مدرسة امباسادور
AMBASSADOR SCHOOL
INSPIRE INQUIRE INNOVATE

STREAMING FORWARD

October 2023

P.O. Box 126924, Plot No.: 317-278, 41A Street, Mankhool, Bur Dubai, Dubai, U.A.E.

SHAPES, STRUCTURES AND A LOT OF FUN

The "Piper" activity focused on critical thinking and problem-solving. Meanwhile, the "Who am I?" activity sparked curiosity.

These activities, facilitated through PlayShifu Plugo, offer interactive learning experiences that engage students actively with the subject matter. The gamified approach not only captures their attention but also fosters a strong motivation to learn.

LEARNING THROUGH PLAY

I "Who am I?" activity ignited a sense of curiosity and wonder, sparking their imagination.

What made these activities even more thrilling was the way they were brought to life through PlayShifu Plugo's interactive platform. It's all about turning education into an engaging and fun-filled exploration!

Every child enjoyed the session.

FROM THE REAL WORLD TO THE VIRTUAL WORLD

PlayShifu Plugo bridges theory and practice, making learning relevant. Through interactive challenges, students grasp STREAM principles and enjoy exploring Science, Technology, Reading, Engineering, Arts, and Mathematics. Fresh and stimulating challenges like "Piper" strengthened their critical thinking, and "Who am I?" sparked curiosity. PlayShifu Plugo's class has added enthusiasm and passion to learn.

STUNNING BRIDGES

The story "21 Elephants and Still Standing," which recounted the construction of the Brooklyn Bridge and its initial doubts. They brainstormed bridge properties and materials. The main activity involved building a strong, stable bridge with just two pillars that could withstand weight. Many of their designs didn't pass the test, emphasizing the importance of strength and teamwork in bridge construction.

LET'S GO TO THE MUSEUM

Application of their trading knowledge to art creation. Students embarked on a virtual museum tour, delving into the world of the renowned "Mona Lisa" painting and predicting the values of other famous artworks. The highlight was the creativity to design and craft their own art pieces, including both 2D and 3D models. These artistic creations were prepared for display in their very own museum. Students presented their models and engaged in discussions, addressing questions from their peers regarding their art.

THE AIR AROUND US

Air, present everywhere. How air can move things? This activity involved a graffiti-adorned fan, discussing how to move the graffiti without touching it. They discovered that turning the fan to its maximum speed achieved this. Students assembled air-powered cars by trading money and Lego pieces. The most successful traders, generating 20 AED or more, received a special car part. The lesson ended with a thrilling car race on a table, with the winning pair earning activity stars in their journals.

THE MOST TOWERING SKYSCRAPERS

Designing and building skyscrapers is a complex endeavor with many challenges. Applying the knowledge of wind's effects students built a Lego tower using their non-dominant hand in just 2 minutes by placing them one above the other. They discovered that taller towers fell faster, emphasizing teamwork and resilience.Students then construct wind-resistant skyscrapers in teams with a 30-minute time limit. Their designs, height, stability, and model presentations were evaluated, and the teacher tested them with simulated strong winds. The best teams received blue activity stars in their journals.

UP THE HILL

Students supported their friends, Sam and Sara, to a challenging task of moving a car up a hill. The class started with a basic eraser-launching activity, emphasizing the role of energy and the efficiency of machines in simplifying tasks. A video on simple machines provided foundational knowledge. The main activity involved building a car launcher, enhancing their understanding of machines and problem-solving skills. The day concluded with a thrilling three-round race, infusing excitement into the learning experience. This week offered both theoretical and practical insights into mechanical principles.

MECHANICAL BRIDGES

Students explored the world of drawbridges and learned how various mechanisms operate to enable the passage of boats. They observed the use of simple machines like gears and motors, essential components in these complex structures. Students creatively designed and constructed different types of drawbridges. They ingeniously combined simple machines to achieve their desired bridge movements, drawing on their previous knowledge of gears and axles. In this way, they brought their innovative bridge concepts to life.

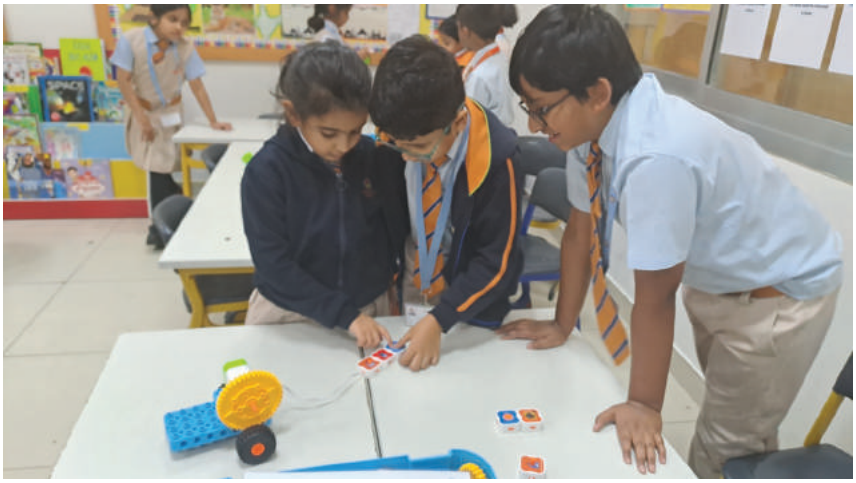
COME, LET'S GENERATE ELECTRICITY

Students explored renewable and non-renewable resources, focusing on the sustainability of renewables, especially wind power. They began by learning about electricity generation through wind turbines and examined the turbine components: blades, gearbox, generator, and transformers.

The main activity involved students creating a functional wind turbine model with motors to demonstrate its operation. To conclude, they presented their models, answered peers' questions, and promoted collaborative learning. This session expanded their understanding of renewable energy and encouraged teamwork.

AUTOMAGIC: MASTERING THE ART OF AUTOMATION

Automation and the key components of robots, were used to emphasize the shift from older machines to modern ones equipped with sensors, controllers, and actuators. The session began with the game "When the Music Stops," highlighting the body parts used during the game. A discussion followed on how our senses, brain, and body parts work together to process information from the environment. Students were then introduced to automation and tasked with building automated devices using infrared sensors and controllers, with a choice of actuators like motors, LEDs, and buzzers. They designed a variety of devices, such as automatic fans, automatic cars, and robotic arms.



ROBOT WARS

Students were introduced to the well-known BBC competition called Robot Wars. The session commenced with the students watching an episode from this competition. They keenly observed the winning robots and identified the fundamental simple machines incorporated in them. Transitioning to the main activity, the students engaged in the design and construction of their own robots, which could be controlled. Towards the end of the lesson, a tournament was held, where the last robot standing in the ring emerged as the victor.

DRAMA ON THE STAGE

Stop motion animation is a technique where objects are moved slightly between frames to create the illusion of movement.

Using stop motion animation and lego community starter kit to students created a drama. A short script was written for the drama using at least two characters. Lego bricks were used to design and build the stage along with the various props for the drama. Lego mini figures were used to represent the characters. Using the set up students filmed the animation by taking at least 20 pictures.

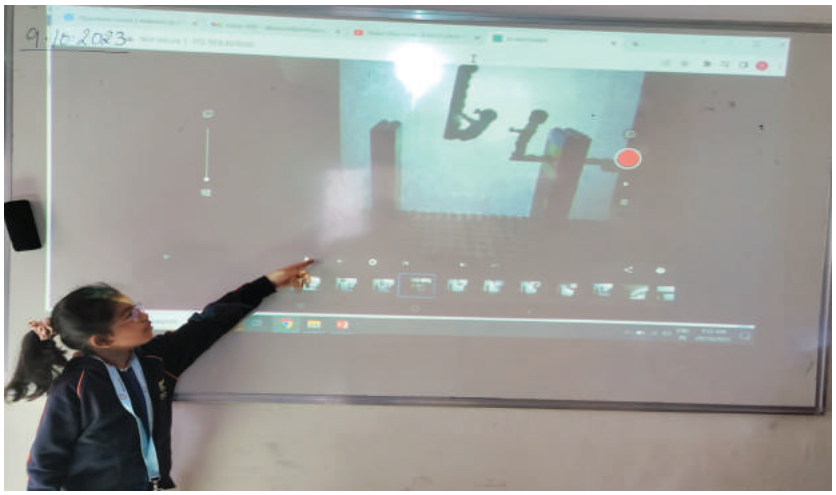
This activity allowed the students to explore art and creativity, along with improving their technical and collaborative skills.

LIGHTS, CAMERA, ACTION!

Shadow theatre or shadow play is an ancient form of storytelling and entertainment which uses flat cut-out figures, held between a source of light and a translucent screen.

Combining the knowledge of Lego building with technology students created a Lego Shadow Theatre and a stop motion animation. A shadow theatre was created using Lego Community Starter kit and paper. Lego mini figures were characters. Creatives stories were shared.

This activity fostered creativity, teamwork, problem-solving, and interdisciplinary learning while enhancing their understanding of technology and the arts.



LINE FOLLOWING CAR

Students explored the concept of force using the Whalesbot S30 kit. Students designed and built a car using the Whalesbot S30 kit. The car was programmed to move forward at the lowest speed. A cardboard was used to create a ramp. Car movement uphill on the inclined plane by increasing its speed gradually was tested. Observations were made on the effect of gravitation on the car and the force required to move the car uphill.

This was a fun way to understand the basic physics principles while enhancing their engineering and teamwork skills.

FORCE WITH WHALESBOT

Shadow theatre or shadow play is an ancient form of storytelling and entertainment which uses flat cut-out figures, held between a source of light and a translucent screen.

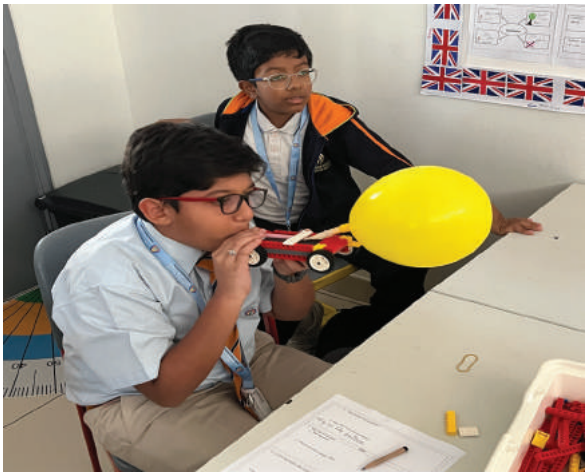
Combining the knowledge of Lego building with technology students created a Lego Shadow Theatre and a stop motion animation. A shadow theatre was created using Lego Community Starter kit and paper. Lego mini figures were characters. Creatives stories were shared.

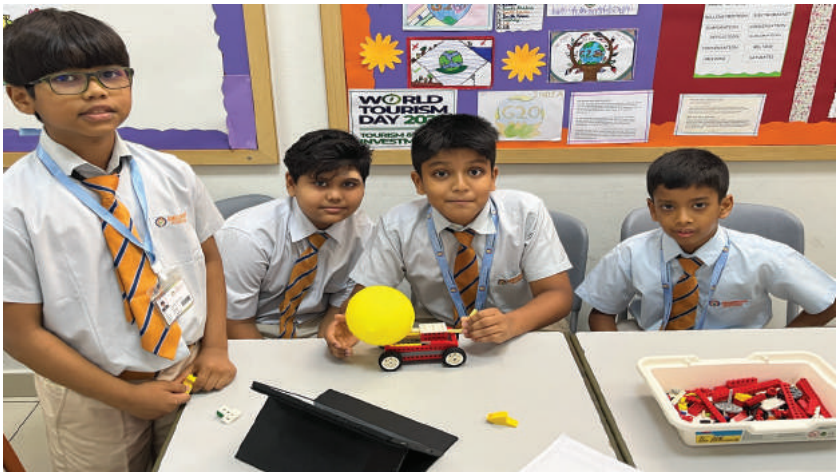
This activity fostered creativity, teamwork, problem-solving, and interdisciplinary learning while enhancing their understanding of technology and the arts.

BALLOON POWERED CAR

The Balloon-Powered Car successfully engaged students in an exploration of force and energy. The hands-on approach allowed them to directly experience the application of these scientific principles and witness the cause-and-effect relationship between force and motion.

Students in teams designed and build a Lego car and then connected balloon to power it with air. After the building they tested their car to move it with the help of air pressure. Students were not only able to apply their knowledge of force and energy but also to exercise creativity and teamwork skills in the design and testing process.





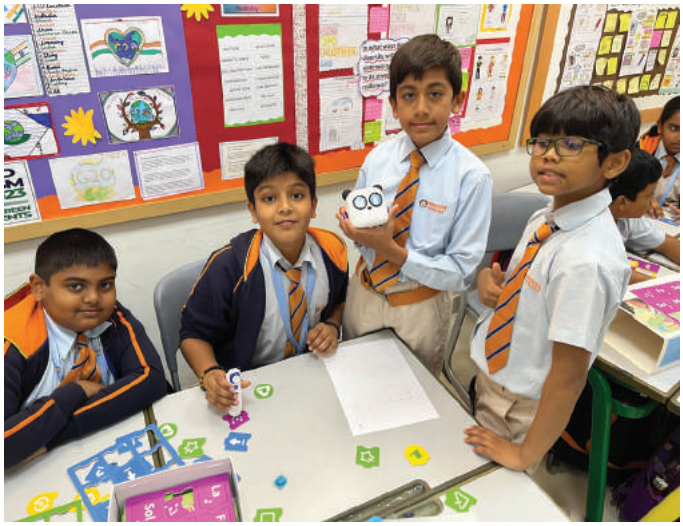
FRICTION IN ACTION!

The LEGO Simple Machine project effectively engaged students in hands-on learning about friction and its variables. By designing and constructing carts and conducting experiments, students witnessed practical implications of friction in everyday life. The project allowed them to understand that friction is not solely an impediment but also a useful force in various applications.

Through experimentation, students gained knowledge about how weight, surface texture, and angle can significantly influence friction and the motion of objects. Furthermore, they learned to apply their problem-solving and analytical skills, drawing connections between the classroom and real-world scenarios.

SYMMETRICAL ART!

The mTiny Robot art and coding activity successfully merged technology, art, and mathematics in an engaging and interactive way. Students not only learned the basics of coding and robotics but also applied these skills to create symmetrical and artistic designs. The project encouraged students to think creatively and experiment with various coding commands to bring their artistic visions to life.



ROCKET ANGLES!

In the paper rocket activity using the National Geographic (Nat Geo) rocket launcher, students engaged in a dynamic and hands-on exploration of the relationship between launch angles and the distance covered by the rockets. This activity involved the design and construction of paper rockets, which were then launched using the Nat Geo rocket launcher.

Students experimented with varying launch angles to observe how these angles influenced the rocket's' flight distances. They analyzed the data collected and discussed their findings to understand the connection between launch angles and rocket performance.

This activity not only fostered an understanding of mathematical concepts related to angles and distance but also encouraged critical thinking and problem-solving skills. It provided an exciting and interactive way for students to grasp physics principles in action, making learning both engaging and informative.

MOTION THE DISEASE!

The creation of educational animations on disease prevention using Stop Motion Studio and the Lego Community Starter Set was a successful and interactive learning experience. It engaged students in a dynamic exploration of health-related topics and equipped them with valuable digital and visual communication skills.

Students not only deepened their understanding of disease prevention but also honed their creative and technological abilities. The project encouraged teamwork, critical thinking, and effective communication, as students had to convey complex health messages in an engaging and accessible manner.

These animations serve as valuable educational resources, potentially benefiting not only the students themselves but also a wider audience as they share their disease prevention knowledge with others. The project exemplifies the potential for technology and creativity to intersect with public health education, yielding informative and engaging results.

MY SUSTAINABLE CITY

The activity aimed to engage students in designing and building a sustainable city within a specified measurement using LEGO blocks and consumable materials. The project was structured to foster an understanding of various energy types and how they can be harnessed for sustainable urban development.

The design and construction of sustainable cities with LEGO and consumables provided students with an engaging and interactive exploration of energy types and their role in urban planning. The project encouraged critical thinking, creativity, and problem-solving skills as students had to design cities that harnessed various energy sources efficiently.

By focusing on sustainability, students gained insight into the importance of making informed choices about energy sources in city development. The activity also helped them recognize the environmental, economic, and social implications of energy decisions in real-world urban settings.

FORCE THE CAR!

The LEGO Race Car Project provided students with a hands-on opportunity to apply and understand the basic concepts of force and energy. Through the design and construction of their race cars, students explored how these concepts could be harnessed to optimize speed and performance.

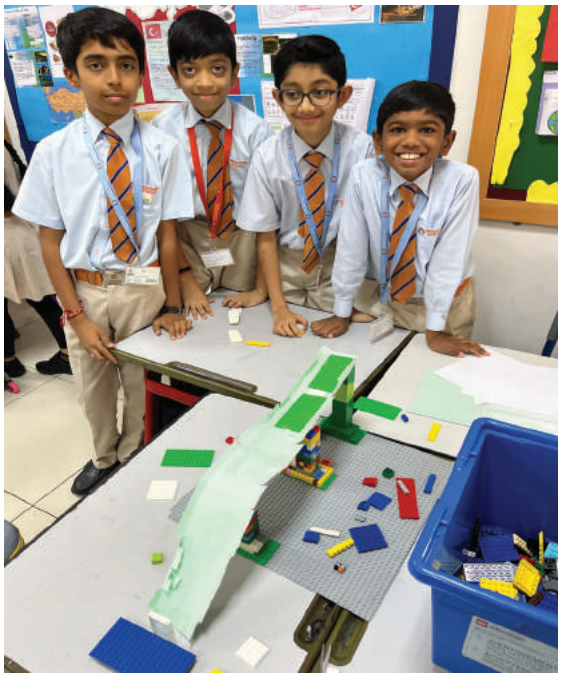
The racing component of the project added an element of competition and excitement, motivating students to think critically and problem-solve in their car designs. The experience not only deepened their understanding of force and energy but also encouraged teamwork and practical application of scientific principles.

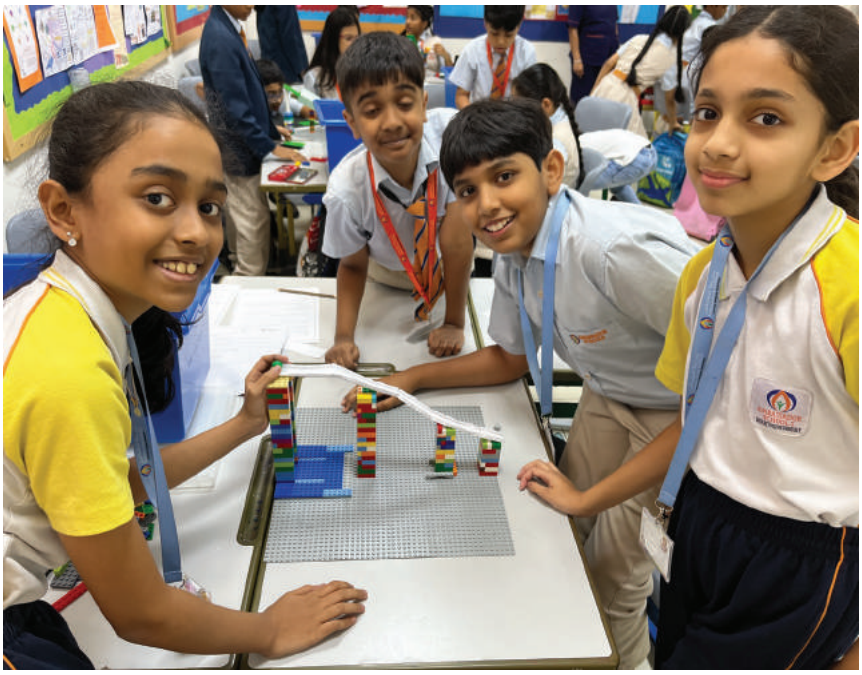
In conclusion, the LEGO Race Car Project served as an engaging and interactive way for students to grasp fundamental concepts related to force and energy. It showcased the potential of hands-on activities in promoting STREAM literacy and encouraging students to think creatively and analytically about real-world applications of science and engineering.

ROLLER COASTER

Building and testing a roller coaster using LEGO and paper is an engaging and educational activity that provides students with an opportunity to explore and grasp the fundamental concepts of kinetic and potential energy. In this project, students designed and constructed the miniature roller coaster track using LEGO bricks, where the track represented the interplay of potential and kinetic energy.

Students planned and build the roller coaster's track structure, considering factors like height, loops, curves, and slopes. The roller coaster car represented the exchange of potential and kinetic energy as it descends from a higher point to a lower one. At the highest point of the track, the car possesses maximum potential energy, which is then converted into kinetic energy as it accelerates downwards. This activity helps students comprehend the basic principles of kinetic and potential energy.

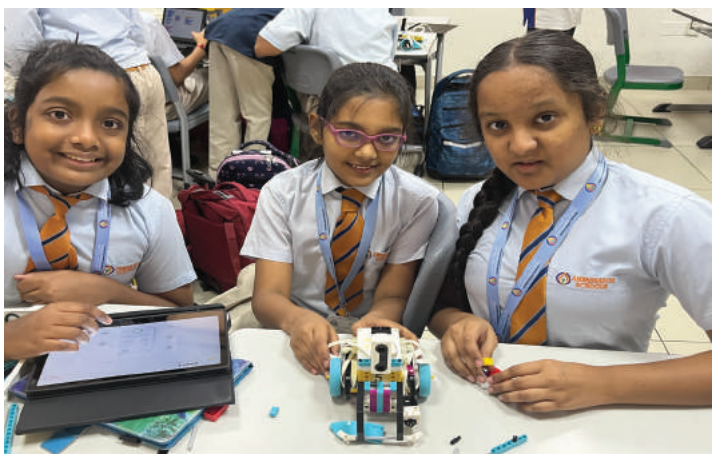




WALL BUMPING DRAG RACE

In this exciting project, students designed and constructed a wall-bumping drag race car using the LEGO Spike Prime robotics kit. A basic racing car using the Spike Prime kit was built. A pressure sensor was added at the front of the car. The sensor was programmed to stop the car and rotate it 180 degrees. Finally, the students geared up for the race. They started their car from the starting line and moved towards the wall. It was programmed to make a u-turn upon hitting the wall and come back to the starting line.

The project aimed to integrate robotics, engineering, and physics concepts while promoting creativity and problem-solving skills among the students.



MAGLEV – THE FASTEST TRAIN

Maglev is derived from the word magnetic levitation. It is a system of train transportation that is supported by either electromagnetic attraction or repulsion.

Students collaborated in group to design and build their own Maglev train compartment. Cardboards were used for the base of the train. Magnets were fixed on the four corners of the cardboard. Papers were used to build the body of the compartment. Creative decorations were used by a few groups to make the train more attractive.

Finally, each group tested their Maglev train on the magnetic track that was kept as a slope. Students were excited to see the principle of magnetic repulsion in action, as their train glided through the magnetic track. This was a fun activity to explore the properties of magnet, while improving their engineering skills.

METAL DETECTOR

Students embarked on an exciting journey to create a metal detector using the versatile micro:bit platform.

The goal of the project was to design and build a functional metal detector using the micro:bit, a small programmable computer board. They programmed the magnetometer of micro:bit to detect the magnetic force around any object. It was further programmed to make a loud sound when kept near any magnetic material. Students were excited to try out their micro:bit metal detectors.

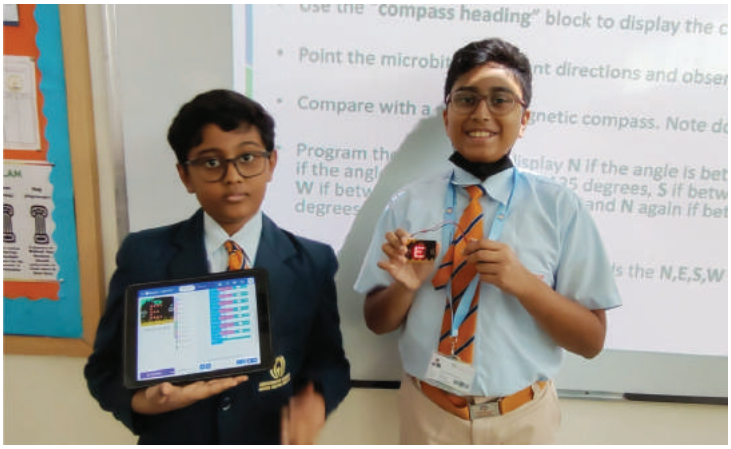
This project not only enhanced their understanding of science and technology but also showcased their problem-solving skills and creativity.

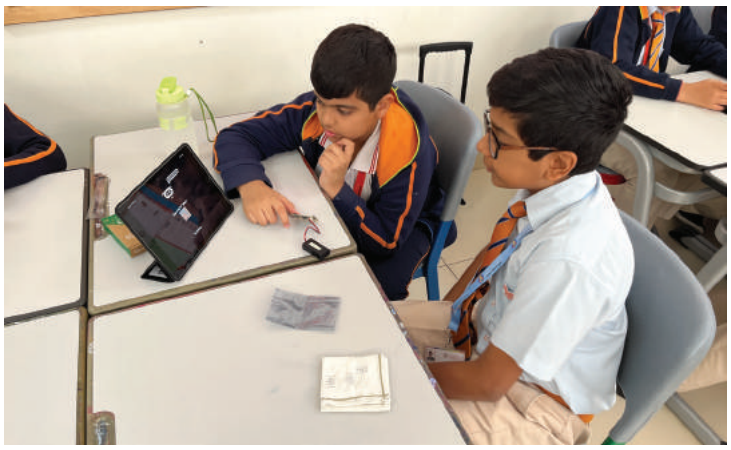
MICRO:BIT COMPASS

The goal of this project was to design and construct a magnetic compass that tells the cardinal directions using the micro:bit device.

Students were introduced to the micro:bit's built-in compass sensor. First they programmed the micro:bit to display the compass sensor data which is shown in degrees. It was further programmed to display the compass directions North, East, South and West, based on the sensor data reading. Finally, students were excited to see their micro:bit compass in action.

This project helped the students learn about the Earth's magnetic poles while improving their programming, engineering and collaborative skills.





COMFORTABLE HOME!

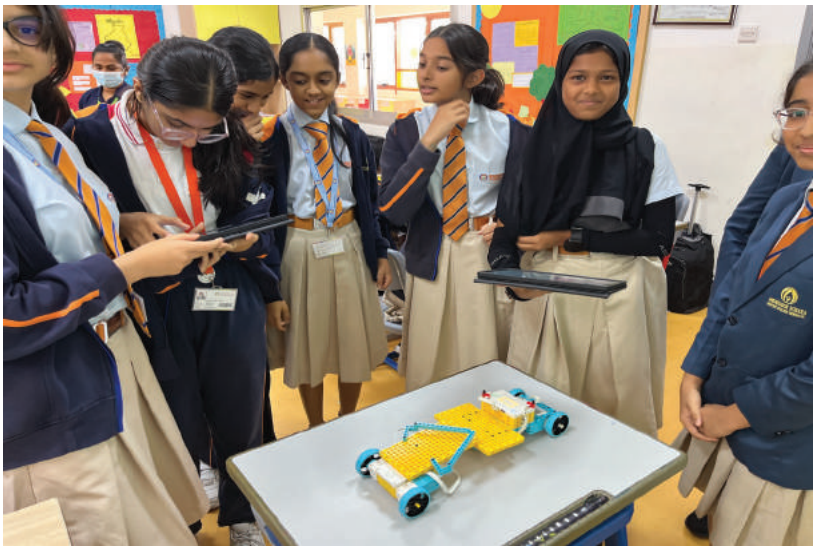
The activity of building a cardboard house and insulating it to measure the temperature inside under direct sunlight was an instructive and hands-on experiment that delves into the principles of thermal insulation and how it affects the indoor environment.

Students constructed a miniature house using cardboard, created walls, a roof, and a floor. Various insulation materials, such as foam, cotton, or even aluminum foil, are applied to the inside of the cardboard walls and roof. The cardboard house was placed under direct sunlight, simulating the heat exposure a real building might experience. Pasco Temperature sensors were placed inside and outside the cardboard house to measure the temperature difference. Students analyzed the collected data, noting the temperature changes both inside and outside the insulated cardboard house

SUMO ACTION!

This exercise includes designing, constructing, programming, and competing in a Sumo robot contest, which was a fun and varied learning experience. It not only educated students about friction, but also gave them the ability to apply their knowledge and abilities to actual, real-world problems.

Students worked in groups to design and build the robot out of Lego Spike, and then investigated the influence of weight on the robot's movement. Following the testing, the teams changed their robots. They competed in the SUMO robot competition, in which the robot had the greatest grip. This project inspired students to learn about and appreciate the significance of friction in everyday life.



SPIKE NAVIGATION!

The design, build, and code activity with the LEGO Spike robot successfully introduced students to robotics and coding concepts in an engaging and practical manner. It encouraged problem-solving and critical thinking skills as students navigated the challenges of creating a robot capable of measuring distance accurately.

Students constructed the robot to record the triangle's base and height and then compute the hypotenuse, which will be used for autonomous navigation.

SPIKE TRIANGLE!

The project demonstrated the potential of robotics and automation in various industries, from manufacturing to autonomous vehicles. It also showcased how students can develop valuable skills in coding, design, and problem-solving while having fun with hands-on, project-based learning. The activity focused on challenging students to design a robot capable of self-navigation along a specific path represented by a right-angle triangle.

Students programmed the robot to navigate the robot to the defined distance along the base and height of the triangle and then calculate the shortest path back to the starting point which is hypotenuse and then navigate back to the starting point automatically.

By designing, building, and programming these robots, students had the opportunity to explore principles of robotics, geometry, and problem-solving.

FOOD CHAIN FILM!

The Food Chain Film activity provided students with a dynamic and creative approach to understand the flow of energy in ecosystems. By using LEGO and stop-motion animation, they were able to visually represent complex ecological concepts and witness the interdependence of organisms within food chains.

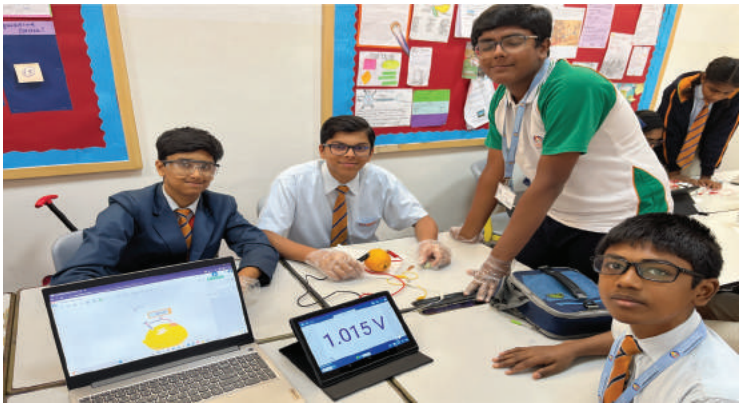
Students in teams selected the particular food chain, researched about it, created and shared their animation. They played the roles of camera man, script writer, director and builder to create this animation.

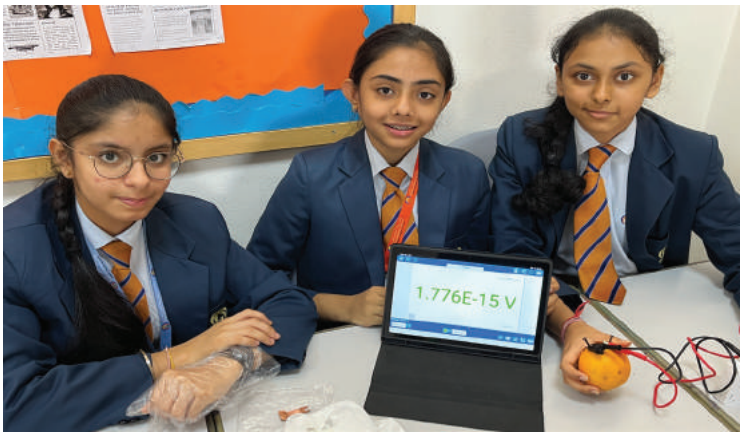
Students developed a deeper appreciation for the intricate balance of life in ecosystems and energy flow from one organism to another. This hands-on approach to learning fosters critical thinking, creativity, and a holistic understanding of the natural world.

ORGANIC BATTERY!

The Organic Battery Creation activity provided students with a practical understanding of electrochemistry and electricity generation. It allowed them to explore the potential of everyday organic materials as sources of electrical energy. Through the assembly of organic batteries and voltage measurements, students gained insight into the factors influencing voltage generation and the role of cations and anions in electrochemical reactions.

The project also highlighted the importance of metal conductivity, demonstrating how the choice of electrodes affects the performance of organic batteries.This activity fostered a holistic approach to learning, encompassing chemistry, physics, and engineering principles while encouraging an appreciation for sustainable energy sources and the practical application of science in daily life.

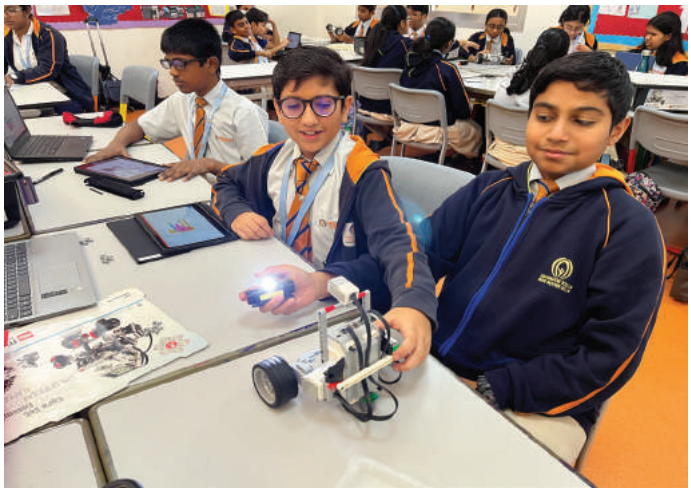




FOLLOW ME!

The LEGO EV3 Robot Navigation activity provided students with a dynamic and interactive approach to learning about reflection and refraction of light. Through the design, building, and programming of robots equipped with light sensors, students were able to observe how these principles can be practically applied in robotics and navigation.

The hands-on approach to robotics and light navigation empowers students to gain a deeper appreciation for the real-world applications of light behavior. It encourages them to think holistically about technology and science, reinforcing the idea that the concepts have practical and meaningful applications in various fields.



LIGHT RACE!

The LEGO EV3 Light Following Race activity provided students with an exciting and interactive approach to learning about robotics and sensor technology. By designing, building, and programming robots to follow a light path, students were able to apply their STREAM knowledge to practical and competitive challenges.

Students in teams used the robots from previous activity and coded it to turn and search for the light source and turn in different directions accordingly. After the testing and modification they participated in the race.
Through friendly competition and the practical application of robotics, students gained valuable experience in the intersection of science, technology, engineering, and mathematics.