مدرسة امباسادور
AMBASSADOR SCHOOL
INSPIRE INQUIRE INNOVATE

STREAMING FORWARD

September 2024

VERY GOOD
DSIB RATING

VACATION STORIES

The second term of the academic year commenced successfully, with students showing great enthusiasm in their STREAM class. Students engaged in a creative activity using Lego Story Tales to construct a narrative about a vacation. They designed scenes depicting various aspects of their imagined vacation, such as traveling, exploring new places, and enjoying leisure activities. Through this process, they built physical Lego models and crafted a cohesive narrative, developing their ability to express ideas, creativity, problem-solving, and collaboration, providing a fun and educational experience.

SOARING HIGH!T

The students explored the fundamental principles of structural design, diving into concepts such as balance, support, and stability. The objective was to design their tent structures, creating models that could withstand various stresses and loads. As they assessed the strengths and weaknesses of their tents, they identified areas where improvements were needed.

Through iterative testing and modification, the students refined their designs, striving to achieve a tent structure that was stable and sturdy. Students gained valuable insights into the intricacies of structural design and the importance of problem-solving in engineering.

MEASURING CAR

Students constructed measuring cars by meticulously using building instructions. The key learning was of mechanical components, including the gearbox, worm gear, and their specific functions within the car. Students using the car measured distances between two designated points within the classroom and the playground. The measuring car was equipped with a scale, and as the car moved forward, the pointer on the scale indicated the distance traveled in units. Students recorded these readings and then calculated the total distance between the two points. This activity not only reinforced their grasp of addition but also offered valuable hands-on experience in non-standard measurement techniques and data interpretation.

BRIDGE THE GAP

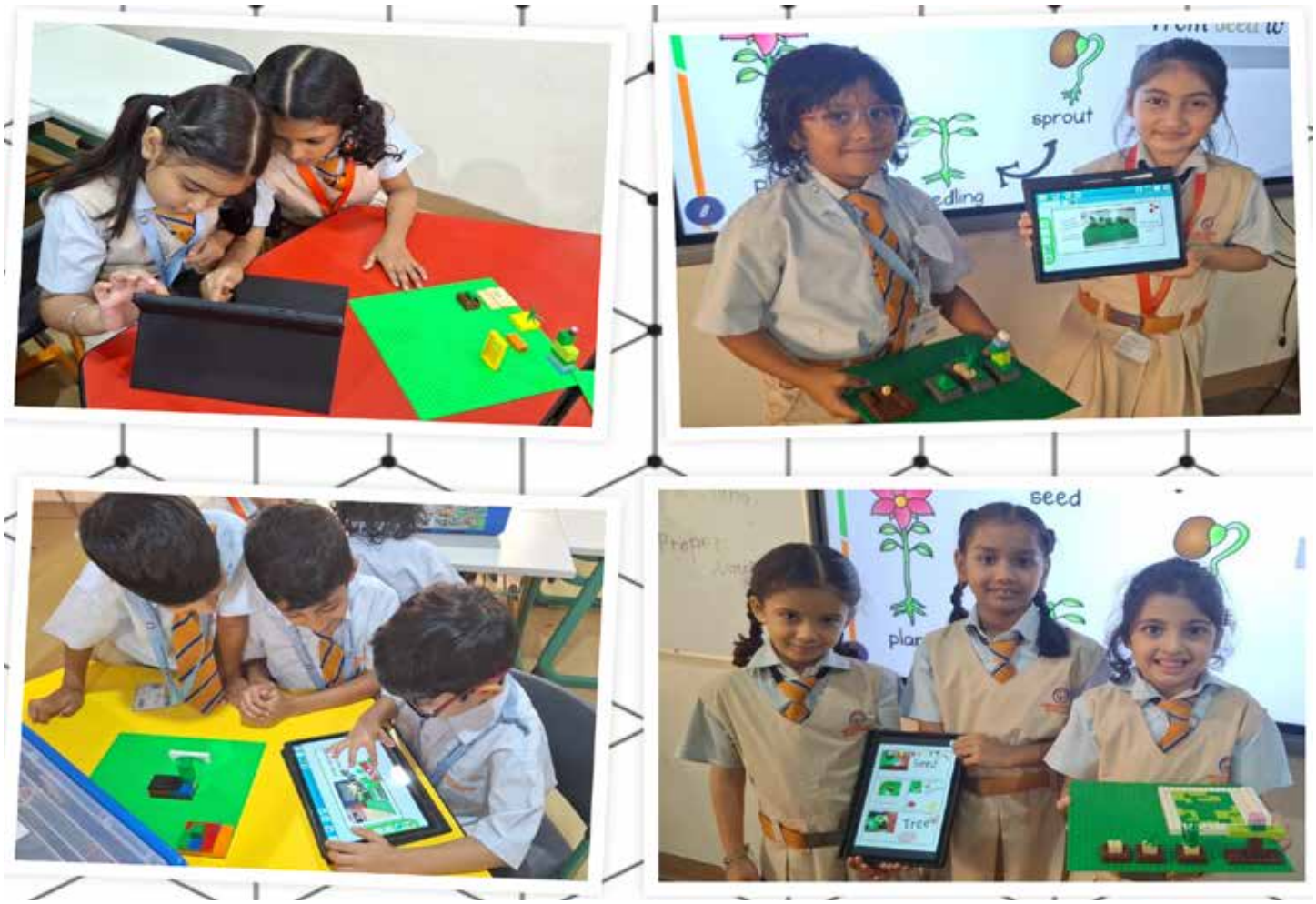
Students analyzed the structural properties of geometric shapes (squares, rectangles, and triangles) and concluded that triangles, due to their inherent stability and strength, were particularly effective for constructing a stable and sturdy bridge.

The hands-on phase involved constructing bridges that demonstrated the ability to stand independently without external support and withstand weights without falling apart. The students carefully observed and recorded their effectiveness and stability under different loads. Few of them refined their approaches based on testing outcomes and made changes to enhance the strength and stability of their bridges.

It was a comprehensive learning experience, merging geometric theory with practical application, critical thinking, and collaborative problem-solving skills, ultimately allowing students to see the real-world impact of their engineering decisions.

FROM SEED TO PLANT

The activity began with an engaging video demonstration on seed germination, which set the stage for understanding the various stages of a plant's life cycle, from seed to mature plant. The class then delved into the hands-on part of the project, using the LEGO Community Starter Kit to construct models that represented each stage of the plant life cycle. Students enthusiastically designed and built their models, illustrating stages of seed to adult plant. This hands-on activity allowed them to apply their classroom learning in a tangible way, reinforcing their understanding of how plants develop and thrive. Once their LEGO models were completed, the students moved on to the next phase of the project. They used the LEGO Story Visualizer app to create digital posters that showcased their models and reflected their learning journey.



NUMBER BOND GAMET

Students designed and constructed a board game using the puzzle tiles provided by MTINY. Once their boards were assembled, they programmed MTINY to navigate through the game according to few set game rules. The programming task required students to devise instructions based on number bonds rather than directly following the numbers rolled on the dice. Specifically, they had to create number bonds that summed to ten using the number rolled, and program MTINY's movement accordingly. In addition to using number bonds, students incorporated other game rules into their programming. When MTINY landed on a tile featuring a food image, it was programmed to move one step forward. Conversely, if MTINY landed on a tile with a scary face, it was programmed to move one step backward. The objective of the game was for teams to navigate MTINY to the destination by following accurate programming instructions and following game rules. The team that reached the destination first was declared the winner.

INTRODUCTIONS TO PICTOBLOX.AI

Class began with simple programming using the PictoBlox.ai platform. Students learned the basics of programming, focusing on understanding fundamental concepts such as sequencing. They grasped how to create an animation by arranging commands to achieve a desired outcome. Students then familiarized themselves with the motion code blocks. They learned to identify these blocks and use them appropriately in sequence to complete various programming tasks. They completed several tasks, such as making sprites move across the screen, display speech bubble, change the sprite, add backdrop and interact with other elements. Students also used their understanding of addition to add two numbers and display the correct sum upon reaching a designated point.

Students developed their programming skills but gained hands-on experience in sequencing commands and using programming blocks to create dynamic animations.

ANIMATE DIGITAL PIANO

Identifying different materials that produce sounds and listening to the vibrations was fun. This foundational understanding set the stage for their subsequent work with sound blocks in Pictoblox.ai. Students used the paint option in Pictoblox.ai to design a digital piano. They programmed this digital piano to function as a musical instrument, allowing them to produce different sounds based on user interactions. This involved both designing the visual representation of the piano and coding the corresponding sound responses.

DESIGN THINKING CHALLENGE - BUILD A CRIMPING MACHINE

Building an electric crimping tool, sparked curiosity and excitement among the students. The task was designed to challenge their creativity and engineering skills, with specific criteria that the machine stands without any external support and be capable of crimpling paper at the click of a button.

Initially, students worked collaboratively, discussing ideas and sketching out potential designs. They were provided with detailed instructions to build the tool. This step was crucial in helping them understand the underlying mechanisms that would make their designs functional. Once the tool was built, the students moved on to the testing phase. They eagerly tested their creations, pressing the button to see it would successfully crimple the paper as intended.

With their machines working as expected, the students then used them to crimple paper and create party hats. They took pride in seeing how their efforts had resulted in a functional product that could be used creatively.

HOME SWEET HOME!

Working model of a gorilla! Students were enlightened about the mechanical principles needed to create a functional model, using spur gears, crown gears, and worm gears. Students explained the working principles behind their designs. They described how the spur gears facilitated rotational motion, the crown gears transferred this motion at a right angle, and the worm gears provided precise control and movement.

Through this process, the students illustrated their understanding of mechanical systems and the use of gear type played in their models. Students also explored various animals that inhabit forest environments and the specific factors that enable gorillas to thrive in such habitats.

PROBLEM SOLVING WITH PLUGO

Students began by reading and comprehending addition and subtraction word problems. They analyzed each problem to determine the application of addition or subtraction required to solve the problem. Plugo platform and its associated manipulatives were used. They engaged with Plugo's interactive components to model and solve the problems. This approach allowed them to visually and physically represent the arithmetic processes.

HOP INTO LEARNING

STREAM session was on Adaptation features of frogs to thrive in pond environments. They examined traits such as webbed feet for swimming, the ability to camouflage with their surroundings, their moist skin that allows gases to pass through and most important helping the frog to breathe. Frogs also have strong hind legs which enable them leap forward at a great distance. This analysis provided the foundation for their subsequent model construction.

Next, students constructed models of frogs, incorporating the features of strong hind legs. They explained the mechanisms as to how powerful muscles in the frog's back legs, allows them to hop great distances.

INTRODUCTION TO FLOOR PLAN

As architects students were introduced to the Floor Plan Creator application. They worked in pairs and used this application to design the floor plan for a two-storeyed building with a bedroom, a living room, a bathroom, a kitchen, a staircase and a garage. Once the basic design of the house was completed, they decorated the interior with appropriate furniture and colored the walls while decorating the exteriors with gardens and trees.

Students explored basic architectural concepts such as spatial arrangement, scale, and room organization. They learned how to utilize the app's features to create accurate representations of a house layout, incorporating both floors and the garage. This hands-on activity helped students understand design principles and showcase their creativity while applying technology to solve real-world problems.

MEASUREMENT WITH FLOOR PLAN CREATOR

Students applied the knowledge of the floor plan created in the previous session, to explore length through this exciting STREAM activity. Using the Floor Plan Creator app, they designed a residential floor plan with specific measurements for each room. Mathematical skill for accurate dimensions of the living room, bedrooms, kitchen, and bathrooms was the key strength of students observed.

This hands-on approach reinforced their understanding of measurement and allowed them to explore how real-world design and planning rely on precise calculations. The activity fostered creativity while introducing students to practical applications of geometry and technology.

A BALANCING ACT

The interesting activity was to design and build a simple balancing scale using the WhalesBot S30 kit. The aim was to explore the concept of mass measurement through a hands-on activity. Students assembled the scale from the kit components and tested it by placing different objects on each side. They experimented with mass distribution and balance, observing how varying weights affect the equilibrium. Some of the groups were also able to modify the scale to improve its capacity to hold more objects.

This engaging activity allowed students to develop an understanding of how balancing scales work, while getting introduced to the basic concepts of mass and measurement through practical exploration.

WHALESBOT CAR

In this exciting hands-on activity, students used the WhalesBot S30 kit to design and build their robot cars. Concepts of robot movement and a program using the controller keypad from the kit were explored. This activity allowed them to experiment with directional control, speed variation, and precision of movements, deepening their understanding of robotics and programming logic.

The interactive experience helped the students grasp fundamental STREAM concepts while fostering creativity, problem-solving, and teamwork, as they worked to fine-tune their robot cars for smoother movement and control.

RUBBER BAND CAR CHALLENGE

Students participated in the "Rubber Band Car Challenge," where they learned about force, friction, and energy transformation from potential to kinetic. Using cardboard for the base, bottle caps or cardboard for wheels, skewers as axles, and a glue gun for assembly, they built cars powered by coiled rubber bands. The rubber bands stored potential energy, which transformed into kinetic energy upon release, propelling the cars forward. Students observed how different friction levels between the wheels and surface influenced movement, and how the force applied by the rubber band affected distance.

The activity concluded with a competition, rewarding the group whose car traveled the farthest. This challenge reinforced physics concepts through experimentation and problem-solving, while fostering creativity and teamwork

INTRODUCTION TO ARTIFICIAL

This interesting activity introduced the students to the world of artificial intelligence and computer vision, using the Pictoblox application. They began by exploring the coding interface of Pictoblox, familiarizing themselves with various blocks and functions. Next, they uploaded images of human faces displaying different emotions, such as happiness, sadness, and surprise. Using Pictoblox's facial expression recognition module, they programmed the AI to accurately detect and classify the expressions shown in the images.

This activity gave students an engaging hands-on experience with AI, helping them understand how computers can be programmed to "see" and interpret human emotions, while also building their coding and problem-solving skills in an interactive way.

MY ADAPTATION HABITAT

Through this STREAM activity, students explored the different habitats of plants and animals with their adaptations. On a specific habitat, they conducted research to identify the unique species living. They learned about how animals and plants adapt to their environments. LEGO Community Starter Kit was used to design models displaying the habitat and the life forms it supports. They incorporated the vegetation, terrain, and animals in that habitat. Students presented their models to the class, explaining the various adaptations the plants and animals had undergone to survive in that habitat, and highlighting the interconnectedness of living organisms with their environment.

ROBO-PULLING CHALLENGE

Students explored various types of forces, including frictional force, through this hands-on activity involving the construction of robots using either the LEGO Spike Essential or LEGO WeDo kits. After building their robots, students participated in a tug-of-war competition. Two groups battled against each other at a time. They programmed their robots to pull each other across a designated borderline, competing to see which robot could exert the most force.

As they battled for victory, students observed how different surface friction and pulling forces impacted the robots' performance. This interactive activity helped students understand key physics concepts such as applied force and friction while fostering teamwork and problem-solving skills.

EMOTION MATTERS

Students explored artificial intelligence and computer vision through this activity using the PictoBlox application. Programming a facial expression recognition module to identify human emotions was introduced. Applying AI functions, the students designed a game where sprites with random facial expressions appeared on the screen. The player had to match the displayed expression with their own facial expression, which was detected through the AI system. Successful matches earned the player points, while mismatches resulted in negative points.

This interactive activity allowed students to deepen their understanding of AI, computer vision, and its real-world applications, all while building coding and problem-solving skills in a fun, engaging way.

AMUSEMENT PARK FLOOR PLAN USING FRACTIONS

The fractions concept was used to design an amusement park. Using a 12 by 12 square grid, they divided the park into sections based on given fractional values for different themed areas. Students calculated and allocated space for a movie-themed park, a water park, a Dino-themed park, a futuristic-themed park, and a food court. After determining the correct boundaries, they drew a floor plan on a chart paper, marking the divisions for each themed park. This activity reinforced their understanding of fractions while teaching practical applications in design and spatial organization.

AMUSEMENT PARK WITH LEGO

LEGO Community Starter Kit was used to bring amusement park designs to life. Teams constructed detailed models of the park, including the movie-themed area, water park, Dino-themed park, futuristic zone, and food court. Through collaboration, students built key attractions and structures, enhancing their understanding of design and engineering concepts.

This hands-on activity encouraged teamwork, creativity, and problem-solving as students transformed their floor plans into functional LEGO models, making their amusement park ideas come to life.

LEGO LIMB

Students explored the human skeleton and joints through a fun activity, where they learned about the mechanics of movement of human limbs. Using the LEGO Spike Prime kit, they applied this knowledge to design, build, and program a functional grabber arm, simulating a prosthetic limb. After assembling their robotic arms, students participated in a challenge where they had to pick up objects from one table and drop them onto another at a distance.

This hands-on activity allowed students to explore engineering and biomechanics while improving their coding skills. The challenge fostered teamwork, problem-solving, and creativity, as they refined

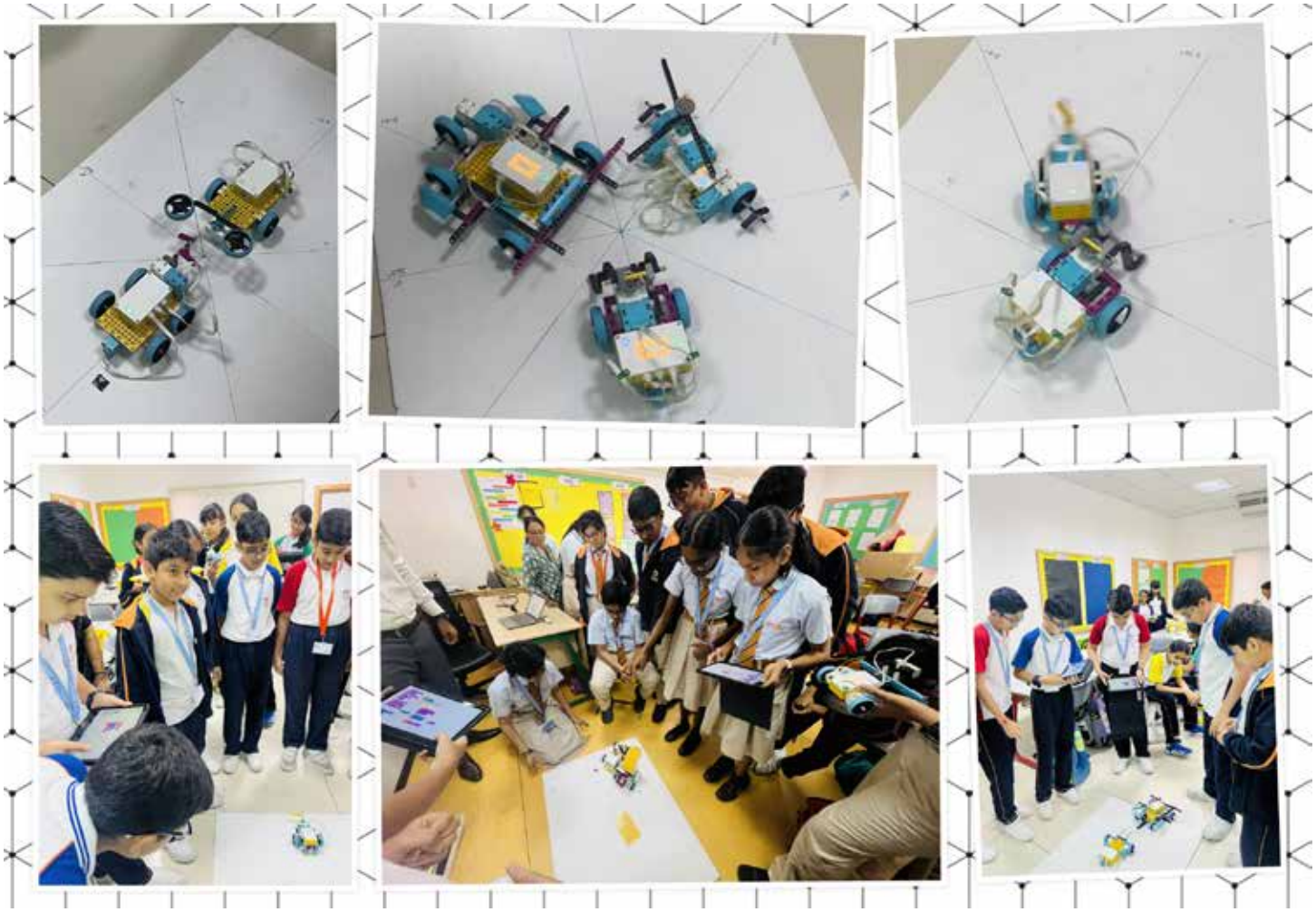
AUTOMATON CHALLENGE

In this week's STREAM class, students took on an exciting challenge—creating their own automaton designs using TinkerCAD. This hands-on activity introduced them to TinkerCAD's new feature, SimLab, where they could design and simulate their automaton in a virtual environment. Through this activity, students not only honed their 3D design skills but also learned how to simulate mechanical movements, giving life to their creations. It was a great blend of creativity, engineering, and technology, as students explored new tools and concepts in digital design.

We're thrilled to see the innovative solutions they came up with!

ROBO WAR

In this activity students took part in an exciting ROBOWAR challenge using LEGO Spike Prime to learn about forces. Teams designed and programmed robots to compete in pushing and pulling tasks, testing concepts like friction, balanced and unbalanced forces, and Newton's Laws of Motion. The hands-on competition allowed students to see how forces influence movement, while encouraging teamwork and problem-solving. They experimented with their robots' designs, adjusting for speed and stability, and learned how coding ties into physics. The enthusiasm was high, and every student left with new skills and a deeper understanding of forces!

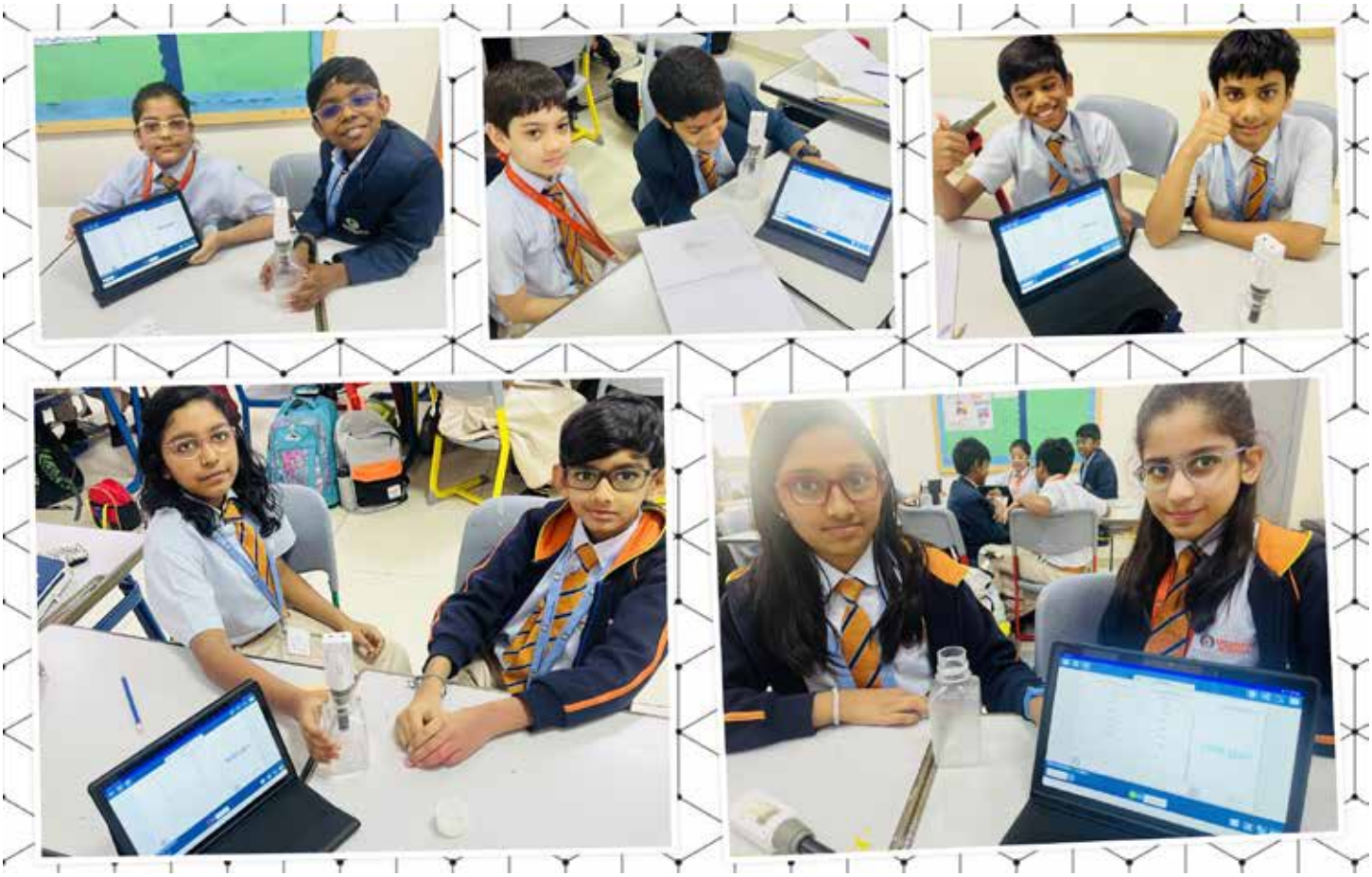


BOTTLE SUMO ROBOT

We were excited to introduce Bottle Sumo Robot to our Grade 6 class using LEGO Spike Prime. In this fun competition, students designed and programmed robots to push a bottle out of a ring, similar to a sumo match. This activity helped teach key 21st-century skills such as teamwork, problem-solving, and digital literacy. Students collaborated, thought critically about their robot designs, and used coding to make their robots autonomous. The challenge sparked creativity and enthusiasm, and we were thrilled with the innovative solutions the students brought to the competition!

HOLD YOUR BREATH PASCO

This week, our Grade 6 students conducted an exciting experiment using a Pasco CO2 sensor to explore how the body releases carbon dioxide. After learning to calibrate the sensor, students used it to measure the amount of CO2 released after holding their breath for 15, 30, and 45 seconds. By analyzing the data, they investigated their lung capacity and identified patterns in CO2 release. This hands-on activity not only deepened their understanding of human respiration but also taught them valuable skills in data collection and analysis. It was a fun and educational experience for all!



FABLE IN ACTION!

Fable robot, is an exciting tool for hands-on learning in robotics. In this activity, students were challenged to program the robot to move and draw various shapes using a marker. This task helped them explore the basics of robot control, programming, and geometry in a fun, creative way. Students enjoyed seeing their code come to life as the robot drew shapes like squares, triangles, and circles. It was a fantastic blend of creativity and technology, sparking excitement about robotics in the classroom!

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A HOUSE WITHOUT AC

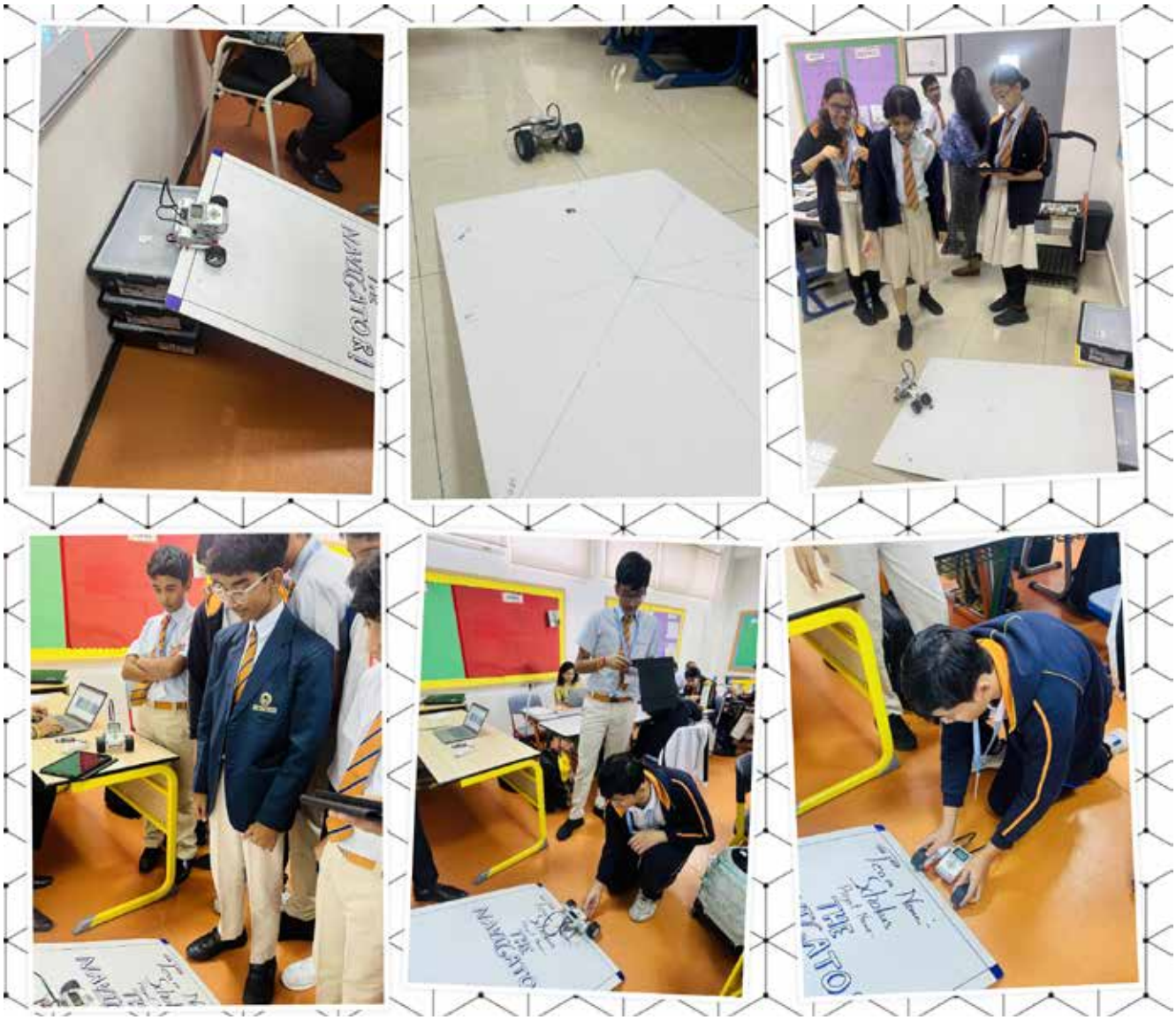
Teams built model houses to test the temperature differences inside and outside using PASCO temperature sensors. After constructing their houses with various materials, they used the sensors to measure and find their effectiveness. This hands-on experiment introduced them to important concepts like heat transfer, while also emonstrating the role of technology in environmental sustainability. The activity sparked creativity and helped students understand how building designs can impact energy efficiency in the real world!

MICRO:BIT SMART HOME

Grade 8 students were introduced to the design smart homes and how they function using various sensors and Micro: bit technology. In this hands-on activity, students learned the application of different sensors like motion detectors, temperature sensors, and light sensors used to automate home systems. They explored how to program Micro:bit to simulate smart home features like automatic lighting, temperature control, and security alerts. This activity gave students a deeper understanding of automation, coding, and the potential of technology in everyday life. It was an engaging experience that sparked interest in future tech innovations!

EV3 CAR CHALLENGE!

In this activity, students took on an exciting challenge to drive a Lego EV3 car on a slope and explore the different forces at play. Students investigated how gravity, friction, and normal force affect the car's movement as it ascends and descends the slope. They analyzed how these forces change with the angle of the inclination and its influence on the car's speed and control. This hands-on experiment helped students deepen their understanding of physics and its real-world applications in driving on uneven terrain. It was both fun and educational!



OILY OCEAN!

Grade 8 students participated in an engaging Oil Spill Cleanup activity, where they faced the challenge of separating a mixture of oil and water using consumables. Students experimented with various methods, including skimming, filtration, absorption, and dissolution to clean up the "spill." Through hands-on experimentation, they analyzed the effectiveness of each technique and ultimately chose the best method for removing the oil from the water. This activity not only deepened their understanding of separation techniques but also highlighted the importance of environmental stewardship and the impact of oil spills on our oceans. It was a valuable and enlightening experience!

ENDANGERED SPECIES!

The challenge is to design, build, and film an animation of the food chain using LEGO Community Starter kits and stop motion animation techniques. Working in teams created vibrant scenes that showcased various organisms and their roles within the ecosystem. As part of the project, students researched and identified endangered species within the food chain, discussing their importance and the threats they face. This hands-on activity not only enhanced their understanding of ecological relationships but also raised awareness about conservation efforts. The students enjoyed combining creativity with science, and their final animations were both informative and impressive!