مدرسة امباسادور
AMBASSADOR SCHOOL
INSPIRE INQUIRE INNOVATE

STREAMING FORWARD

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VERY GOOD
DSIB RATING

MTINY ROUTINE DIARY

The objective was to Create a program using code blocks to navigate a bot on a mat, illustrating its daily activities as described in a story. The project bot's daily activities were narrated. This story laid the groundwork for their programming tasks, allowing them to visualize the bot's journey. By translating the narrative into a sequence of coding movements—forward, right turns, and left turns—the students learned to break down complex tasks into manageable steps.

FLASH FLOOD

This is a deep dive into the fascinating world of beavers and experience their incredible engineering skills. After exploring the ecological importance of furry architects, designing and building their very own beaver dam provided one of the real-world solutions to prevent flash floods.

With an assortment of materials (mini logs, stones, soil, and playdough), students brainstormed different creative solutions and tested various designs to see which could effectively control water flow.

This fun and interactive experience reinforced their understanding of engineering principles and highlighted the importance of trial and error in the design process.

Watching them tackle environmental problems with enthusiasm and creativity was truly inspiring!

STORY TALES

Students built a creative story with a well-developed setting, engaging characters, and a captivating plot. They collaborated to brainstorm ideas, contributing their unique perspectives and imaginative elements. Students shared their versions, explaining their interpretation of the narrative and characters.

This enhanced their creativity and communiation skills while enjoying the collaborative and storytelling experience.

UP AND DOWN - SEESAW

Students followed the building instructions to construct a motorized model of a seesaw using a reverse/forward motor, switch with a controller. Collaboration, assembling the components, and positioning parts for optimal functionality were the skills observed during the session.

The model was programmed by joining the code blocks. Once their models were operational, each group observed and understood the working mechanism, detailing how the motor and controller functioned together to create the seesaw's motion.

RESCUE BOT

Critical thinking and problem-solving skills while designing a bot intended for rescue operations and detecting sounds were the tasks. The brainstormed ideas were collaborated by the teams and utilized their understanding of sound mechanics to create functional prototypes.

Students recognized the importance of testing their designs. They conducted trials to evaluate how well their bots detected sounds from varying distances. By collecting feedback from peers and instructors, they identified strengths and weaknesses in their designs.

As a result, students made iterative improvements based on their findings, refining their bots to enhance performance and reliability. This hands-on experience not only deepened their understanding of sound but also fostered valuable skills in engineering and technology.

DRUMMING MONKEY

This activity highlights the creativity and critical thinking skills to design a mechanical model of a drumming monkey. The teams shared ideas and made changes to ensure their mechanical monkey could drum effectively.

After building models, students demonstrated how their creations worked. They explained how each part (worm gear, spur gear, and crown gear) of the model helped in creating movement and thereby producing sound.

This hands-on activity helped them understand how sound and mechanics work together, and it also improved their problem-solving skills and communication skills.

MTINY MARK THE COMMUNITY

Students designed and constructed a detailed map of a community and successfully identifying various places on the mat. They then programmed the MTINY bot to navigate to different destinations indicated on the map, using the provided color marker to highlight each location. Later they demonstrated the addition skill by accurately calculating and marking the places that corresponded to the sums given by the teacher. This hands-on experience allowed them to apply their mathematical knowledge in a creative context while enhancing their programming skills.

NOISE POLLUTION ALERT MACHINE

The task is to build a sound pollution alert machine designed to detect noise levels. They gathered their materials, and constructed the alert machine, integrating a sound sensor that would trigger a buzzer when noise levels exceeded a certain threshold. To enhance the project, they also added a motorized component that activated the response to the sound sensor's detection. This motorized mechanism provided a visual element, demonstrating the machine's reaction to high noise levels.

Students created a functional prototype that not only alerted people to excessive noise. This also showcased an engaging element of movement, solidifying their understanding of the interplay between sensors, motors, and programming designs.

MICRO HABITAT

The session began with a discussion on microhabitats and the diverse mini-creatures that inhabit them. The research was on different microenvironments, emphasizing the distinct characteristics of mini creatures living in those habitats. For example- insects camouflage to evade predators, while others highlight the specialized feeding adaptations of various creatures.

To further demonstrate their understanding of these intricate relationships between organisms and their environments, the students created a project. A stop-motion animation depicting the life cycle of a butterfly in a garden setting. They meticulously planned each scene, using LEGO community starter elements to create vibrant backdrops that reflected the beauty of a garden ecosystem.

The final product was a captivating blend of art and science, reflecting the student's deep understanding of ecology and their ability to convey complex concepts in a creative format.

MTINY 2.0 WITH ANOTHER EXCITING PROJECT!

Students created a program using MTINY and code blocks that featured repeat commands using repeat code block, along with instructions to move forward, move backward, turn left, and turn right. They applied their multiplication skills to complete the task effectively.

A challenge was given to build a maze using the MTINY magnetic tiles filled with obstacles to avoid, treasures to collect, and a home to reach. Each time they collected a treasure, they earned points, with each treasure worth 5 points.

This hands-on experience allowed them to blend coding with math in an enjoyable way as they navigated through the maze and calculated collected points at the end of the session. The group with the maximum points was declared as winner.

MECHANICAL DANCING DOLL

The students successfully designed and constructed a dancing mechanical model using a LEGO Early Simple Machine kit. Each team explained the working principles behind their models, detailing how gears and other mechanisms contributed to the dance motions. Skill to differentiate man-made and natural materials while designing and constructing sustainable costumes was observed. This enhanced both the aesthetic appeal and functionality.

INTRODUCTION TO PICTOBLOX.AI

Students engaged with the pictoblox.ai platform to learn and create simple animations using programming. The skill to explore the basics of programming, instructions, and sequencing is strengthened through this task. Through guided lessons, students familiarized themselves with various code blocks found in the Events, Control, Looks, and Motion code pallets.

As they gained confidence in identifying and selecting appropriate code blocks, students began to apply their understanding by creating a program that demonstrated a multiplication story. They worked in teams to construct animations that illustrated the concept of multiplication, effectively sequencing their chosen code blocks to create engaging narratives

THE SANDS OF TIME

A class with fun and learning! Measuring time by designing a working sand clock using recycled bottles, sand, and tape. Funneled sand into one bottle, connected two bottle caps with tape, drilled a hole for controlled flow, and secured the second bottle on top. Testing intervals of 30 seconds and 1 minute with a stopwatch, students compared sand flow in real-time. This activity enhanced skills in creativity and precision while reinforcing concepts of time measurement and promoting sustainability through the reuse of materials.

EFFECT OF ILLUMINATION!

To Explore light as a concept, the Spike Essential kit was used in the task . Students differentiated transparent, translucent, and opaque objects. They built and programmed a flashlight, to learn the importance of light to see objects. Using the flashlight, they examined hidden objects in a dark box, applying their knowledge to observe how illumination aids in identifying objects. This hands-on project not only enhanced the skill to understand the concept of light., also its role in vision. Developing the skill of problem-solving, teamwork, and programming skills, fosters a deeper, practical understanding of scientific principles.

A SEED'S TALE

Stop-motion animation was used as a resource to study the parts of a plant and seed germination. Application of Stop Motion Studio and LEGO Community Starter Kit, they constructed a plant with roots, stems, leaves, and flowers or fruits. They photographed stages of the plant from seed germination to the fully grown plant. This interactive activity strengthened their knowledge of plant development while enhancing creativity, technology skills, and collaboration. Students gained valuable experience in using animation to represent scientific concepts visually and dynamically. Presentation and communication skills were well appreciated!

MATH IN PLANTS

Building plant models using the LEGO Community Starter Kit and estimating the amount of water was the task. The objective was to create various plant structures. Math co-relation was with the 4-digit number representing water in milliliters was divided equally among their plants. By performing division, students calculated the amount of water that each plant would receive and then divided further based on each plant's number of parts, practicing multi-step division. They presented their models alongside their calculations, gaining practical insights into the even distribution. This hands-on activity fostered teamwork, and problem-solving, and reinforced mathematical skills.

BALLOON POWERED CAR!

Students explored energy transformation by creating a balloon-powered car using the LEGO Simple and Powered Machines Kit, along with a balloon and straw as the propulsion source. They observed how the potential energy stored in the balloon transformed into kinetic energy, moving the car forward. By adjusting factors like balloon size and car weight, students examined how these variables impacted speed.

A lively race, to reinforce concepts of energy types and their transformations was fun leaning! This experience fostered teamwork, problem-solving skills, and curiosity, giving students practical insights into the principles of energy and motion.

SUSTAINABLE GREEN CITY 3D MODEL

Through this design focused activity, students utilized the Tinker Cad platform to create a 3D model of an eco-friendly green city, emphasizing the principles of sustainable urban planning. They incorporated various elements, including residential homes and commercial buildings, to depict a vibrant community. Students highlighted renewable energy sources by adding solar panels and wind turbines, demonstrating their potential to power the city. Green spaces, such as parks and gardens, were included to enhance the environment, while transportation options like electric buses, roads, and bike lanes promoted eco-friendly mobility. This activity helped students understand the importance of sustainability in urban development and fostered critical thinking skills.

WIND TURBINE WITH SPIKE ESSENTIAL

Investigation is important in learning science concepts. Therefore this task, the generation of electricity from wind turbines and the energy transformations demonstrates it. Utilizing the LEGO Spike Essential Kit, they designed and built their wind turbine models. Students connected an LED matrix to the turbine through the LEGO hub, programming it to illuminate when the turbine turned. The intensity of the LED lights varied with the turbine's speed, illustrating the relationship between wind speed and electricity production. This interactive project enhanced students' understanding of renewable energy concepts while promoting teamwork and programming skills.

EFFECTS OF FORCE AND GEARS!

Designing gear trains and modifying gear ratios using the LEGO Simple and Powered Machines Kit is the objective. They collaborated in groups and built different gear configurations to observe how gear ratios affect speed and force. They discovered that higher gear ratios increase speed but decrease force, while lower ratios enhance force at the cost of speed. By designing and building a fishing rod, students tested their gear trains and noted performance changes with each adjustment. This hands-on experience deepened their understanding of mechanical principles and improved their problem-solving skills.

DECI: BIT!

New resource Micro: bit, new skill building. Students used the conversion of fractions to decimals using a micro: bit. They began by learning to connect the device to an iPad and practiced programming with basic tutorials, such as blinking a heart shape and displaying their names. They also used the micro: bit to take the numerator and denominator inputs using the buttons, perform division, and show the result in decimal form. This interactive activity helped solidify their understanding of fractions and decimals while building skills in programming logic and computational thinking, making math concepts engaging and practical.

UNIFIED ROBOTICS CHALLENGE !

The challenge of designing and building an efficient robot base using the LEGO Spike Prime kit to complete tasks on the Unified Robotics Challenge mat. In the first week, students focused on engineering a stable and balanced base that could handle the Unified Robotics Challenge missions. They tested different designs, adjusting for durability and precision to ensure their robot could navigate smoothly from the base point to various locations on the challenge mat while carrying the mission models.

UNIFIED ROBOTICS CHALLENGE - MISSION-2!

Students later measured distances on the mat and programmed their robots to move through the defined path, making accurate turns and traveling specific distances to reach four different locations. At each stop, they programmed the robot to deliver items to the marked spots, working to complete the tasks as quickly and accurately as possible. The activity combined engineering, programming, and problem-solving skills, pushing students to think critically and work collaboratively.

Each team's enthusiasm had no bounds. Teams had to wind up the session reluctantly as it was fun with bots.

WHAT'S ON MY PLATE?

To dive into the concept of nutrition, students designed a stop motion animation on balanced diets. They first built models of different food groups such as proteins, carbohydrates, fats, and vitamins, using the LEGO Community Starter Kit. With the Stop Motion Studio app, they animated scenes to illustrate the importance of a balanced intake of these nutrients for good health.

This activity deepened their understanding of food categories, and also developed their skills in engineering, technology, and storytelling, combining animation and nutritional science in an engaging, educational experience.

HOLD YOUR BREATH WITH PASCO 2

STREAM experiment using the PASCO CO_2 Sensor and SPARKvue app to see how exercise impacts breathing. They measured CO_2 levels before and after one minute of activities like running, push-ups, and jumping jacks. The results showed a clear increase in CO_2 after exercise, highlighting how our lungs work harder during physical activity. This engaging experiment helped students understand the connection between respiration and exercise, sparking curiosity and discussions on the science behind our breath!

MAGLEV

This was an exciting hands-on STREAM activity where they built their very own maglev trains using cardboard, magnets, and other consumables. After constructing the trains, they tested them on a Pitsco Maglev track to see magnetic levitation in action!

Throughout the project, students explored magnetic polarity and strength and even calculated the speed of their trains as they zoomed along the track. It was a fun and educational experience that sparked curiosity and encouraged problem-solving, design thinking, and collaborative skills.

JUNK YARD ELECTROMAGNETS

LEGO Spike Prime and Lakeshore Magnetic Kits were used to build electromagnets! They programmed their machines to separate metallic junk from non-metallic items, just like a real junkyard. Students tested magnetic strength, adjusted their designs, and watched as their creations picked up metal objects like screws and nails.

This hands-on project was a fantastic mix of engineering and science skills. The practical applications in the Dubai Municipality were the discussion points with interesting facts to learn. This gave awareness to many who never new its functioning.

HYDRAULIC MACHINES

This was a fascinating world of hydraulics using the Smartivity Hydraulics Kit. They built various models to understand how water plays a crucial role in hydraulic systems. This hands-on activity allowed students to learn the basic principles of hydraulics, discover how water transfers force in machines, and see real-world applications like construction equipment and lifts. Pascal's law was understood in such simplicity with this activity. They observed the energy and force being used to make hard tasks easier.

Such as water can cut through metal plates with its energy which is unimaginable until you watch it!

The project sparked curiosity and gave students a deeper appreciation for how simple forces can power complex machines!

GRADE 6

INNOVATIVE SOLUTIONS TO WATER CHALLENGES!

Tackling real-world water-related challenges in a hands-on STREAM project was made interesting through the fun activity with community starter kits. Teams identified key issues like water scarcity, pollution, and efficient water use. After researching and discussing potential solutions, students used Tinkercad, Micro, and Community Starter to design and create prototype models addressing these challenges.

This activity encouraged critical thinking and creativity, as students worked on innovative solutions to improve water management. Their projects highlighted the importance of accessible technology in tackling global water issues!

HOUSE WITHOUT AC_2

Hands-on STREAM project to explore insulation. Teams constructed a cardboard house and chose different insulation materials that keep it cool. After insulating and sealing the house, students used the PASCO temperature sensor and SPARKvue application to measure temperature changes under sunlight.

This activity gave students valuable insights into how insulation works and its importance in maintaining energy efficiency. It was a great way to connect scientific principles with real-world applications! Designing, problem solving, and team work to collaborate were the skills observed.

LIGHT HOUSE

Introducing electrical circuit concepts using TinkerCAD was a more scientific method to learn. They started by creating a simple circuit to light a bulb and then counted all the electrical appliances in the classroom. Using this information, students designed and simulated a detailed TinkerCAD circuit of the classroom setup.

By calculating the total electricity needed—considering light bulbs (25W each), projectors (200W), and air conditioners (2000W)—students discussed sustainable energy sources required to power their classroom efficiently. This hands-on activity sparked great discussions about energy use and sustainability!

LINEAR WALK

The introduction of the PASCO motion sensor and SPARKvue application to dive into the world of motion and linear equations was the task set. Teams used sensors to measure and record the movement of various objects, generating position-time and velocity-time graphs.

By analyzing these graphs, students learned how motion data connects to linear equations, gaining a deeper understanding of mathematical concepts in a real-world context. This engaging project combined physics and math, making linear equations both interactive and practical! They gained a deeper understanding of motion and linear equations.

SPACECRAFT MATERIAL AMONGST METALS

An interesting STEM project to investigate the properties of metals and non-metals used in spacecraft design was the objective of the session. Students researched the chemical and material challenges of space exploration, testing and comparing different materials based on conductivity, weight, and reactivity.

By analyzing their findings, students applied this knowledge to solve real-world problems in space travel and understand the importance of material selection for the harsh conditions of space. This hands-on activity highlighted the critical role of chemistry and engineering in the future of space exploration!

It was interesting to find students exploring the metals from the periodic table and studying their properties enhancing the skill to research, analyze and apply.

SPACE CRAFT MATERIAL CHEMISTRY 2

This session is in continuation of the NASA-inspired challenge to design a spacecraft shield capable of withstanding Venus's extreme temperatures and radiation. Using data from their material tests, students selected the best combination of materials for the shield, focusing on properties like heat resistance and durability.

Each team created detailed designs, labeling the material used and explaining their choices based on the tests they conducted. Students strengthened the scientific concepts, and applied them to a real-world space challenge, showcasing their creativity and problem-solving skills!

PROBABILITY IN DRIVERLESS CARS

Probability in the context of driverless car safety was an interesting and challenging objective for the session. Teams programmed a LEGO EV3 car to detect and stop when an object (a pedestrian) was in its path using the EV3's ultrasonic sensor.

After multiple trials, students calculated the probability of the car successfully stopping without hitting the obstacle. This project allowed students to connect math with real-world technology, highlighting how probability plays a crucial role in ensuring the safety of autonomous vehicles!

SOUND METER

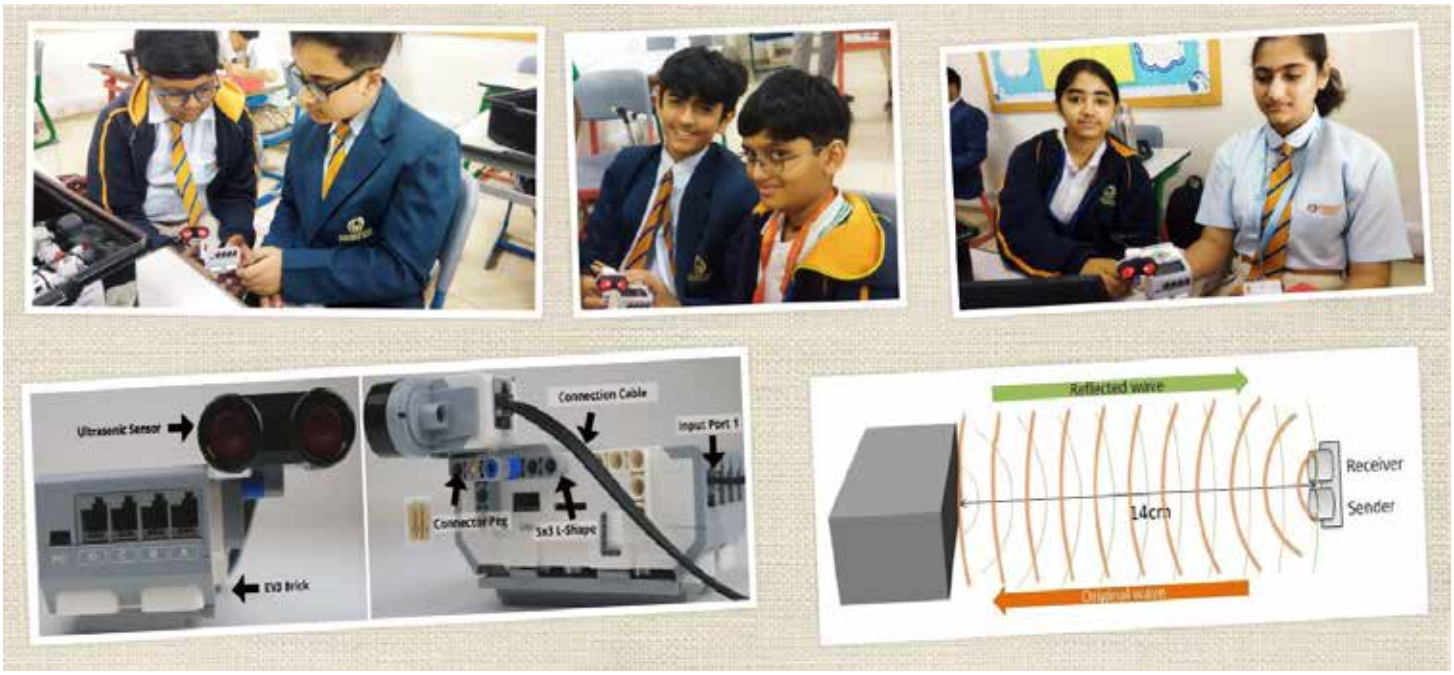
PASCO SPARKvue software was used to explore the science of sound in this session. Teams of students measured and displayed sound intensity in real time, observing how decibel levels relate to sound intensity.

Students then applied their coding skills to program a sound meter that could detect and respond to specific sound thresholds. This hands-on activity allowed them to build a functional sound measurement tool, blending science and technology to better understand the properties of sound!

ULTRA WAVES

To explore the physics of sound waves using the LEGO EV3 Ultrasonic Sensor was the objective. They measured the distance to various objects by calculating the time it takes for a sound wave to travel from the sensor to an object (one-way trip) using the distance formula.

Students also delved into the concept of sound wave cycles. Given the LEGO Ultrasonic sensor's frequency of 40,000 Hz, they calculated the time it takes for one sound wave cycle and determined the number of cycles involved in a round trip from the sensor to an object and back. This helped most students to be able to calculate the speed of sound waves, frequency, and a few of them the practical applications of measurement in technology!



SUSTAINABLE AMBASSADOR

An investigative approach was used in this STEM project to explore renewable energy solutions for their school. Using Google Earth, they calculated the area and perimeter of the school's roof, applying math skills to estimate the number of solar panels that could be installed.

Students then brought their designs to life by creating a 3D prototype of the solar panel installation using Tinkercad. This project allowed them to connect geometry and technology, fostering an understanding of sustainable energy in a hands-on way!

SMART IRRIGATION!

The most important programs for smart irrigation systems were tried through this lesson. Using Microbit technology and a smart home irrigation kit, students planned, designed, and built their automated irrigation systems. Students learned how sensors can monitor soil moisture levels and do water distribution efficiently. This project not only enhanced their understanding of technology in agriculture but also fostered collaboration and creativity as they brought their innovative designs to life. We can't wait to see their prototypes in action!