



SNAPSHOT OF
Creya'tors
@ Work





Early steps in

ROBOTICS



UNIT: INTELLIGENT ROBBIE

In this module, students collaborate to construct a robot named Robbie. They also develop and implement programming to enable Robbie to perform various tasks and respond to commands.

Project: Obstacle Detector

In this project, students will program the rover to identify obstacles using the switch sensor and program Robbie to do 'U' turns when an obstacle is detected.



Project: Line Follower

In this project, students will program the rover to follow a designated path, utilizing sensors and algorithms to maintain its position within the given line while adapting to environmental changes.

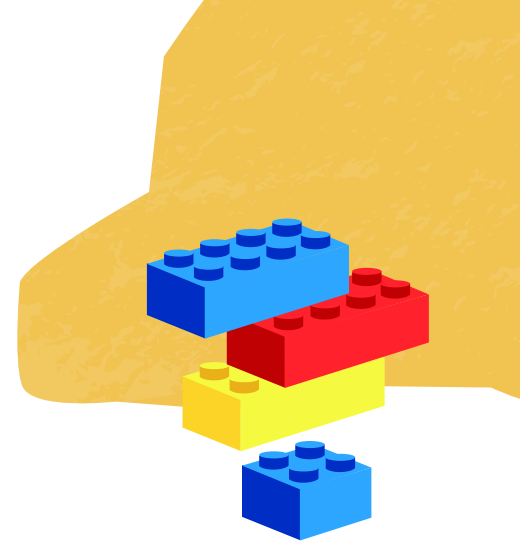
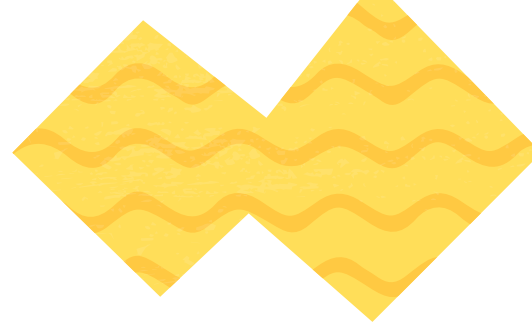
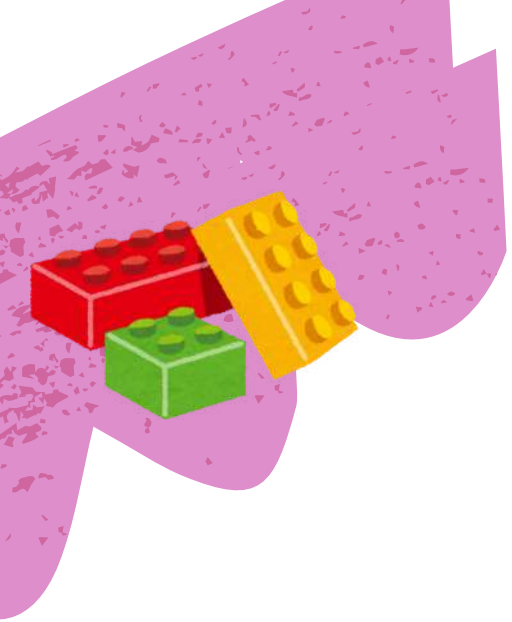


Unit: Intelligent Robbie

Capstone

Students are challenged to move Robbie turn around and have the bumper-pressed to teach your rover to move left or right when it hits something





From

BRICKS

to Masterpieces



UNIT: SCIENCE OF BUILDING

In this module, students build some interesting structures that are famous constructions from different parts of the world. Students build simple structures like cantilevers to more complex structures, such as the pagoda.

Project: Cantilever

In this project, students learn about and build a cantilever. They also attempt to test the strength of the cantilever built by placing a heavy object on it.



Project: Arches

In this project, students build a simple corbelled arch with Bricks.

Unit: Science of Building



Project Journal: Arches

A sample of reflective questions students answered after building their Arches.

Science of Building

Arches

P 2:

project, you will learn about different types of arches. You will build a corbelled arch.

ved structure that goes over an opening is called:

ost ☐ Lintel ☒ Arch ☐ Bridge

belled arch:

ises two cantilevers that meet at a central point.

ises two posts that do not meet.

as never been used.

ises many smaller arches to make one large arch.

our arch support the heavy book/object? *yes It supported my book*

is a corbelled arch?

on two cantilevers meet at one point they become one corbelle

Unit: Science of Building

Science of Building

Arches

P 2: Jo

Sketch a corbelled arch.

Arches

Excellent

Project: Pagoda

A pagoda is a levelled tower with projecting roofs. In this project, students build a three-tiered pagoda with bricks.



Unit: Science of Building

A sample of reflective questions students answered after building their project Pagoda.

Science of Building

Pagoda

P 6 Jo

In this project, you will be building a three-tiered pagoda with bricks.

Pagoda is a place of worship.

True ☒ False

Pagodas consist of tiers

True ☒ False

Pagodas are derived from

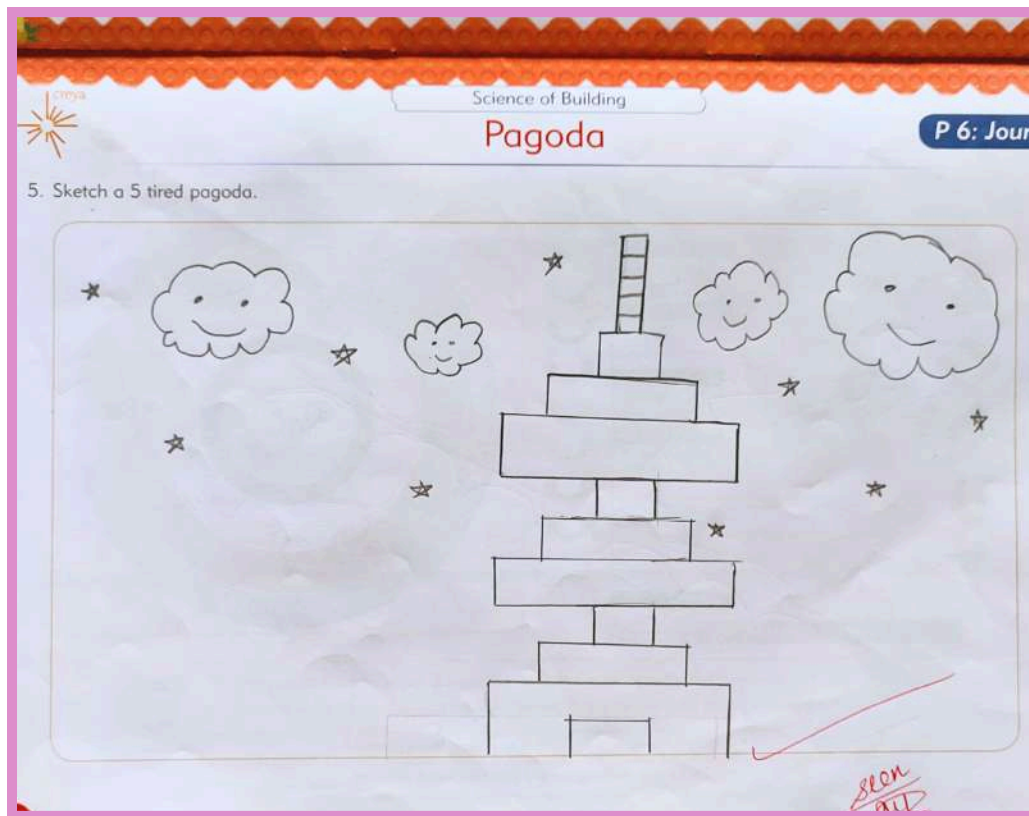
Stupa ☒ pyramid ☐ Arch

Do you find any similarities between a pagoda and a pyramid? If yes, what is it?

Yes both are having apex.

Project Journal: Pagoda

At the conclusion of the module, students engage in reflective questions aimed at assessing their soft skills like teamwork, communication, presentation, and overall enjoyment of the learning experience.



Unit: Science of Building

LEAP REPORT

I AM! During this module, I displayed these skills.

I am many things and earning things. I am a Meerkat	I listened carefully and followed instructions. I am an Attentive Cheetah	I shared things with my friends. I am a Sharing Crow	I finished my work on time. I am a Punctual Whale	I helped my friends when they needed me. I am a Helpful Ant	I was open to doing any given task. I am a Flexible Chameleon	I was not afraid of making mistakes. I am an Adventurous Lamb
☐	☐	☐	☒	☒	☐	☒

MY FRIENDS SAY I AM!

Names	Which animal am I?
Aarathya	punctual whale
Sanchal	Helpful Ant
anishka	Adventurous Lamb

seen

A sneak peek at Brick Bonanza!



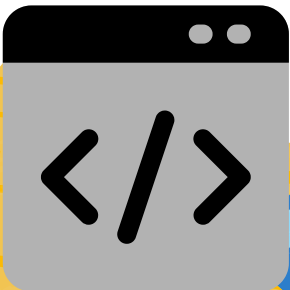
A group of students are working on various projects like Cups, Bar graphs, and Cantilevers from modules Reduce, Reuse, Recycle, And Science of Building, And Your Bricks are Numbered.



start

CODING

from Scratch



stop

UNIT: START WITH SCRATCH

In this module, students are introduced to the app Scratch Junior, on which they learn commands to create simple animations involving giving titles, movements and motions, triggering animations using conditions, introducing new characters, selecting different backgrounds and scenes, jumping, appearing, vanishing and much more.



Project: Who Am I?

In this project, students experiment with Scratch Junior commands to perform some simple movements in the four different directions of left, right, up and down in the animations.



Project: Abracadabra!

In this project, students will create animations learning to control timing and effects. They will develop engaging scenes that introduce key programming concepts while sparking their creativity through visual storytelling.



Unit: Start with Scratch

Capstone

In this project, students will program a digital relay race with four unique characters, competing to pass the baton and complete the race on-screen first.





Tyker

CODING

for Gaming



UNIT: DRAGON TOME

In this module, students will create an animation that will depict an old story about a dragon and its rider using various block coding commands. They will work with actors that can perform a lot of actions based on user interaction which are analogic to human actions which will include movements.

Project: Dragon Tome

In this Project, students will make an animated story about a dragon and its rider, which perform actions analogous to humans using commands on Tynker.



Project: Dragon Tales

In this project, students will complete the story that was started in the previous project. Students improve your animation to include lot of movements and maneuvers, changes in body size etc.

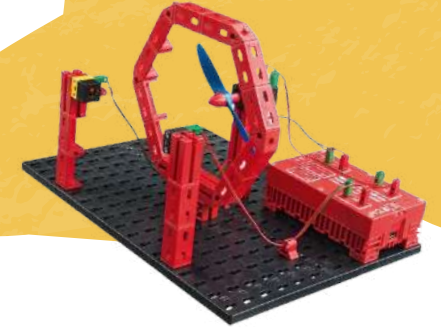
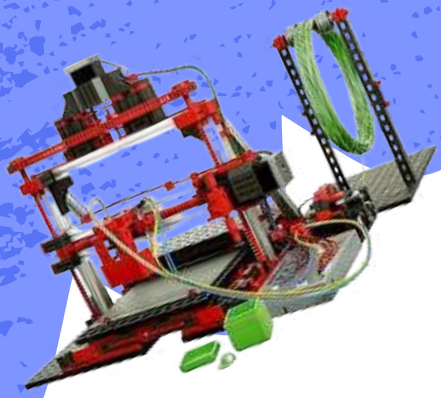


Unit: Dragon Tome

Capstone

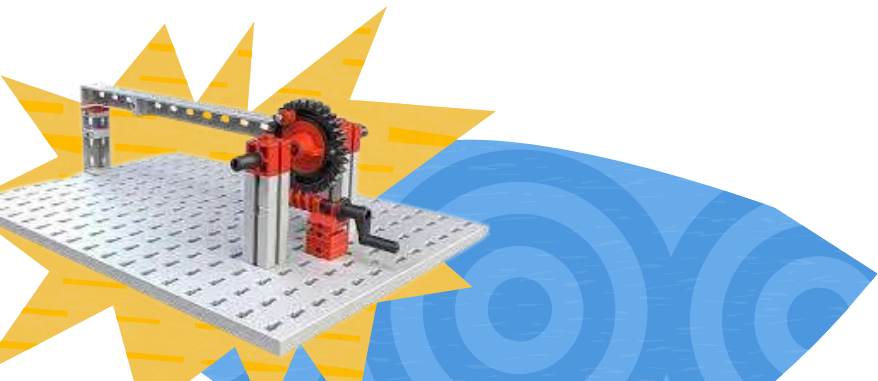
In this project, students will create an engaging and informative animation on the four seasons, with the potential to be featured in the Ministry of Education's digital resource library for under-resourced schools.





Innovation through

ENGINEERING



UNIT: PULLEYS AND WHEELS

In this module, students build two simple machines. In the first project, they build a Pulley frame to understand how a pulley system works. In the second, the students build a cart and its launcher to gain insights into how forces are used in the movement of an object.



Project: Pulley Frame

In this project, students build a frame and experiment with lifting a weight with a single pulley system. Also, compare it to lifting weight with multiple pulleys and a block and tackle system.



Unit: Pulleys and Wheels

Project Journal: Pulley Frame

The Pulley Frame project was completed, and students answered reflective questions about their experience. A snapshot of their responses is provided below.

creya Date: 4-8-2023

PULLEYS & WHEELS PROJECT 1: PULLEY FRAME

In this project, you will build a frame and experiment with lifting a weight with a single pulley system. You will compare it to lifting the weight with multiple pulleys, and a block and tackle system.

1. Calculate the length of the string that you have to pull to lift the weight 10 cm from the base. Write your answer in centimeters.
The length of the string that you use to pull up the weight should be close to 20 centimetres.
2. Repeat this exercise with the string passing through just one pulley.
What is the length of the string that you have to pull to lift your weight 10 cm from the base? Write your answer in centimeters.
The length of the string that you use to pull up the weight should be close to 10 centimetres.
3. Lift and drop the weight several times. Reattach the string so that it is connected to the weight and then goes over just one of the frame's Bearing Sleeves. Lift and drop the weight several times again. Which seems easier?

Single Pulley: ☐ Block and Tackle: ☒
4. Which system used a greater length of string?
Single Pulley: ☐ Block and Tackle: ☒
5. Which system required a greater amount of force?
Single Pulley: ☒ Block and Tackle: ☐
6. Why was it easier to lift the weight using the block and tackle compared to lifting the weight using one pulley?
The block and tackle cut down the force applied $1/4^{th}$ of the total as there are two pulleys, so the string passes four times over those. As the string passes over 4 pulleys, it is divided into four parts. The weight is equally distributed along the points of the string. The block and tackle pulley system reduced weight by four times. So, lifting $1/4^{th}$ the weight was easier with the block and tackle system.

Project: Cart and Cart Launcher

In this project, students build a cart and cart launcher, conduct trials, and record distances.



Project Journal: Cart and Cart Launcher

In this project, students are introduced to wheels and axles. A model of Cart and Cart Launcher is made. A sample of reflective questions answered by students is shown below.

PROJECT 2: CART AND CART LAUNCHER

In this project, you will be introduced to the concept of wheel and axle. You will build a model of a cart and cart launcher.

1. Which version of the cart will roll farther? Explain why.

The wheeled version of the cart will roll farther as it has got wheel and axle as its source of movement. It reduces friction hence increasing the distance travelled.

2. On a smooth surface, launch the wheeled cart and sled three times each using the cart launcher. Measure and record the distances using a ruler or tape.

Wheel	Distance	Sledge	Distance
W1	76.38 cm	S1	34.5 cm
W2	63.25 cm	S2	68.27 cm
W3	53.21 cm	S3	89.35 cm

3. Draw a bar graph recording the results of your three trials the wheeled cart and sleds. The axes may be the trials and distances traveled.

4. Can you think of any situation in which the wheeled cart and sled without wheels will travel the same distance? Explain in your words.

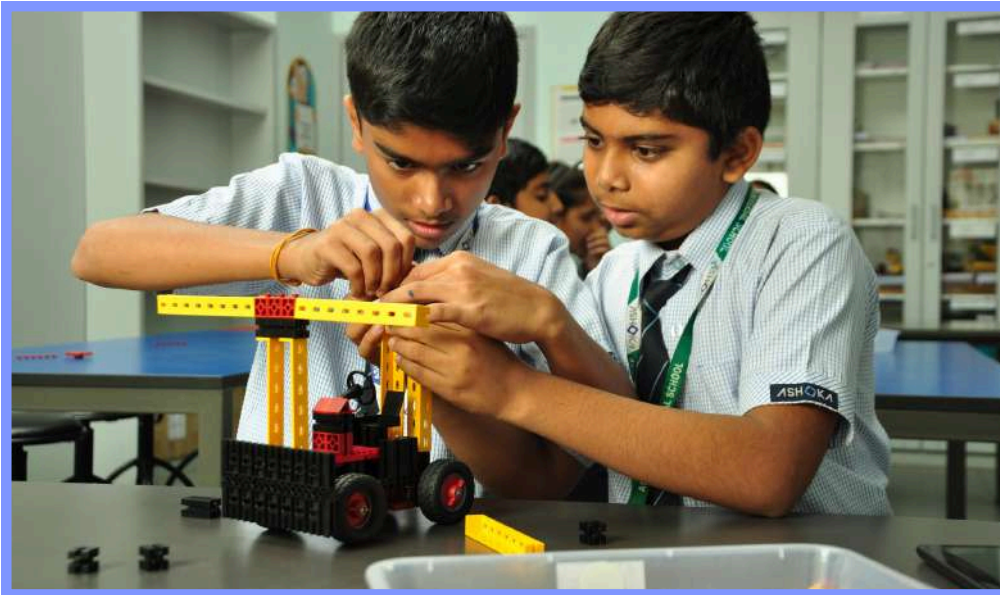
A situation where there is friction or air resistance. The advantage of wheel is become in such circumstances.

Unit: Pulleys and Wheels

Capstone

In this capstone project, students will design and build a message-passing system, to communicate across the room.

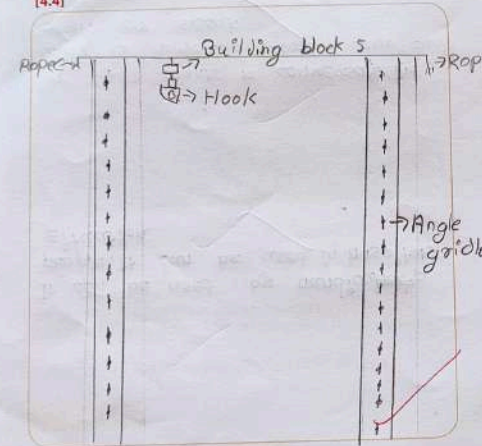




Unit: Pulleys and Wheels

Prototype

5. Sketch the model that you are planning to build and label the parts. [4.4]



6. Write down the list of materials that you think you will need to build your machine.

12 pulleys, 4 gears, 6 clip axles,
4 cranks with bore, string half
meter.

Build

Create

Execute



Define

1. Who is the user you are addressing in this capstone? [1.1]

Hint: In what situation will your transportation system be used?
For example, in a hospital to transfer prescriptions

It can be used by handicapped people. It can be used in hospitals situation.

2. What is the need of the user? [1.1]

The user wants to converse. The user is handicapped person who can't walk or speak.



Ideate

3. What are the constraints that you need to keep in mind while building your system? (for e.g., it could be a hospital where reports are transmitted from one office to another) [1.2]

The capstone project should help people who are handicapped to speak by text msg. so, our project should have a A.I. robot inside the box or the user will have to write and send msg.

4. What engineering assemblies are you going to use to build your machine? [1.2]

We are going to use wheels, axles and gear machines.

7. What improvements do you think your model needs?

Our project has automatic rope way, if you pull from on right side room, then the parde will go to the right side room, same with the left side. Rather than pulling we will attach an A.I. button.



Reflect

8. Where else do you think it is may be required to transport messages across a room?

We can use it in malls, super markets and big buildings where people have to send msgs.



Innovation in pocket

APP DEVELOPMENT



UNIT: HELP THE NEEDY

In this module, students will develop an app specifically designed to assist specially-abled individuals. They will focus on accessibility features, user-friendly interfaces, and innovative solutions to enhance daily living and communication.



Project: Text To Speech

In this project, students will create an app that enables speech-impaired individuals to communicate effectively. The app will utilize text-to-speech features, symbol-based communication, and user-friendly interfaces to enhance interactions.



Project: Guide The Dog

In this project, students build an app that will guide the Visually Challenged person to detect the obstacles while walking.



Unit: Help The Needy

Capstone

In this project, students will develop an app to assist specially-abled individuals, promoting independence and dignity by addressing accessibility challenges using learned concepts.





The Magic of **3D DESIGN**



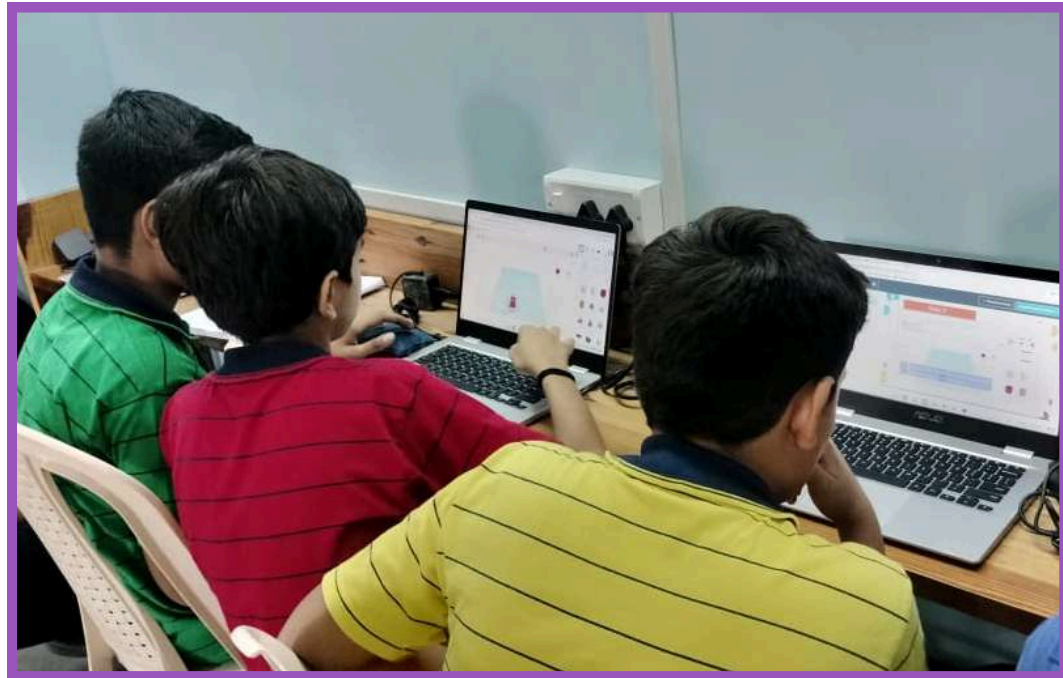
UNIT: ANCIENT WAR MACHINES

In this module, children will design and build simple movable war machines like siege towers, battering rams, and ballistas. They will research war machine history and explore the science and engineering behind them, designing objects that mesh together as a single 3D-printed model.



Project: Battering Ram

In this project, students will design a functional model of a battering ram, exploring its historical use in breaking fortifications. They will apply engineering concepts to create a sturdy and effective siege weapon prototype.



Project: Seige Tower

In this project, students design a functional siege tower model, simulating its use in historical invasions. They explore engineering principles, structural stability, and movement mechanisms essential for an effective siege weapon.

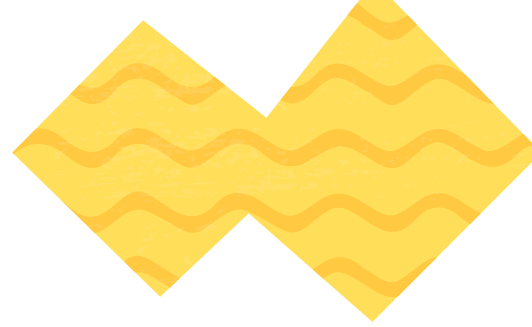
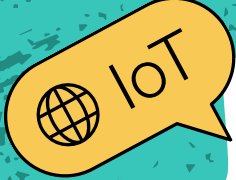


Unit: Ancient War Machines

Capstone

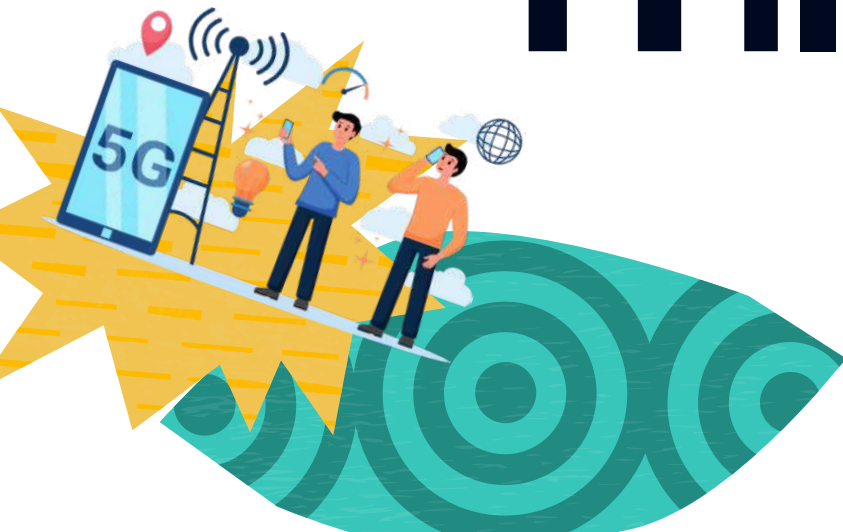
In this capstone project, students will design a machine capable of defending city walls, to create an impenetrable barrier against attacks.





Smart solutions with

INTERNET OF THINGS

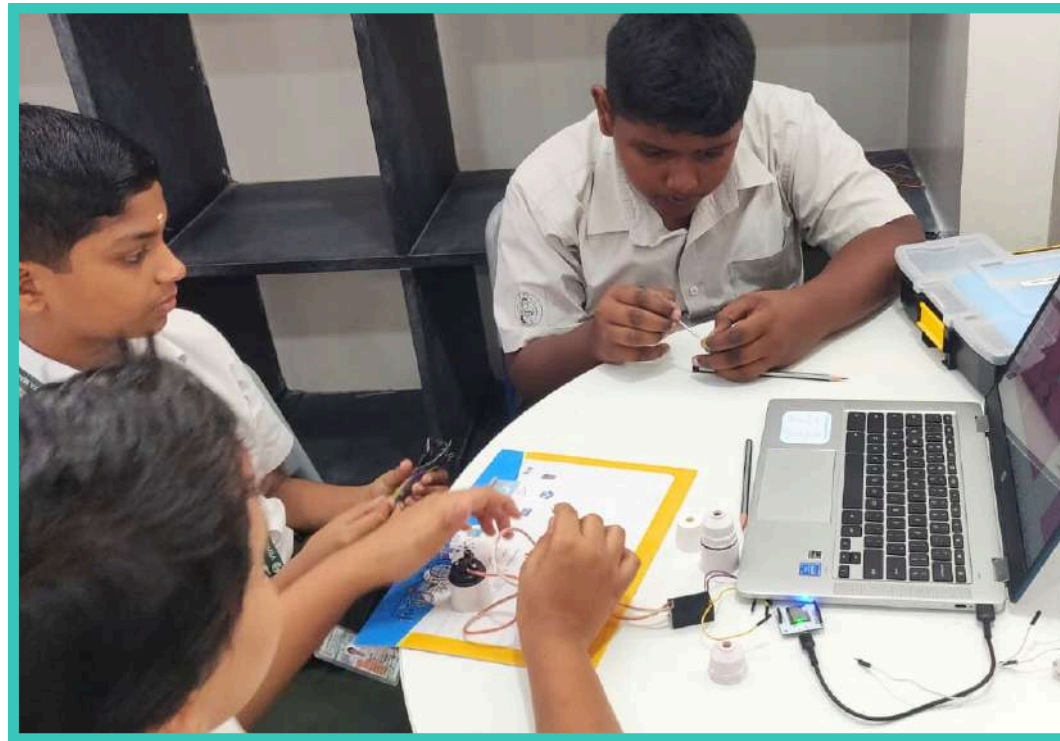
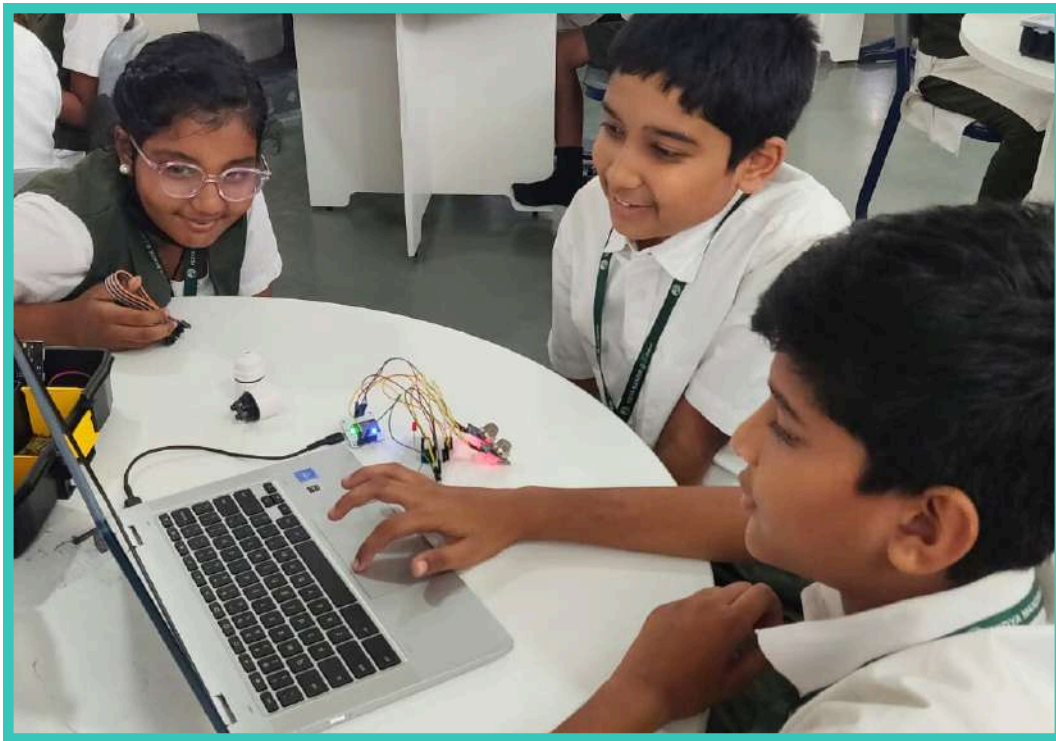


UNIT: MAKE IT SMART!

In this module, students build IoT circuits using smoke and temperature sensors to create smart rescue systems. They understand the real-time application of these sensors and further apply the learnings in the Capstone.

Project: Temperature Alert

In this project, students build a circuit and write code to trigger an alert when the temperature exceeds a set threshold.



Project: Smoke Alert!

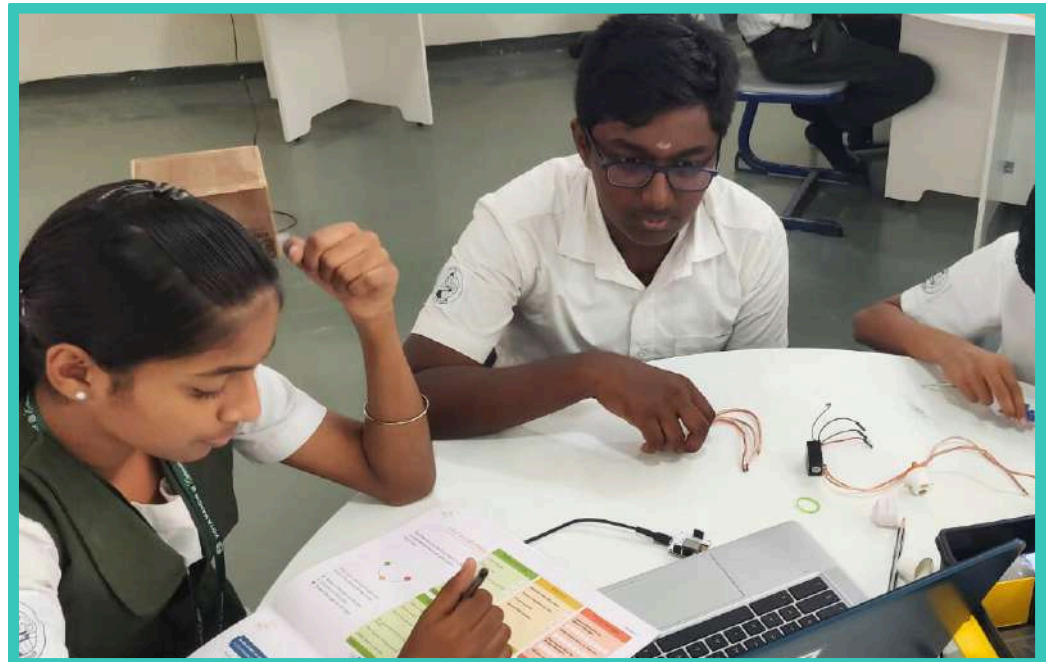
In this project, students will design a circuit and develop code that activates an alert system when smoke is detected. They will learn about sensor integration and coding for real-time monitoring.

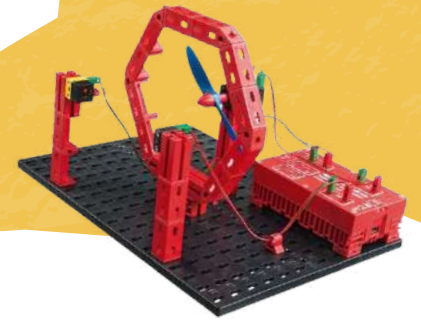
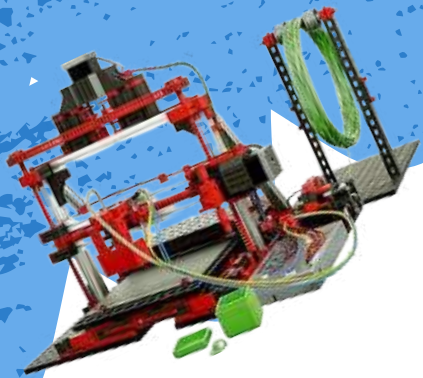


Unit: Make It Smart!

Capstone

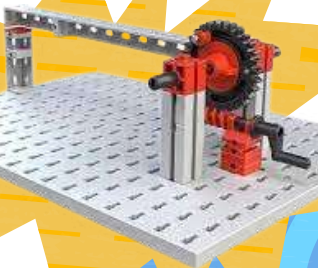
In this project, students will design a circuit and write code to activate an alert system when smoke is detected, enhancing safety and monitoring capabilities.





Building with the power of

ROBOTICS



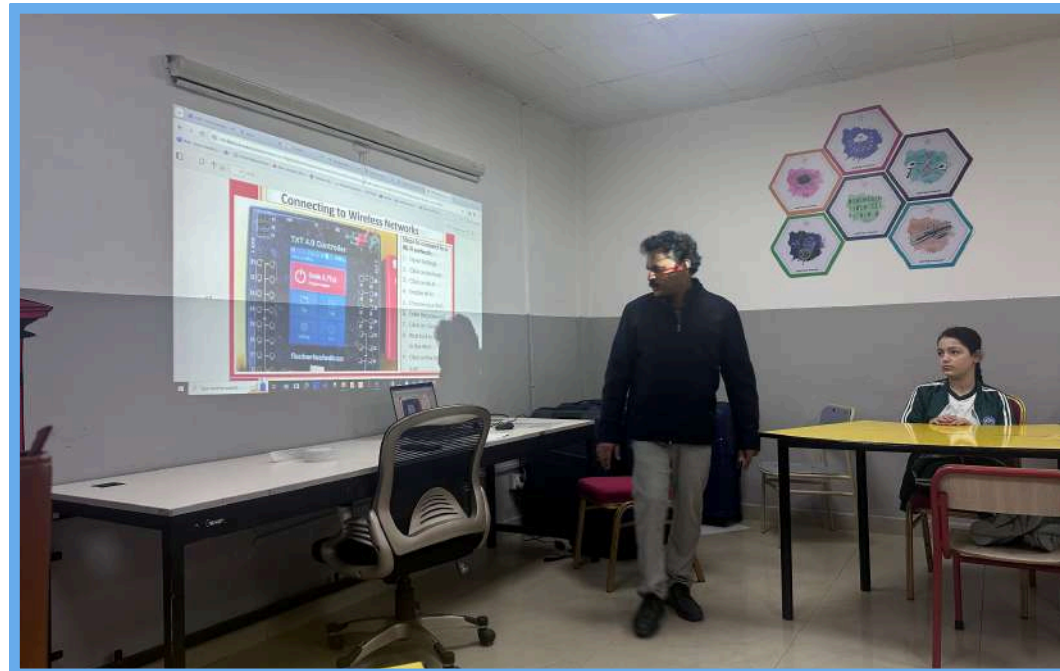
UNIT: SENSOR MOTOR INTERACTIONS

In this module, students build a Wheeled Rover and program it thereby understanding the mechanics behind wheeled robotic vehicles and programming.



Project: Build the Explorer

In this project, students will design and construct a two-wheeled rover. They will explore concepts such as motor control, and sensor integration to enable the rover to navigate and perform tasks efficiently.



Project: Line Follower

In this project, students will build and program a line-following robot. They will use sensors and coding to enable the robot to detect and follow a designated path or line autonomously.



Unit: Sensor Motor Interactions

Project: Edge Avider

In this project, students will program sensors to detect edges or boundaries, enabling the robot to avoid bumping the surfaces and navigate safely.



The Future is
**ARTIFICIAL
INTELLIGENCE &
COMPUTATIONAL
THINKING**

UNIT: Artificial Intelligence

In this module, students will use multiple web applications to create multiple AI-based games and applications. They will use the AI engine to detect hand motion, gestures, colors, emotions, and objects in text and images and learn to link them to the desired outcomes through programming.

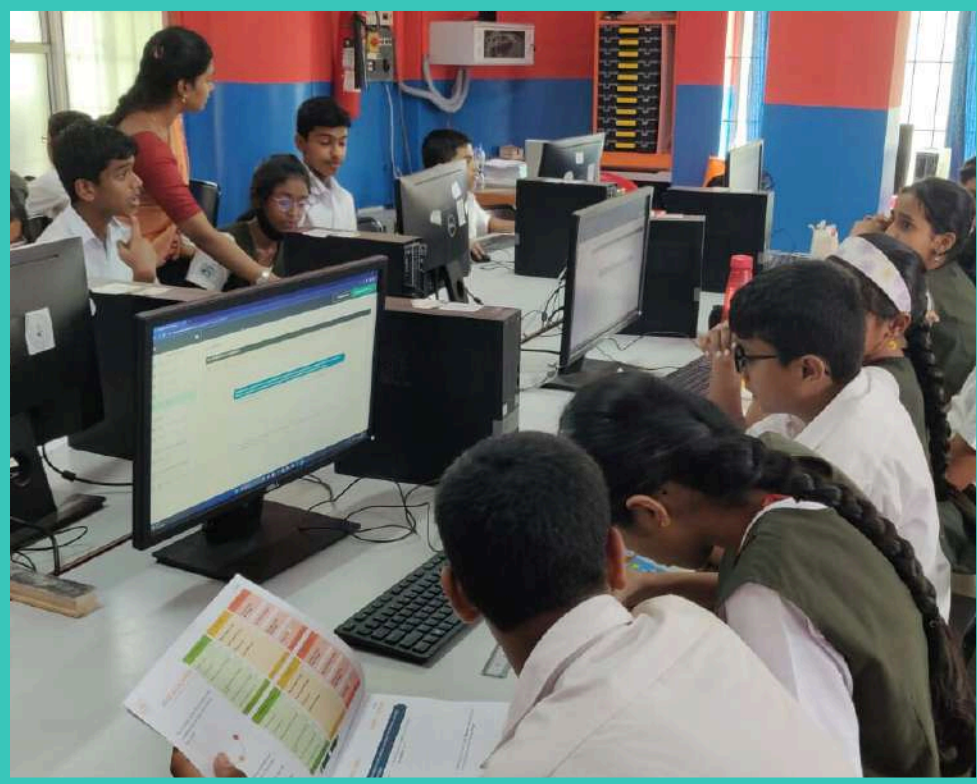
Project: Nary Understands

In this project, students will develop an AI application that can analyze human emotions from text input. They will explore natural language processing and sentiment analysis to create a tool capable of understanding emotional tones.



Project: Flappy Bird

In this project, students will create a system that detects hand movements to control a bird in a game. Using motion detection, they will program the bird to flap based on the player's hand gestures.



Unit: Artificial Intelligence

Project: Music On

In this project, students will build an application that plays music based on video motion. By using motion detection, they will explore how to trigger sounds and control music through physical movements.





Coding with

PYTHON



UNIT: DATA STRUCTURES

In this module, students will explore Python projects focused on dictionaries, tuples, and sets. They will also implement the map function to manipulate and transform data, enhancing their problem-solving and coding skills.



Project: Tuple and Set

In this project, you will learn about the data structures “Tuple” and “Set”. You will learn how to create and store data in a tuple and a set. Further, you will learn the different methods that can be performed on a tuple and a set.



Project: Dictionary

In this project, you will learn about a new data structure called Dictionary. You will understand and learn its uses and the different methods that can be performed on it



Unit: Data Structures

Project: Map() Function

In this project, we will learn about the “map() function” and special functions called “lambda” which help us to operate custom functions on data structures easily.



DIGITAL MEDIA

in Motion



UNIT: MEGANIMATOR

In this module, students understand good photography techniques, including frames and shot angles, basics of stop-motion animation. They also get introduced to basics of storytelling and learn to create storyboards. They will end with ideating for a stop motion film, taking, processing and editing photos to make an original stop motion film.



Project: Stop Motion

In this project, we will be introduced to Stop Motion films and how to make them using the Stop Motion Studio App. Along with this, we will also learn how to take pictures for the Stop Motion Animation.



Project: Animation Tricks

In this project, we will learn some animation tricks which are used to reproduce certain actions in stop motion animation.



Unit: Meganimator

Project: Stories and Story Boards

In this project, we will learn about the elements of a story and how to create a storyboard for the smoother direction of the animation.





Inspiring to Innovate

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