



مدرسة امباسادور
AMBASSADOR SCHOOL
INSPIRE INQUIRE INNOVATE



**STREAMING
FORWARD**
February 2025



MTINY - FOLLOW THE GREEN BRICK ROAD

The two-week activities were planned to comprehend the given algorithm and correctly place the green tiles according to the instructions provided. They first reviewed a series of algorithmic steps, which included movements such as "move forward," "turn left," and "turn right." Students placed the green tiles in the designated spots on a grid or map, representing the sequence of actions to be carried out by the bot.

In the first week, students programmed the bot to execute the algorithm. They worked on sequencing the commands for the bot, ensuring that the movements aligned with the steps in the algorithm. This allowed students to translate algorithmic instructions into practical movements in a programmable environment.

In the second week, students demonstrated their computational coding skills by incorporating the Repeat code block into their programs. This reinforced their understanding of loops in programming and how to simplify repetitive tasks using computational constructs.



PLUGO - HOPPITY BOB

Utilization of computer vision technology to bridge the gap between digital and physical learning was the object. They interacted with magnetic hexagonal pieces to complete a virtual challenge, combining hands-on activity with digital engagement.

Week 1: Through this activity, they applied their knowledge of measuring height to help a frog catch its prey at a specified height displayed on the virtual interface. By manipulating the hexagonal pieces, students were able to translate their understanding of measurement into a real-time solution, successfully integrating physical action with virtual concepts.

Week 2: Students demonstrated their understanding of the spellings of number names, body parts, and vehicles by arranging the magnetic blocks in the specified patterns. Once they had arranged the blocks physically, they replicated the same pattern on the virtual interface, reinforcing their knowledge through both hands-on and digital activities.



READY STEADY LEGO!!

Designing and building the balloon-powered cars to explore how air could be harnessed as a power source for movement. As they tested, students noticed how the force of the air escaping from the balloon pushed their car, causing them to move. Some students focused on increasing speed, while others concentrated on stability or distance, trying different strategies to optimize their creations.

Once the students tested their models, they reflected on the process and discussed ways for further improvement. They explained how the balloon-powered cars used air pressure to generate movement. During these discussions, they deepened their understanding of the science behind their designs, strengthening the concept that air can be used as a force to move objects, similar to how engines and other forms of propulsion work.



AI EXPRESSIONS

The students began by identifying various emotions and understanding how these emotions are expressed. They explored the different ways emotions can manifest, focusing on facial expressions as one of the key indicators. Students were introduced to the basics of emotion recognition using artificial intelligence (AI). They learned how AI models can analyze facial expressions to detect emotions, offering insights into how technology can interpret human feelings.

Students developed programming logic to implement an emotion detection app. Using PictoBlox Junior AI interface, students were able to write and test code that could detect emotions from facial expressions, analyze the results of their emotion detection system and ensure it displayed corresponding images or text outputs that matched the identified emotions.

Through this hands-on experience, students gained practical skills in both programming and AI while learning how the emotion recognition app functions in real-world applications.



PLUGO - LITTLE DAN ADVENTURE

Students effectively engaged with multiplication word problems on the virtual interface, reading and understanding the text with growing confidence. They successfully identified the key elements in each problem and understood what was being asked. By applying their knowledge of multiplication concepts, students were able to solve the problems accurately, demonstrating a strong grasp of the mathematical operations involved. They also had the opportunity to use a variety of manipulatives to perform multiplication calculations, which provided a hands-on way to interact with the problem-solving process.

This hands-on approach allowed them to visually and physically interact with the problem-solving process, resulting in accurate answers.



A MAZE ING

Multiplication to calculate the number of blocks needed to construct their mazes was the objective. They designed their mazes to create an intricate and functional layout. Later they built miniature cars that were designed to move through the maze.

In addition, students explored the concept of magnets and how magnetic forces of attraction and repulsion work. Magnets were used in the miniature cars to move inside the maze. Few used powerful magnets outside the maze, to experiment with the effects of magnetic force hands-on.



LIFI - LIGHT FIDELITY

Discussion led to the task of building a light-activated device. Students collaborated by brainstorming how light intensity could trigger actions, such as turning on an LED or moving a motor. They used light sensor reactions to changes in light levels and how this could activate responses in their circuits.

Real-world examples of light being used in technology were discussed. Applications like LiFi, light-sensitive toys, and solar panels, which all rely on light to function, help them better understand the role of light in various devices.

Students gained a deeper understanding of how light can be used in technology to trigger actions and power device



LIGHT CAMERA ACTION!!

The students designed scenes, characters, and props to bring the core ideas of their story. They collaborated with their peers, exchanging ideas about character design, scene settings, and the framework. This collaboration allowed them to refine their concepts and develop a more cohesive and engaging narrative.

Additionally, the students used a stop-motion animation app to present their work. They displayed their characters and props, capturing individual frames to create smooth animations.

By use of this technique, they showcased their stories, combining their artistic and technical skills to produce dynamic and visually compelling animations.



UNITED WE STAND DIVIDED WE FALL!!

Students effectively used their problem-solving skills to navigate the MTINY game and solve division word problems to progress towards the treasure. Working together as a team, they developed a program, collaborated on debugging, and shared creative ideas for tackling complex problems. Through their teamwork, they communicated effectively, finding the most efficient strategies to move forward in the game.

It was an engaging and rewarding experience, allowing students to apply their mathematical concepts with programming knowledge in a fun, interactive way.



MEASURE UP

Students designed, constructed and modified a driver-based model of a vehicle. They used creativity and engineering skills to build a functional vehicle, programmed to move within specific parameters. They learnt to use motion and repeat code blocks to control its movement. Students applied their understanding of estimation and measurement to fine-tune the vehicle's movements, ensuring they navigated through the maze accurately.

This hands-on experience allowed them to combine programming, and practice practically and engagingly.



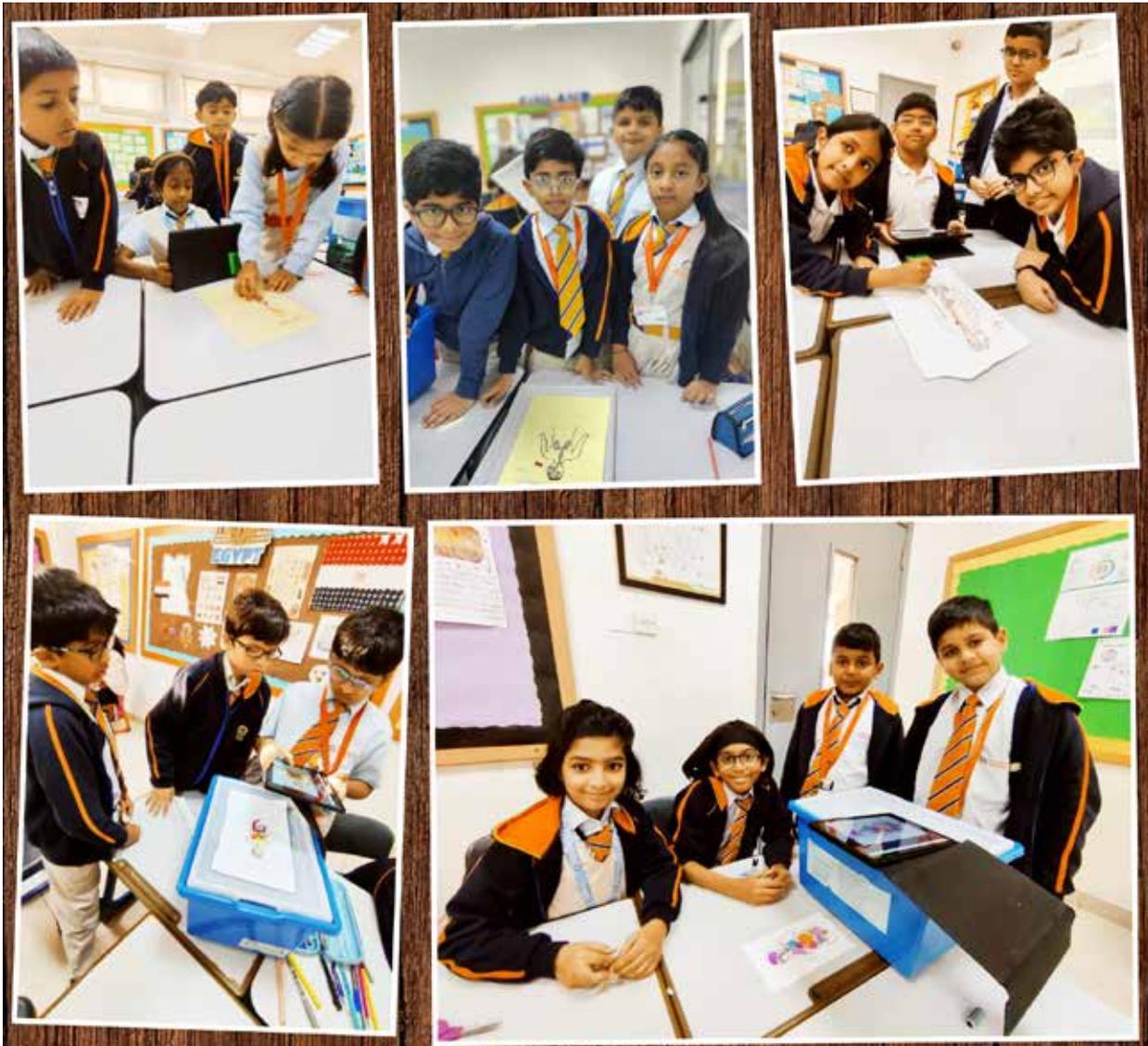
3D SKELETAL SYSTEM

The objective was to explain the human skeletal system through 3D modeling using Tinkercad. As they designed their digital skeletons, they explored the names, shapes, and functions of bones, understanding the functions of the bones. This enhanced their creativity, problem-solving, and technical skills, adjusting their designs to make them more accurate. This hands-on experience made learning anatomy and technology exciting, helping students see the real-world connection between science and digital design.



OUR BODY IN MOTION!

Curiosity came to life as students turned the human body systems into animated stories using stop motion animation. Using LEGO pieces, paper, and tablets with the Stop Motion Studio application, they recreated the respiratory, digestive, or circulatory system, showing the function in a fun and engaging way. This activity blended science and technology, allowing students to think critically, problem-solve, and bring their ideas to motion, making learning truly interactive and memorable.



HOCKEY FRACTION!

Excitement filled the room as students designed their own stick hockey game using the LEGO Spike Essential kit. They built and programmed a goalkeeper bot that blocked shots at random speeds, adding a fun challenge to the game. As they played, they recorded their scores as fractions, comparing and identifying like fractions in a real-world context. Through this interactive experience, students sharpened their coding, problem-solving, and logical thinking skills, while also developing a stronger grasp of mathematical concepts.



BUILD A FRACTION SCHOOL

Creativity and math came together as students designed and built their own LEGO school building using the LEGO Community Starter Kit and base plate. They divided the area as classrooms, a playground, a cafeteria, and an office, ensuring each part represented a like fraction that added up to a whole. As they constructed their miniature school, they strengthened their spatial reasoning, problem-solving, and collaboration skills, while deepening their understanding of fractions. This hands-on activity made learning engaging and relatable, turning abstract numbers into a colorful and interactive experience!



PARK OF SIMPLE MACHINES

The classroom transformed into a mini amusement park as students designed and built exciting rides using simple machines with the LEGO Simple & Powered Machines or BricQ kit. They created seesaws with levers, slides with inclined planes, and other mechanical attractions, ensuring each ride demonstrated the real-world use of simple machines. Adding a touch of innovation, they also built at least one motorized ride, bringing movement to their creations. Through this engaging challenge, students explored engineering concepts, problem-solving, and mathematical reasoning, while working together to bring their ideas to life, making learning both interactive and thrilling!



MAP THE UAE!

Students became young cartographers as they recreated the UAE map using LEGO community starter kit and base plates. They calculated the size of the UAE, divided it into seven parts based on the area of each emirate, and used color coding with LEGO bricks to represent them accurately. Through this hands-on activity, they explored decimals, fractions, and measurements, rounding numbers to ensure precision. As they pieced together their map, they sharpened their math, geography, and problem-solving skills, while also developing teamwork and critical thinking.



RUBE GOLDBERG MACHINE CHALLENGE

Students took on the Rube Goldberg Machine Challenge and designed a chain reaction machine using at least four different simple machines. With LEGO bricks, sticks, pulleys, thread, and paper, they built intricate setups where one movement triggered the next, creating a fascinating domino effect. As they adjusted angles, measured distances, and calculated force, they explored the mechanics behind real-world machines. The challenge encouraged creativity, teamwork, and problem-solving, as students tested and refined their designs. Turning a simple task into an elaborate sequence, they discovered the magic of engineering and innovation in the most playful way!



AREA AND PERIMETER WITH SPIKE ESSENTIAL

Creativity and robotics were used to explore the area and perimeter with LEGO Spike Essential. They started by sketching squares and rectangles, and calculated the dimensions. Then they designed, built and programmed a robot car to trace the shapes with precise 90-degree turns. Marker was attached to the Robot and programmed to draw and calculate. They strengthened their coding, critical thinking, and teamwork skills, making learning an interactive adventure. This hands-on experience helped them see math in action, connecting numbers, movement, and technology, excitingly!



POWER CAR

Students designed and built a power car using LEGO Simple and Powered Machines to explore the science behind force and energy. They experimented with different gear ratios, testing how they affect speed and pulling power. To put their creations to the test, they raced their cars up a cardboard ramp, observing the effects of gravity, friction, and kinetic energy. Using a stopwatch and measuring tape, they analyzed performance and refined their designs. This engaging challenge encouraged teamwork, problem-solving, and hands-on engineering, helping students connect physics concepts to real-world applications in transportation and mechanics.



FORCE THE CAR!

The thrill of racing met the power of physics as students designed and built LEGO race cars using the BricQ Essential Set. They launched their car using a spring-powered launcher, testing how wheel size affects the distance travelled. With stopwatches and measuring tapes, they recorded results, analyzed data, and fine-tuned their designs. The challenge culminated in an exciting team race, where students applied their understanding of force, motion, and energy in a fun, competitive setting. Through hands-on experiments, they strengthened their problem-solving, critical thinking, and teamwork skills, making science and engineering come alive dynamically and engagingly.



SPIKE TUG OF WAR!

The excitement of competition met the science of friction and force as students designed and built LEGO Spike Prime tug-of-war robots. Teams programmed their robots to pull against each other, testing the impact of balanced and unbalanced forces in a thrilling 60-second battle. By adjusting their designs and coding loops, they explored how friction and traction affected performance. The challenge sparked strategic thinking, problem-solving, and teamwork, as students refined their bots for maximum pulling power. Through friendly competition and hands-on learning, they gained a deeper understanding of force, motion, and programming, making physics both fun and interactive.



LEGO SOCCER MATCH

The thrill of soccer met the world of robotics as students designed and programmed LEGO Spike Prime soccer bots to compete in an exciting match. Using tablets, they controlled their robots in real time, adjusting their programs for passing, shooting, and scoring goals. A mini soccer field was set up with tape, where teams battled for victory while tracking goals and missed shots. After the match, they recorded and analyzed their results, creating bar graphs to visualize performance. This activity blended coding, physics, and data analysis with teamwork and strategy, making learning both engaging and dynamic.



WEEK 1: BOREWELL RESCUE MACHINE 2

This week, our Grade 6 students revisited their borewell rescue machine project using LEGO Spike Prime. They modified and redesigned their prototypes to address previous shortcomings, improving their understanding of simple machines. The highlight of the activity was successfully lifting a weighted block from a large pipe—symbolizing the rescue of a child from a borewell. This hands-on experience reinforced problem-solving skills, engineering principles, and teamwork.



WEEK 2: DISEASED CELL

In their science exploration, students delved into the world of diseased cells. They conducted research on various cell diseases and then digitally designed both healthy and unhealthy cells. To illustrate the impact of diseases, they created engaging animations, presentations, or videos showing how a disease affects a healthy cell and presented before the class. This activity helped them understand cellular functions and the importance of medical research in combating illnesses.



WEEK 3: MY 3D HOUSE

Bringing math and architecture together, students of grade 6 designed 3D models of houses based on architectural drawings. Through this project, they learned essential mathematical concepts like scaling, measurement, dimensions, shapes, ratios, and proportions. This activity not only enhanced their creativity but also helped them appreciate the role of mathematics in real-world applications like construction and design.

Each of these hands-on projects has helped students develop critical thinking, creativity, and a deeper understanding of STREAM concepts. We look forward to more exciting learning experiences ahead!



BIOMIMICRY BUILDING

Fascinating world of biomimicry was created by designing and building structures inspired by vertebrate animal shelters. They sketched drawings of their structures, incorporating natural design elements seen in animal habitats. Using Lego Community starter, Tinker CAD, and other 3D tools, they built structures and displayed them before the class and received valuable feedback from other students to improve it. This activity helped them understand how nature influences architecture and engineering, fostering creativity and innovation.



EV3 DRAWING ROBOT

In this activity students took their learning to the next level by designing an EV3 drawing robot that can draw. They programmed the robot to draw various geometric shapes, exploring different lines and angles and finally an art in the process. This hands-on experience not only enhanced their understanding of mathematical concepts but also allowed them to create unique artistic designs through robotics.



EV3 ULTRASONIC ROBOT - MAZE NAVIGATION

In this exciting challenge, students built and programmed an EV3 robot equipped with an ultrasonic sensor to detect range and blind spots to understand the sound waves. They then applied their programming skills to navigate the robot through a maze, demonstrating problem-solving, logical thinking, and an understanding of sensor-based automation.



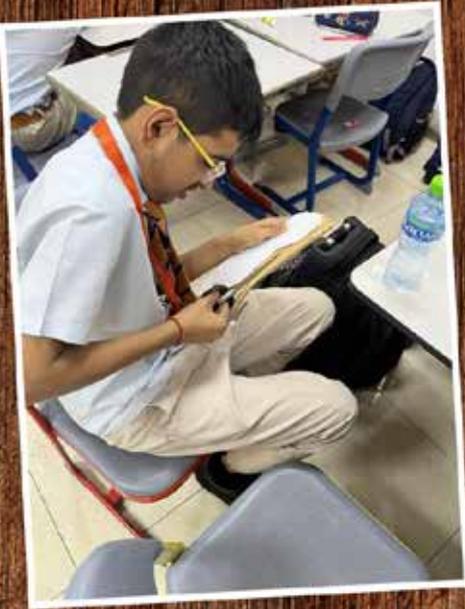
APP DEVELOPMENT - "HEALTHIFY ME"

Grade 8 students were introduced to Thunkable, an app development platform, and tasked with creating a user interface for their application, Healthify Me. They researched prevalent health and hygiene issues within their society, homes, communities, or schools. Using their findings, they designed mobile applications aimed at solving these problems. Each team of students presented their app prototype to the class, receiving valuable feedback for improvements. This activity enhanced their problem-solving, research, and UI/UX design skills



SNEAKER ENGINEERING CHALLENGE

Students took on an exciting sneaker design challenge, where they explored the world of shoe engineering. They researched various types of sneakers and their key features, such as grip, cushioning, durability, and comfort. Using available materials, they designed and built their own custom sneakers while applying mathematical and scientific concepts like scaling, measurement, friction, and material properties. This hands-on activity helped them understand how science and design come together in product development.



SHOE BRANDING AND SHOWCASE

The task continued with the creation of logos and brand names for their designs. To test their creativity and innovation, they showcased their sneakers to teachers across the school, collecting feedback and signatures. The team that received the most signatures was crowned the Best Sneaker Design Team. This interactive and competitive activity helped students develop marketing, presentation, and teamwork skills while celebrating their creativity.

