



مدرسة امباسادور
AMBASSADOR SCHOOL
INSPIRE INQUIRE INNOVATE



STREAMING FORWARD

June 2023

LET'S MAKE A STORY

There can be many stories behind one picture. Storytelling is an art that comprises creativity, language, innovation. This week the children came up with different stories based on a picture they were shown. They then build scenes with the Stories Tales Kit Lego Set and told their stories to their teammates. This week's scene included a horse carrying two children in a blue slide and a boy sliding in the snow. The children came up with stories such as the horse taking the kids on vacation around the world, the boy plucking apples from the tree in the snow and so on. They also gave the character their favorite names and backstories.



STORY SCENES

STREAM lessons transport to a lands of their imagination by building a story scene shown to them in the class. A scene that contained castles and horses was displayed on the Smart TV. The students enjoyed their story time about a castle that was the last standing in the town. They then replicated the scene shown to them exactly, thus getting move familiar with the Lego Story tales kit and improving their special intelligence. The students then had to improvise a story based on the scene they had built. They tried to guess who might be living in the castle, what other things might one find in the castle etc. The team that finished the story first was given stars.



THREE BILLY GOATS AND GRUFF!

Three Billy Goats and Gruff, a fun story for children to build. In this week's activity, the students built this story and had a lot of fun. Students watched the story on the smart TV and shared it to the class as well as the teacher. They then explored the story further, naming the characters and describing the scenes. They proceeded to build the scene exactly as shown on the screen. This activity helped students to explore color and shape of each block, select the exact block needed and place it correctly on the board. Further they build on this story and created other scenes from their imagination. Stars were given to the best teams for their designs and teamwork.



TRADING BRICKS

Trading globally gives consumers and countries the opportunity to be exposed to goods and services not available in their own countries, or more expensive domestically. The importance of international trade was recognized early on by political economists such as Adam Smith and David Ricardo.

A brief overview of trading and money through a video, followed by a demonstration of how to use the Lego cafe set for simulated transactions was a motivation to start off the session. Each child was given 5 random bricks, 2 coins and a printed card. They had to build the item on the printed card by trading their bricks or coins to other children in their team. There were 4 students in each team and the trading was dealt between them. The task had four rounds and in each round the amount of coins each child had, was documented. In these four rounds each student got a different item to build. At the end of the fourth round the student with the highest number of coins was given a star. This activity boosts their interest and enjoys learning with great fun!



DOUBLE UP

Introducing the concept of doubling numbers using STREAM method is easy to understand and students get the skill easily. The students were then given the Café Lego Set. The teacher demonstrated that the price also doubles as we double the bricks in an item.

Each group consists of a cashier and some consumers. The consumers were given a certain number of coins and told to trade it for bricks to build their favorite items. They practiced again with doubling number of coins and compared their results with other teams. This allowed each student to consolidate their knowledge and reinforce their understanding of the concept. Taking turns was ideal way to give opportunity for the students to play different roles, and helped them to do simple addition too.

Assessment helps to determine their understanding of the concept. The assessment consisted of several questions on doubling numbers using Lego blocks and counting the number of blocks they had before and after.



INTRODUCTION TO EARLY SIMPLE MACHINE

Machines are all around us and have been for a long time. In this activity, students observed and explored the Early Simple Machines Lego Set. Students observed simple things moving around them and how these movements were possible. They saw that the living and non-living things could move yet the way they moved were different. They discussed what made these motions possible, for instance, a car moves by the engines that turn the wheels, a plane moves with a different type of engine and air pressure, water moved due to difference in height and so on. Students had to replicate the machine they had seen around them. They explored the components and its working. This enhanced greater appreciation for technology around them. The class was well-executed and informative to learn and grow their knowledge of machines with Lego replicas. The hands-on approach allowed us to understand better the intricacies of machine operation and the vital role machines play in our daily lives.



LIVING AND NON-LIVING THINGS USING EARLY SIMPLE MACHINE

The students explored the world of moving things. They categorized these things into living and non-living things. Observing the world around them, the students noticed that things around them moved forward, backward, round, and so on. Students were introduced to use gears, axles, and wheels that provided movement to the machines. Students observed the human body and studied the different degrees of movement for each joint. The challenge was to apply the knowledge of machines to show movements in a living and a non-living as an example. It left everyone in an awe to understand how nature has created the organs to function coordinating millions of cells and organs to perform a particular function so smoothly.



HEXAGON, A SHAPE THAT NATURE LOVE!

Introduction to hexagon was done through a video. This provided the students with a clear and concise introduction to the shape, its unique properties, and real-world applications. Using Lego blocks they constructed hexagons. It is an opportunity to apply the number of sides and the angles that forms the hexagon. This task helped them to move from abstract representation of this shape to a concrete and hands-on approach.

Construction of hexagon helped to explore the different ways that it can be constructed using their angles and sides are relationship. Hexagons can be used to create more complex shapes and patterns using simple repetition. This exploration provides students with a greater depth of understanding and appreciation for the nature of the hexagon and its features.

Students described what they had created, and how they had constructed it. This allowed students to develop communication and descriptive skills, while also reinforcing their knowledge of the shapes.



PATTERNS IN PLANTS

Patterns in plants using Lego blocks demonstrated the efficacy of incorporating hands-on activities into academic instruction. By engaging in the exercise, students developed a greater understanding of patterns in plants like arrangement of leaves and flowers which improved their observational skills and critical thinking.

Educational video was used to show different patterns in plants. The students were assigned to work in teams, and each group was required to create one model of a plant's pattern to be it a leaf, flower or stem. They also discussed the need for these patterns in plants for photosynthesis, pollination and sustenance. The use of Lego blocks in the classroom serves as a valuable tool for educators striving to enhance student learning experiences.



SOME SPECIAL TREES

The STREAM class conducted on special trees aimed to introduce the students to the concept of plant biology and, more specifically, the mechanisms by which trees support their growth and development. Learning objective was to enable the students to gain a practical understanding of the roles of various parts of a tree, including the roots, stem, bark, and leaves, and its functions. A video on different types of plants was used for introduction. They saw what it means to be the biggest tree in the world. The word 'big' could mean a lot of things, it could be the heaviest tree, the widest tree, or the tallest tree. Example of the tallest tree the Redwoods found in California was shared with more examples.

A discussion was held on some special trees they have observed around them. The presentation was on different models that they built was shared with the groups with simple explanation. Building, organising, recalling and team work were the skills observed during the session.



EXOTIC FRUITS

Exotic fruits are those that are not commonly seen other than in their place of origin. Students had an amazing time exploring different exotic fruits from across the world. The class began with a video where they saw the 15 most exotic fruits around the world. They observed the shape, size, taste, color, and place of origin of these fruits. They noted down their preferred fruit and constructed it using the Lego Duplo Blocks. Students presented their model along with the details of the fruit with great enthusiasm and happiness. Assessment for discipline, teamwork, time management, and design was done during the session. The team with the highest point was given stars. Rest were motivated to do better.



WATER CYCLE ANIMATION

Water cycle shows the continuous movement of water within the Earth and its atmosphere, through the process of evaporation, condensation, precipitation and collection.

Using stop motion videos students were given an opportunity to create animated movies. The designed different processes of evaporation, condensation and precipitation in action using LEGO. They creatively used the LEGO bricks to make the landform, water bodies, clouds and the sun. Paper cut-outs were used to label each of the processes.

□ Directing the sequence of different processes ,capturing pictures using tablet using the Stop Motion Studio application was well applied. After some trial and error, they came up with impressive stop motion videos of the water cycle. Each team was truly excited and proud to present their creative work to the class . Appreciations ,applause and feedbacks made the teams happy.



LAYERS OF SOIL

Students explored the five different layers of soil through this activity. Students researched and gathered information about the layers of soil. The task was to design and explain the different layers of soil and prove how they are different from each other. LEGO bricks were used to demonstrate the project in groups.

Different colours of LEGO bricks represented each layer of soil, bedrocks at the bottom to the top soil. Then they added parent material above it, followed by subsoil, topsoil and humus differentiating each of them with their characteristic features. Each layer was labelled. The aesthetic value of the project was observed through the depiction of plants on the top.

Presentation was done in teams. Each student got chance to describe their role and the functions of each layer of the soil.



ENERGY EFFICIENT APPLIANCES

This activity was designed to help students understand the importance of energy efficiency and to design electrical appliances that use less energy. The students began the activity by learning about the different types of energy efficient electrical appliances that are available in the market. Brainstorm session helped to get ideas to design energy efficient appliances with few changes added to the existing. Using the LEGO Community Starter Kit students creatively designed very impressive energy efficient electrical appliances. Discussions were on the need to use energy efficient appliances and the star ratings. They had a lot of fun working on their models. Skill to plan, design and build, was observed in this task. Communication is the key skill along with presentation.



CHANGING STATES OF MATTER

A change of state is a physical change in a matter. They are reversible changes and do not involve any changes in the chemical makeup of the matter. Common changes of the state include melting, freezing, sublimation, deposition, condensation, and vaporization.

In this activity, students used the LEGO Community Starter kit and Stop Motion Studio application to create a stop motion video of the changing molecular arrangement in water when heat is applied. They started with showing the molecular arrangement in ice, gradually changing it to water and finally showing the arrangement in water vapour.

It was a simple way for the students to learn the structure of water. They saw how the molecules interact with each other, and they were able to create a visual representation of their learning. The project also helped the students to develop their creativity and problem-solving skills.



WEDO ADAPTATION PARK!

An adaptation is defined as a physical or behavioral feature of an animal that helps them better survive in their environment. In other words, an adaptation is something on their body or something they do with their bodies that help them find food, water, mates, and shelter.

Building a LEGO WeDo 2.0 animal robot offers an interactive and engaging way for students to explore the concept of animal adaptations and their importance for survival. Through hands-on construction and programming, students gain a deeper understanding of the diverse range of adaptations found in the animal kingdom and how these adaptations contribute to an animal's ability to thrive in its environment. This activity promotes creativity, critical thinking, and a deeper appreciation for the complexity and diversity of the natural world.



ADOPT A PLANT!

Applying engineering and design principles with Lego WeDo to construct a plant model offers an interactive and engaging way for students to explore plant adaptations and their significance for survival. Through hands-on construction and programming, students gain a deeper understanding of the diverse range of adaptations that plants have such as pollination, carnivorous plants, touch me not plant etc. to develop to thrive in their environments. This activity promotes creativity, critical thinking, and a deeper appreciation for the intricate mechanisms that allow plants to adapt and survive.

This activity gives an immense responsibility for students to care for plants and value them in nature.



MY ADAPTATION HABITAT

Exploring the characteristics features of plants and animals that enable their adaptation to specific habitats was made fun and easy using different STREAM resources.

. By designing and constructing Lego models of rare plants and animal features, students applied their creativity, problem-solving skills, and ecological knowledge. The collaborative nature of the activity fostered effective teamwork, communication, and critical thinking. Through presentations and discussions, students deepened their understanding of adaptation and its significance in the survival of organisms within diverse habitats.

Through research ,it enabled each of the student to know more features of rare animals and plants which strengthened their learning.



STATES OF MATTER WITH VINEGAR AND BAKING SODA

Beginning was with lot of fun and engaging quiz on states of matter. This project provided students with a hands-on opportunity to apply scientific concepts to real-world scenarios. Designing, constructing, and testing a car powered by the reaction between vinegar and baking soda allowed students to understand the principles of states of matter such as chemical reactions, gas generation, and energy conversion.

Through collaboration and problem-solving, the students successfully built a functional car that moved by harnessing the force produced by the carbon dioxide gas released during the reaction. The project not only fostered scientific knowledge but also enhanced critical thinking, creativity, and teamwork among the participating students.

This session gives an insight how career of chemical engineers can be perceived with experiments predictions, observations and conclusion.



SAVE THE MATTER

Pasco wireless temperature sensor probe was experiment to measure and compare temperature changes in different states of matter. By utilizing various materials such as ice, water, salt, aluminum foil, and paper, students examined the effect of temperature on changing the states of matter. This hands-on experiment aimed to deepen their understanding of how temperature influences the physical properties of substances and their transitions between solid, liquid, and gas states. This activity also promotes critical thinking, data analysis, and the application of scientific principles in real-world contexts.



ICE CREAM IN A BAG

Ice cream is something that practically everyone, especially children, enjoys eating. In this project, students had a hands-on opportunity to investigate the changing states of matter while producing ice cream. Students in groups studied and developed a recipe for manufacturing ice cream in a bag, and then tried creating it by following the recipe and method, with some teams succeeding and others having the opportunity to evaluate and make improvements. Overall, the exercise was a success since the children enjoyed creating ice cream in class. Students got a better grasp of freezing and melting processes by conducting scientific investigations and making observations. The experiment encouraged critical thinking, data analysis, and communication skills while also allowing students to directly interact with scientific notions of states of matter.



RESPIRATORY SYSTEM MODEL

The human respiratory system mainly consists of the nose, lungs, trachea, bronchi and diaphragm. Students created a model of the human respiratory system. Students researched and explained the working of the respiratory system.

Plastic jar, three balloons, one large and two small straws were used to construct the model. They used one balloon at the bottom of the jar to represent the diaphragm, a muscle that contracts and expands to help us breathe. Two balloons inside the jar were connected to two small straws separately. They represented the lungs, which is filled with air when the diaphragm contracts, and deflate when the diaphragm relaxes. The small straws, which represented the two bronchi, were connected to a large straw within the jar. The large straw was used as the trachea.

The students could understand the functions of diaphragm expanding and contracting just like our lungs, as they pulled down and released the diaphragm balloon.



GRAVITATIONAL FORCE WITH EV3

The acceleration due to gravity is a fundamental constant of nature that is important for many areas of physics and engineering. It can be determined by measuring the time it takes for an object to fall a certain distance.

Students researched the concept of gravitational force and acceleration due to gravity (g). In groups they built and engineered a drop tower robot using the LEGO EV3 kit. A motor, controlled by a touch sensor, a metal ball was used in the building. The free fall of the ball was designed using the robot. The robot was programmed to display the time (t) and distance. Using mathematical formula of motion ($S=1/2*g*t^2$) they calculated the acceleration due to gravity. The gravitational force was also calculated using the equation $F= m*g$.

Teams were vigorously involved in research, construction and calculation of acceleration. This made them understand the engineering process. With steady and focused understanding it becomes easy and fun learning.



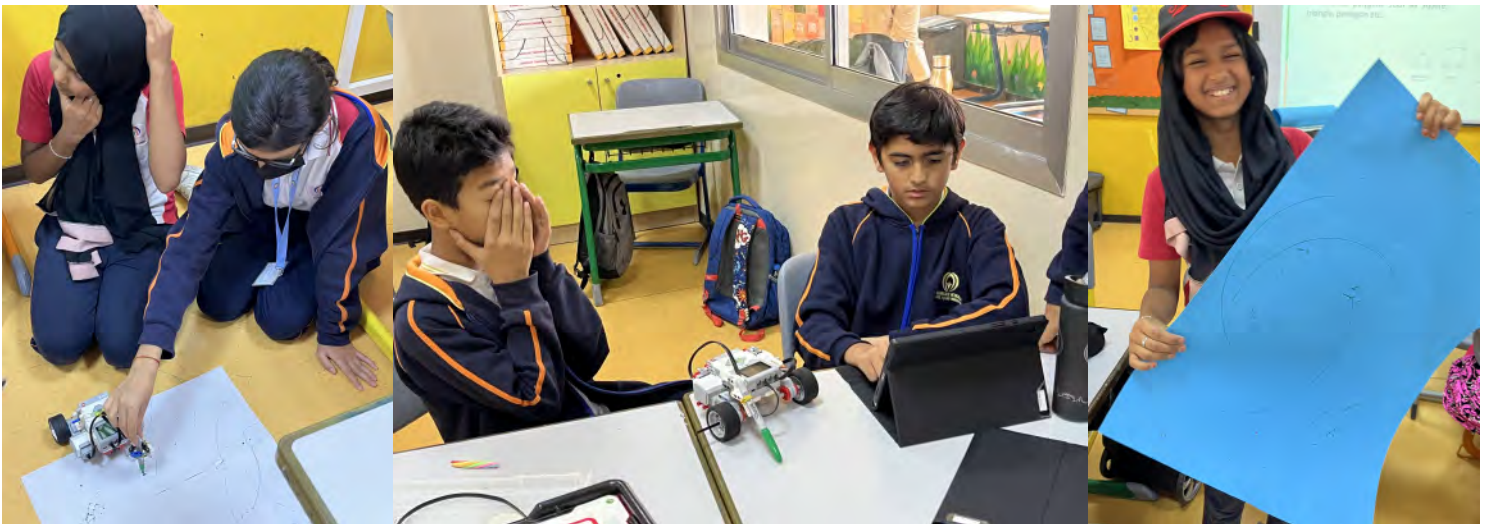
ACCELERATION WITH EV3

The drop tower built was brought to action using the EV3 programming application. Students brainstormed the logic and algorithm required to operate the drop tower. They programmed one touch sensor to rotate the motor once, letting the ball to fall freely. Another touch sensor was programmed to stop the timer, for measuring the time taken of the falling ball. ($S=1/2*g*t^2$) was the formula used to calculate acceleration due to gravity. Formula $F= m*g$ was also applied in the calculation. Teams were vigorously involved in research, programming and calculation of acceleration. This made them understand the engineering process. With steady and focused understanding it becomes easy simple and learning fun.



THE POLYGON ARTS!

EV3 robot is used to demonstrate artistic expression. Through coding it provides students with a unique blend of technology, creativity, and geometry. Individual teams programme the robot to draw different shapes using lines and angles. Students enhance their coding skills while exploring the visual appeal of geometric compositions. This activity fosters critical thinking, problem-solving, and an appreciation for the amalgamation of art and technology. The designs are unique and can be created in various ways to match the interest of individuals.



HEALTH AND HYGIENE!

Implementing engineering and programming concepts to improve health and hygiene using the Lego EV3 Kit provides students with a hands-on, multidisciplinary learning experience. Students designed and built a LEGO EV3 model that promotes health and hygiene. Automated hand sanitizer, an electric toothbrush and a floor cleaner are exemplary work done. Students get a complete grasp of the importance of health and hygiene routines in sustaining overall well-being .

Building and programming innovative models exemplifies these behaviors. This method encourages creativity, critical thinking, and a greater understanding of the convergence of engineering, programming, and personal health and hygiene. This definitely prepares our ASD students with 21st Century skills.



HEALTH AND HYGIENE - 2

The Lego EV3 Health and Hygiene Machine exercise engaged students in applying engineering concepts and creativity to promote health and hygiene habits. The emphasis in this exercise was on testing, modification, and presentation of the model designed.

Learning and re-learning with effectiveness was amplified with this task. Students tested the machine and then adjusted with improvement to build problem-solving abilities and the capacity to effectively articulate their ideas. This hands-on exercise encouraged critical thinking and teamwork while showcasing the capabilities of technology in tackling health-related issues.

The scope for skills necessary for engineers, pharmacist, doctors and health workers are developed through this project.



BUILD THE BRIDGE!

Bridges are landmarks that define the identity of towns and cities, and a source of civic pride for the people who live there. So, it's important that bridges are not just functional but also elegant, pleasing to look at and welcoming.

Design and construction of truss bridges using paper and knowledge of shapes provides students with a tangible experience in structural engineering. By testing the strength and stability of their bridges using weight blocks, students gain insight into the principles of load-bearing structures and the importance of design considerations. This activity promotes critical thinking, problem-solving, and an appreciation for the role of shapes in creating stable and functional bridges. The students engineering skills was observed by their building and materials they used for the construction.



ENERGIZE THE CAR!

Non renewable raw materials are considered those whose consumption rate is much higher than their regeneration rate. This is the case of fossil fuels such as coal, oil, or natural gas. Over time nonrenewable resources were the main sources of energy, the reserves of fossil fuels will be depleted within 50–100 years

Students gain a practical understanding of energy conversion and transfer by constructing a solar car using the Pitsco Solar Car Kit. By engaging in hands-on construction and observation, students explore the principles of solar energy, electrical energy conversion, and the transfer of energy into mechanical motion. The activity aims to enhance students' comprehension of energy concepts and promote sustainable energy awareness. The application of critical thinking skills is while they use the energy conversion methods to increase and store energy in different forms. The collaborative effect brings the best in each of the students in a comfortable environment.

Its always encouraging to see students strengthening their innovative skills through STREAM sessions.

