity between two objects depends on their masses and the distance between them.
- 3. The reason why roller coasters can move so fast is due to the gravitational force pulling them down from high points.

Disclaimers

Please note that this lesson illustration represents only about 30% of the full in-class experience. In addition to the structured content, students also engage in valuable discussions and activities that enhance their learning, which are not fully captured here.

Introduce young students to the basics of coding and technology through fun and engaging activities. This foundational programme uses WEDO hardware and accessories to help children develop an early love for coding. By building and programming LEGO® models, students will enhance their fine motor skills and spatial visual skills.



Remote Control Fan

A kind of fan that can be operated by using a Remote Control, as opposed to manual operation of buttons on the Fan. A remote control is an electronic device used to control another device. For our lesson, the tablet will serve as a remote control for the Fan.

1) Recap on previous lesson on these coding blocks



2) Introduce the Motor Power coding block and explain what it does.



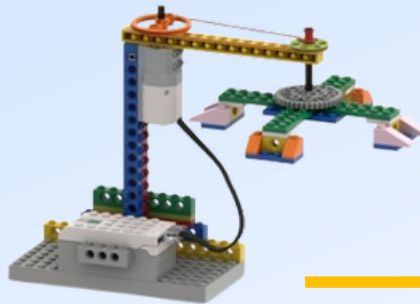
3) Challenge students what will happen if these coding blocks were to be used



Task 1: Control Motor. Let's use at least all the 5 Motor Blocks In one program.

Task 2: Power Up. Start with 3 different power levels.

Task 3: Program the Fan to get our Wind Racer to the finish line as fast as possible



Merry-go-round

An amusement park ride that goes round and round. It usually has seats, oftentimes in the form of animals, cars, etc. Merry-Go-Rounds are also referred to as carousels or roundabouts in other countries.

1) Introduction Loop/ Repeat block



2) Demonstrate Loop/ Repeat block



3) Discuss about the benefits of using loop/ repeat block



Task 1 Make sure the Merry Go Round can rotate in both directions.

Task 2 - Use loop block instead of long sequence

Task 3 Red for Stop, Green for Go!

Disclaimers

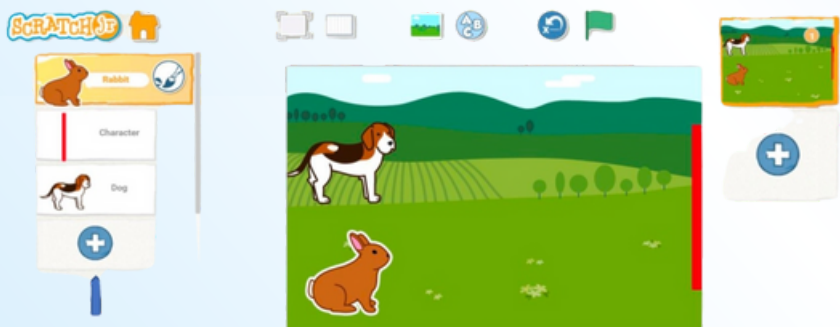
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Introduce young learners to the basics of games, animation, and storytelling design using Scratch Junior. This program aims to foster creativity, logical thinking, and digital literacy in a fun and engaging way. By creating interactive stories and simple games, students will develop foundational skills that complement their learning in Robotic STEM and Robotics Coding.

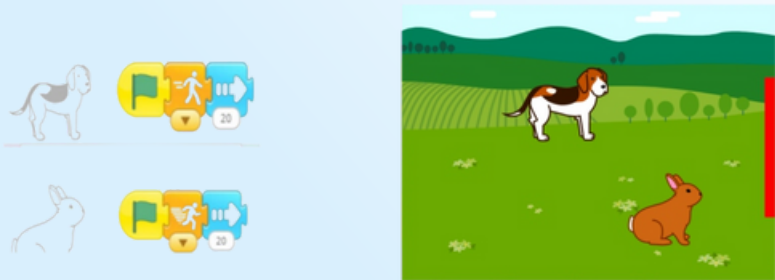


RacingGame

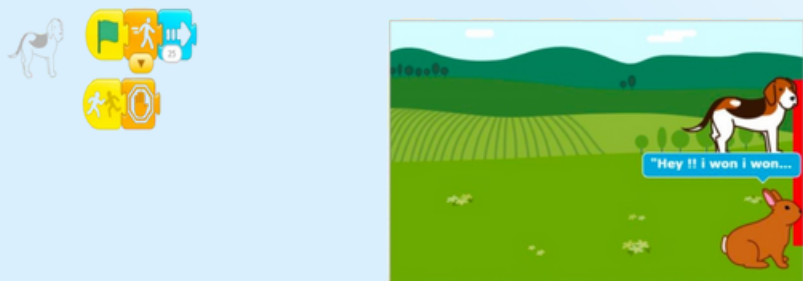
Task 1 Choose two sprites, dog and rabbit. Make one more red line sprite with the paint brush and choose the farm background.



Task 2 Make sprites (dog and rabbit) move to the nishing red line with di erent speeds.

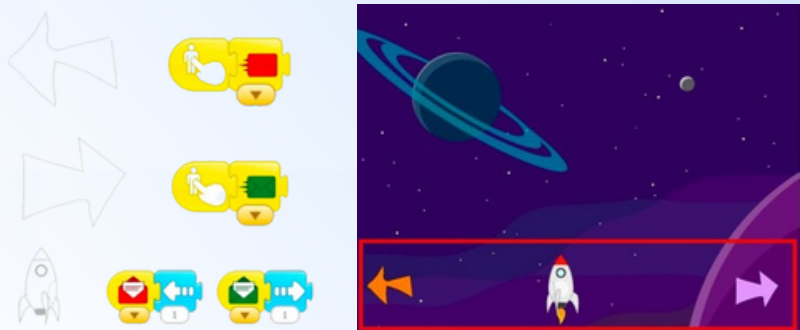


Task 3 Stop both sprites on the red line. Make the animal who touches the red line rst dance and say "Hey!! I won, I won!".



ShootingStars

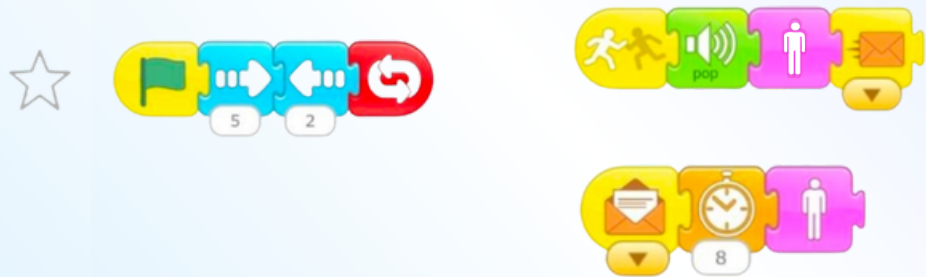
Task 1 Choose a sprite as rocket, draw left and right arrows and program the movement of the rocket.



Task 2 Program the rocket to move upwards when it is clicked.



Task 3 Add 3 stars as sprites and make them move across the screen. When the rocket touches the stars, they disappear, make a pop sound, and reappear again after a period of time.



Progressive Tasks



Coding

Disclaimers

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