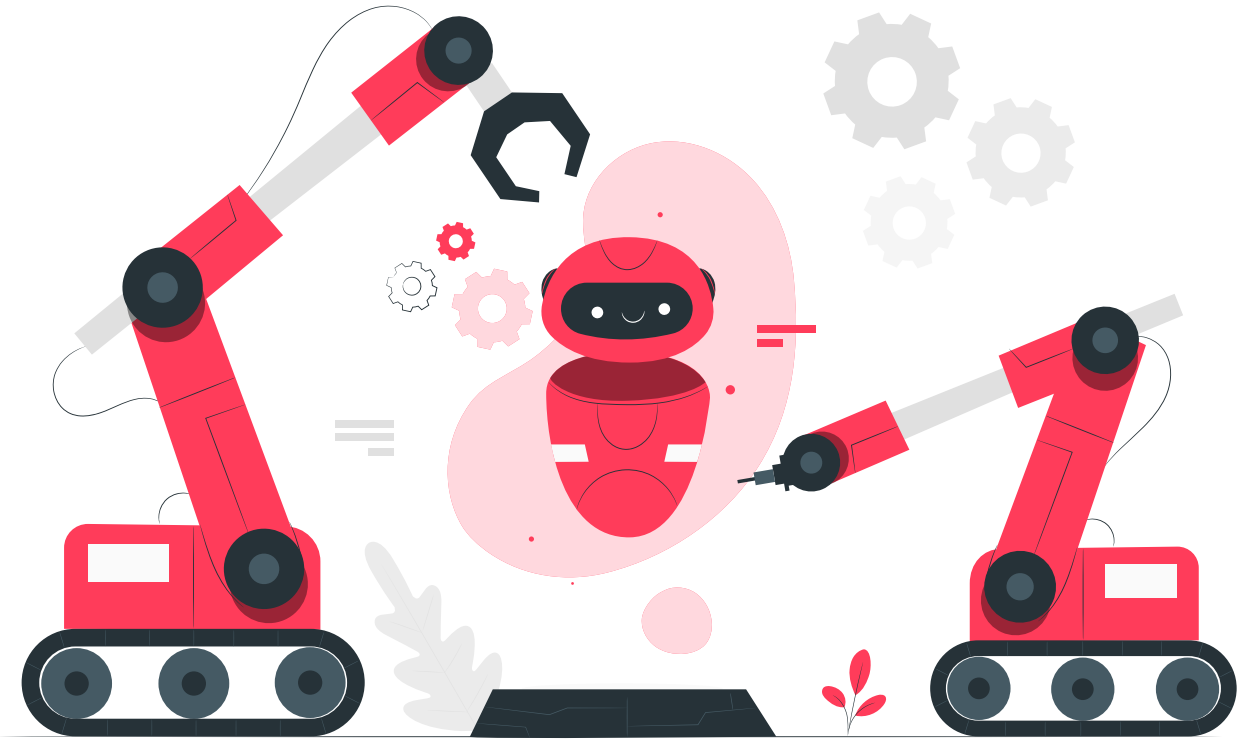
REAL SCHOOL

Machines & Robotics

Robotics Bootcamp

Online. Real-time. Futuristic



CONTENTS

» About the Program

» Goals you can accomplish

» Benefits of the program

» Meet RAMA, your companion!

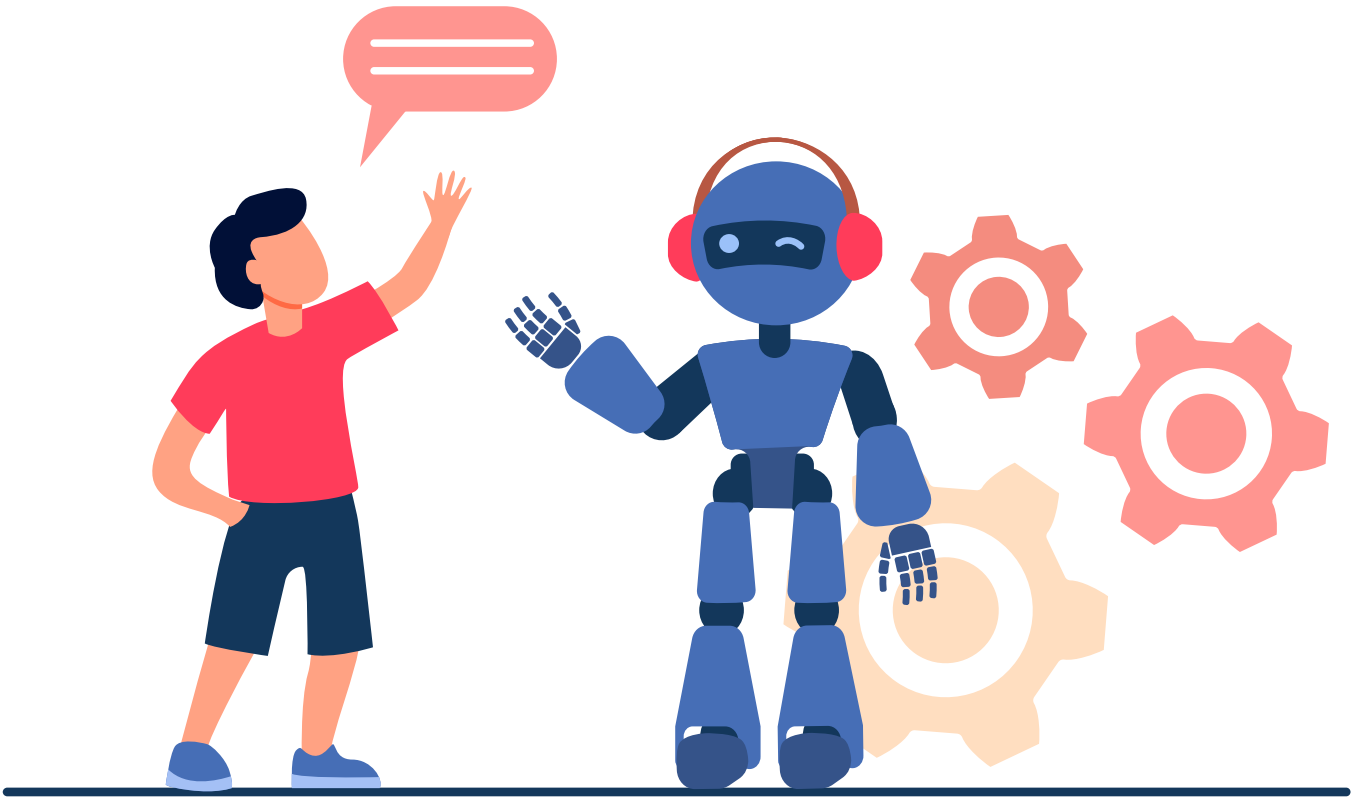
» What do we cover

» The developmental roadmap

» Parent testimonials

» Classroom Experience

» Real School Philosophy



About the Program

The Robotics Bootcamp is an exhaustive program that takes you through the anatomy of a Robot right from the basics of motors, to sensors to the logic board including the programming and the user interface and application of these bots.

This program is designed to make a kid understand about the Real-life problems and challenges and how to solve them with the help of Machines and Robotics.

Goals you can accomplish

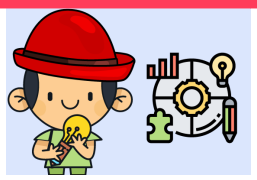
Real-world challenges are unpredictable and demanding. Super expertise in just one area will do more harm than good. For this reason, each of the Real School programs takes your kids through a range of critical and complementary skills and knowledge domains. This guarantees a holistic development.

Mathematician

10%

10%

Logician



Machine Specialist

10%

5%

Project Manager

Mechatronics Expert

30%

Automation Engineer

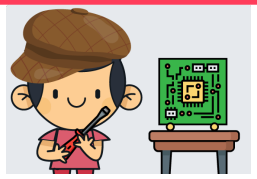
5%

IoT Systems Specialist

10%

10%

Circuit Specialist

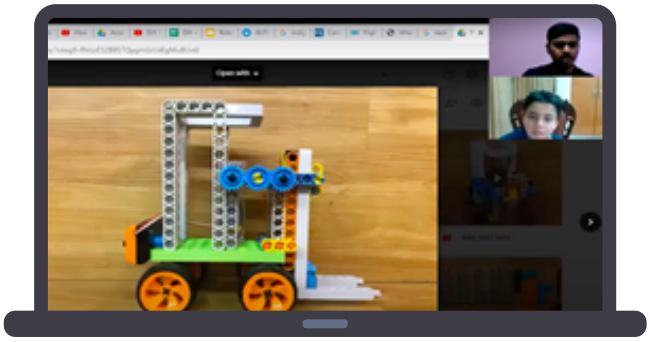


Electronics Expert

10%

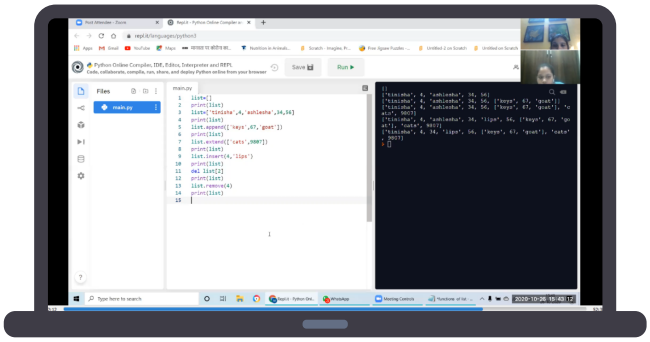
Benefits of the Program

Ensures Elegant Creations



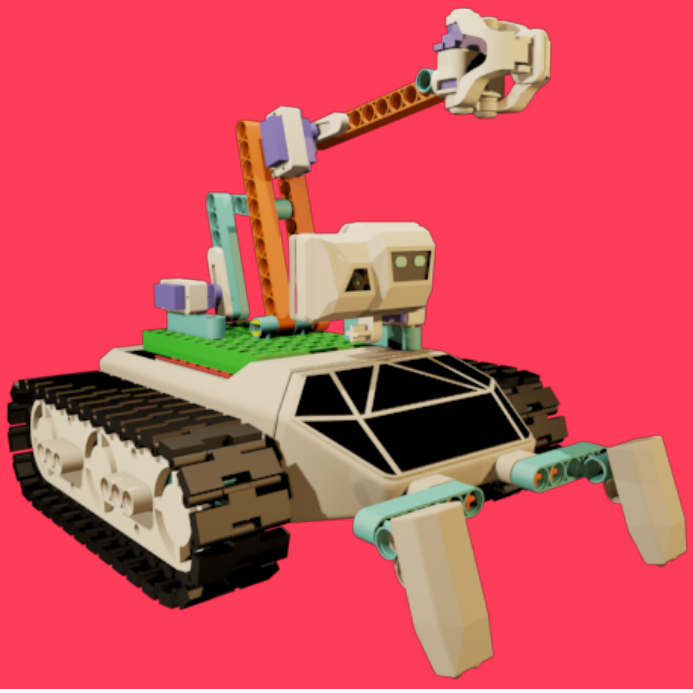
Develops Ingeniousness

Improves Situational Adaptibility



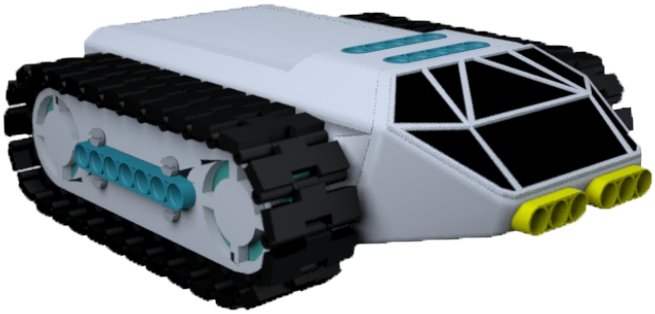
Drives Innovation

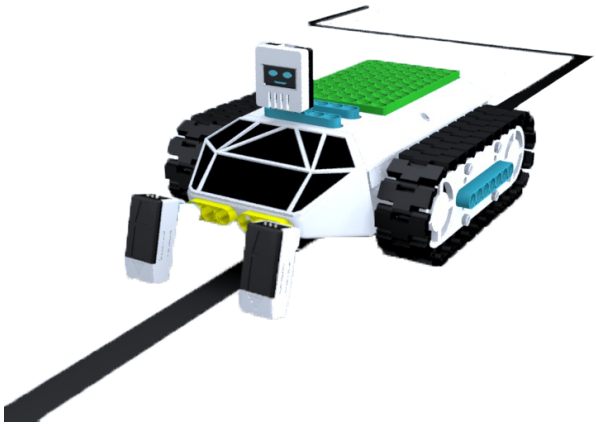
Meet R.A.M.A.
Your companion



R.A.M.A. -
RealSchool Automation Machine for Advanced Robotics
is your companion in the journey

RAMA is whatever you can imagine it to be. Navigate the maze, follow a line, dispose-off a bomb, or go out and predict the weather





Unleash the Robotics' genius in you !

What do we cover

The Robotics Bootcamp Program is covered in 3 Levels in different Packages according to the age group taking our students from simple to advanced level concepts in that domain. We ensure that the real-world significance of the machines is reflected in every topic we cover and every project that is done in the class.

MODULE 1

Introduction to Motion and structural designing

Concepts covered

1. Concepts of Simple machines with real-life examples
2. Conversion of Energy forms.
3. Structural Designing of a machine
4. Conversion of Motion

MODULE 2

Application of Motion, Force, Torque, Power, and Energy

Concepts covered

1. Prime Movers and Applications
2. Motion Transmission using types of Gears and Gear ratio
3. Concepts of force, torque, and speed and their relation

MODULE 3

Real-life Mechanisms and their mechanical Counterparts

Concepts covered

1. Types of motions and mechanism design involving motion conversion
2. Cam Mechanisms and Oscillatory Motion
3. Introduction to CIrcuits.
4. Rotary to Rotary motion and Rotary to Linear motion Conversion
5. Advance mechanisms using the prime movers
6. Belt Drives and Conveyors

MODULE 4

Introduction to Electrical and Electronics using basic circuits and simulation

Concepts covered

1. Introduction to Voltage, Current, and Resistance
2. Series and Parallel Electrical Circuits.
3. Introduction to Digital Sensors
4. Arduino UNO Microcontroller board
5. Concepts of Signals
6. Understanding Analog and Digital Signals
7. Sensors - LDR, IR, Scratch programming for Arduino

MODULE 5

Application-based real-world challenges and projects on RS B-Bot

Concepts covered

1. Introduction to Microcontroller/ Microprocessors
2. Arduino Programming using scratch
3. Applications of Sensors and Actuators

MODULE 6

Circuit Designing and Application of Arduino using advanced sensors over RS B-Bot

Concepts covered

1. Circuit designing and Arduino Scratch Programming on TinkerCAD
2. Arduino IDE for programming, Sequential, and simple conditional programming with sensors and LED
3. Advance Sensors, Ultrasonic Sensor, Gas Sensor, RFID Sensor
4. Introduction to Arduino Displays, OLED
5. Applications of OLED with Advance Sensors
6. Building an Interacting Car

MODULE 7

Computer Vision using ESP cam and Applications

Concepts covered

1. Interfacing ESP cam with Arduino
2. Wireless Robotics over Wifi
3. Object and path Identification
4. Color Identification using Color Sensor

MODULE 8

Introduction to a Multirotor drone

Concepts covered

1. Rules and Regulations
2. Basics of Aerodynamics
3. Concepts of Aerodynamics, Yaw, Pitch and Roll
4. Introduction to aeromodelling
5. Introduction to Unmanned Aerial Vehicle

MODULE 9

Building the Quadcopter

Concepts covered

1. Basics of Quadcopter, and it's components
2. Aerodynamics and Forces acting on QuadCopter
3. Introduction to Flight Controller and it's purpose.
4. Sensors used in a quadcopter and their applications
5. Basics of Accelerometer and Gyroscope in a Quadcopter

MODULE 10

Become a Drone Developer using scratch programming

Concepts covered

1. Introduction to Scratch Programming in Flight Controller
2. Condition based Programming in scratch programming
3. Developing an Automated Logic Based Drone

Packages

Considering the learning capabilities of kids in particular age groups, we have created specific packages that you can choose from. Zip through the course with the Express package or, be a pro by enrolling in the Mission!

Grade 1 to Grade 3- Express

Duration	13 Hours
Months	3 Months
PTMs	3 PTMs
Dedicated Course Counsellor	Yes
Modules Covered	1, 2, 3

Includes Inventors Kit with 200 component

Projects

Bipedal Robot

Scissor lift

Single Motor Car

Fork Lift

Purpose Built Car

Trebuchet

Floor Mopping Robot

Mouse Trap

Robotic Gripper

Grade 4 to Grade 6- Express

Duration	13 Hours
Months	3 Months
PTMs	3 PTMs
Dedicated Course Counsellor	Yes
Modules Covered	1, 2, 3, 4

Includes Inventors Kit with 200 component

Projects

Bipedal Robot

Scissor lift

Single Motor Car

Fork Lift

Morning Alarm

Purpose Built Car

Trebuchet

Floor Mopping Robot

Mouse Trap

Robotic Gripper

Parking Sensor

Dispensing Machine

Obstacle Avoiding Robot

Line Following Robot

Fire Fighter Robot

Grade 4 to Grade 6- Ultimate

Duration	60 Hours
Months	9 Months
PTMs	10 PTMs
Dedicated Course Counsellor	Yes
Modules Covered	1, 2, 3, 4, 5, 6, 7

Includes RAMA, the Advanced Robotics inventor kit

Projects

Bipedal Robot
Scissor lift
Single Motor Car
Fork Lift
Morning Alarm
Purpose Built Car
Trebuchet
Floor Mopping Robot
Traffic Light
Mouse Trap
Robotic Gripper
Smart Parking Sensor
Object follower bot
Obstacle Avoiding Robot
Wired RC Bot
Line Following Robot
Automatic Headlights
Identifier Robot
Color Sorting Machine
Object detection
Weather Station
Bluetooth Controlled Car
Object tracker
Maze following Robot

Grade 7 and above- Express

Duration	13 Hours
Months	3 Months
PTMs	3 PTMs
Dedicated Course Counsellor	Yes
Modules Covered	1, 2, 3, 4

Includes Inventors Kit with 200 component

Projects

Bipedal Robot

Scissor lift

Single Motor Car

Fork Lift

Morning Alarm

Purpose Built Car

Trebuchet

Floor Mopping Robot

Mouse Trap

Robotic Gripper

Parking Sensor

Dispensing Machine

Obstacle Avoiding Robot

Fire Fighter Robot

Line Following Robot

Basic Contraption

Medial Contraption

Grade 7 and above- Ultimate

Duration	60 Hours
Months	9 Months
PTMs	10 PTMs
Dedicated Course Counsellor	Yes
Modules Covered	1, 2, 3, 4, 5, 6, 7

Includes RAMA, the Advanced Robotics inventor kit

Projects

Bipedal Robot
Scissor lift
Single Motor Car
Fork Lift
Morning Alarm
Purpose Built Car
Trebuchet
Floor Mopping Robot
Traffic Light
Mouse Trap
Robotic Gripper
Smart Parking Sensor
Object follower bot
Obstacle Avoiding Robot
Wired RC Bot
Line Following Robot
Automatic Headlights
Identifier Robot
Color Sorting Machine
Object detection
Basic Contraption
Weather Station
Bluetooth Controlled Car
Object tracker
Maze following Robot
Medial Contraption

Grade 7 and above- Mission

Duration	100 Hours
Months	Unlimited classes
PTMs	On-demand PTMs
Dedicated Course Counsellor	Yes
Modules Covered	1, 2, 3, 4, 5, 6, 7, 8, 9, 10

+

Includes RAMA, the Advanced Robotics inventor kit and the Drone development kit

Projects

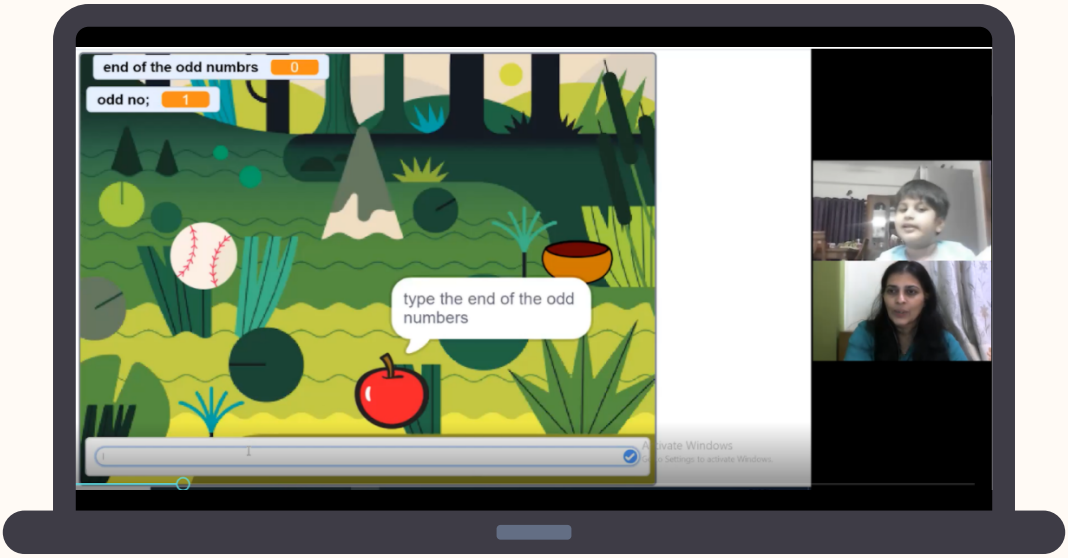
Bipedal Robot
Scissor lift
Single Motor Car
Purpose Built Car
Fork Lift
Morning Alarm
Trebuchet
Floor Mopping Robot
Traffic Light
Mouse Trap
Robotic Gripper
Smart Parking Sensor
Object follower bot
Obstacle Avoiding Robot
Wired RC Bot
Line Following Robot
Automatic Headlights
Identifier Robot
Color Sorting Machine
Glider
Weather Station
Basic Contraption
Object tracker
Maze following Robot
Bluetooth Controlled Car
Object detection
Logic Drone
Medial Contraption
Science of Paper Plane
Treasure Hunt using Drone
Toss to Fly
Spirit Level using Quadcopter
The Color circle

The development roadmap

Robotics bootcamp aims to bring about a positive change in the kids in a structured way. You will see the following developments as they do more and more projects

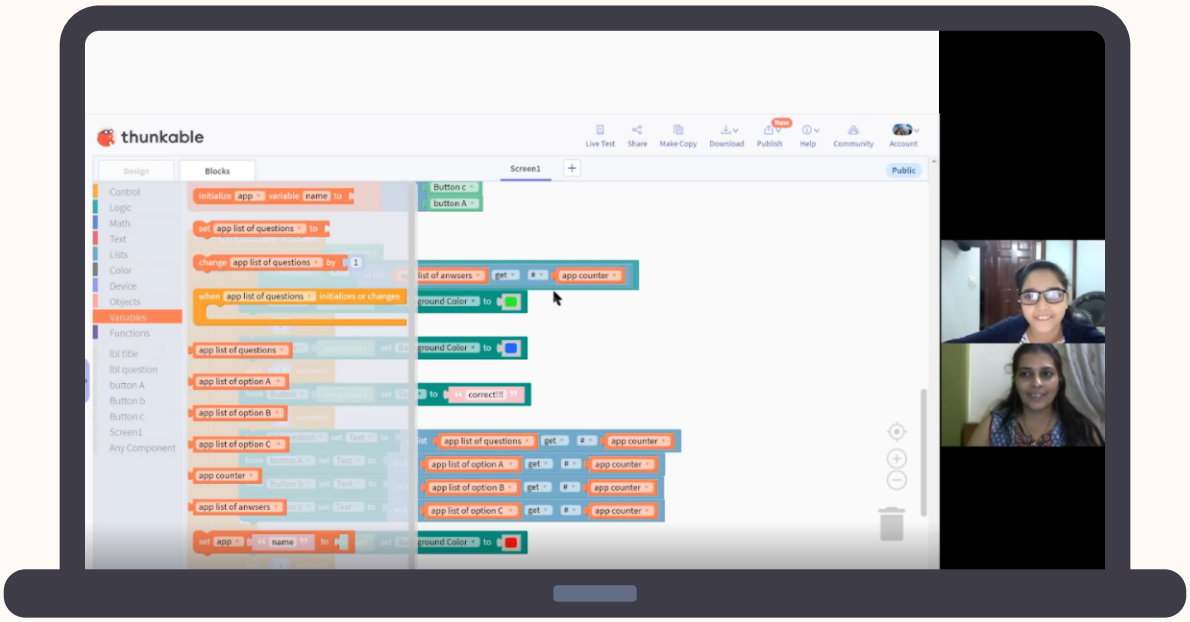
1. Starts getting familiar with new concepts and terminologies
2. Learns ideation and brainstorming techniques for projects. Discovers new tools and methods.
3. Actively participates in brainstorming. Engages in enquiry driven discussions. Starts challenging the Trainer.
4. Creates unique ideas and designs. Gathers ability to work independently.
5. Comprehends and applies the learnings to create innovative solutions for the projects.
6. Develops problem solving aptitude that involves mental, physical and social skills
7. Develops ability to identify problems, its root cause and design a suitable solution towards it
8. Ability to compete head-on with highly competent peers

Parent Testimonials



“Real school has proved to be better than my expectation. This was Panav’s first experience with robotics and I am extremely satisfied to see him spending time in building smart machines. The classes are not just fun, they have so much to offer... children and we parents are bound to stay curious!”

Vishakha Shroff
Mother of 10-years old Panav
Calcutta



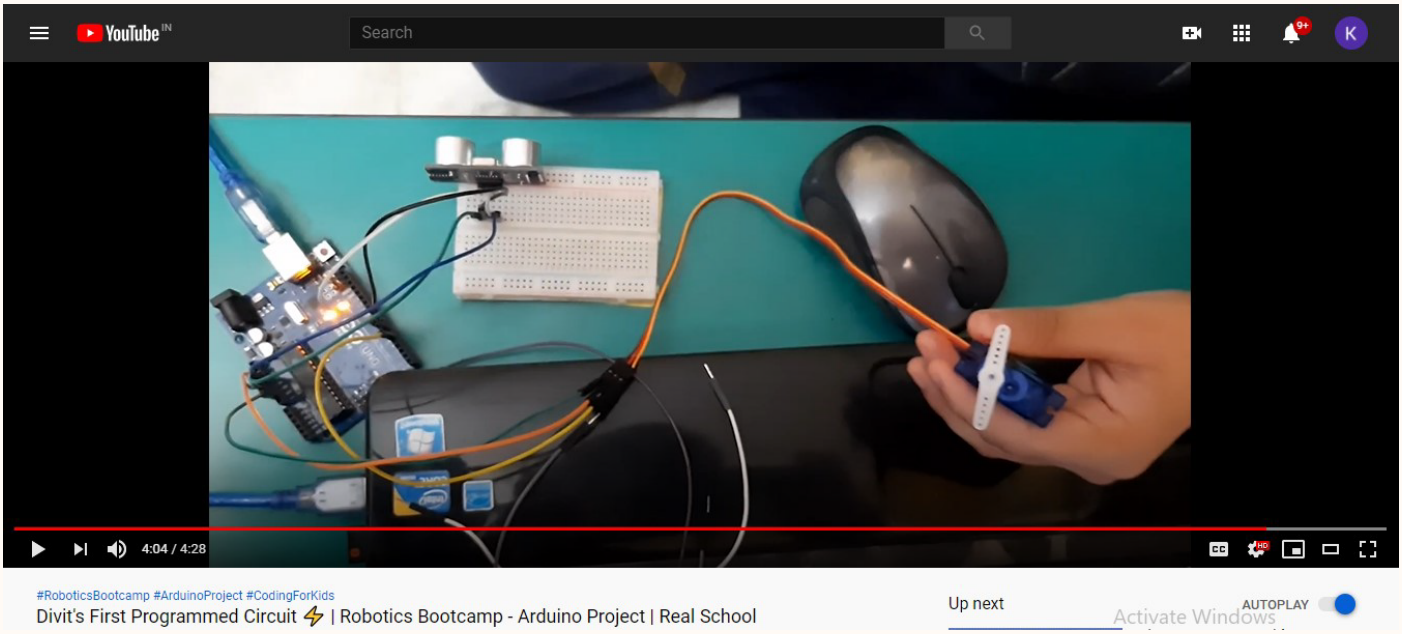
Real school has proved to be the right platform for Simar's growth in his interested subject- Robotics. He has started to think on problems that can be solved using Robotics. He actually built an automatic hand sanitizer machine in this pandemic and we were thrilled to see this change in him. Thanks to Real School"

Sukhchain Singh
Father of 13-years old Simar
Dehradun

Classroom Experience

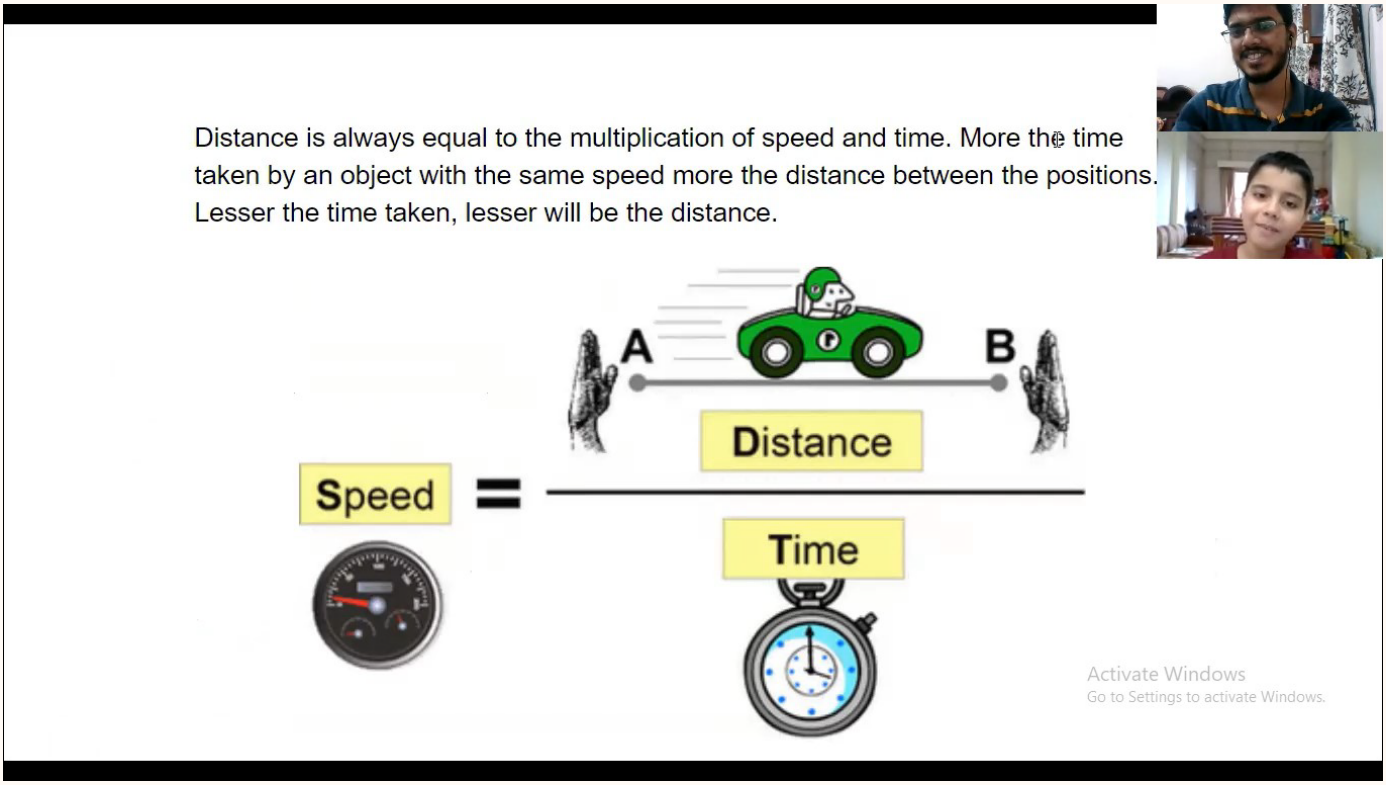
Student Projects

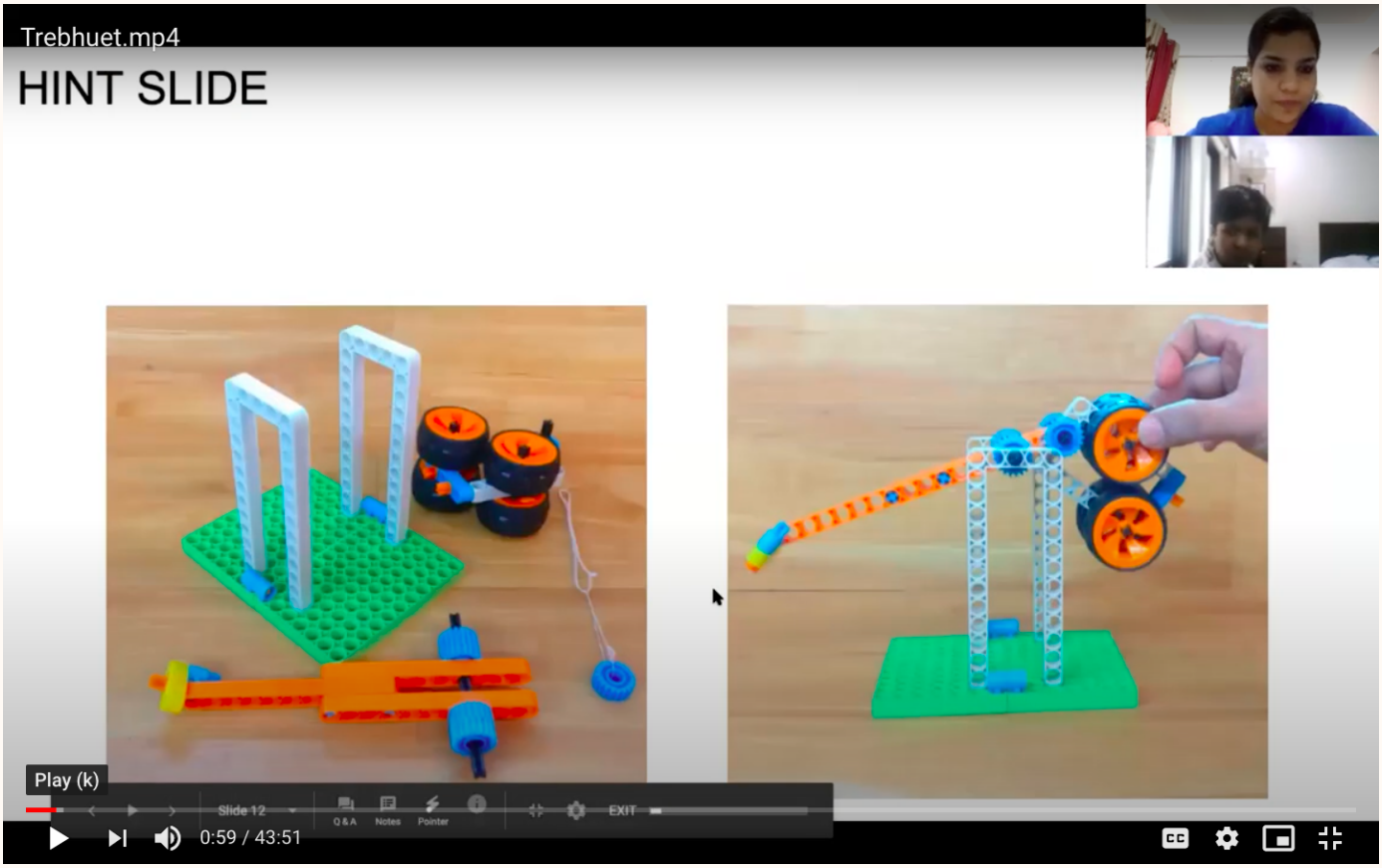
Automatic Sanitizer dispenser : https://www.youtube.com/watch?v=tdu_YFc9q40



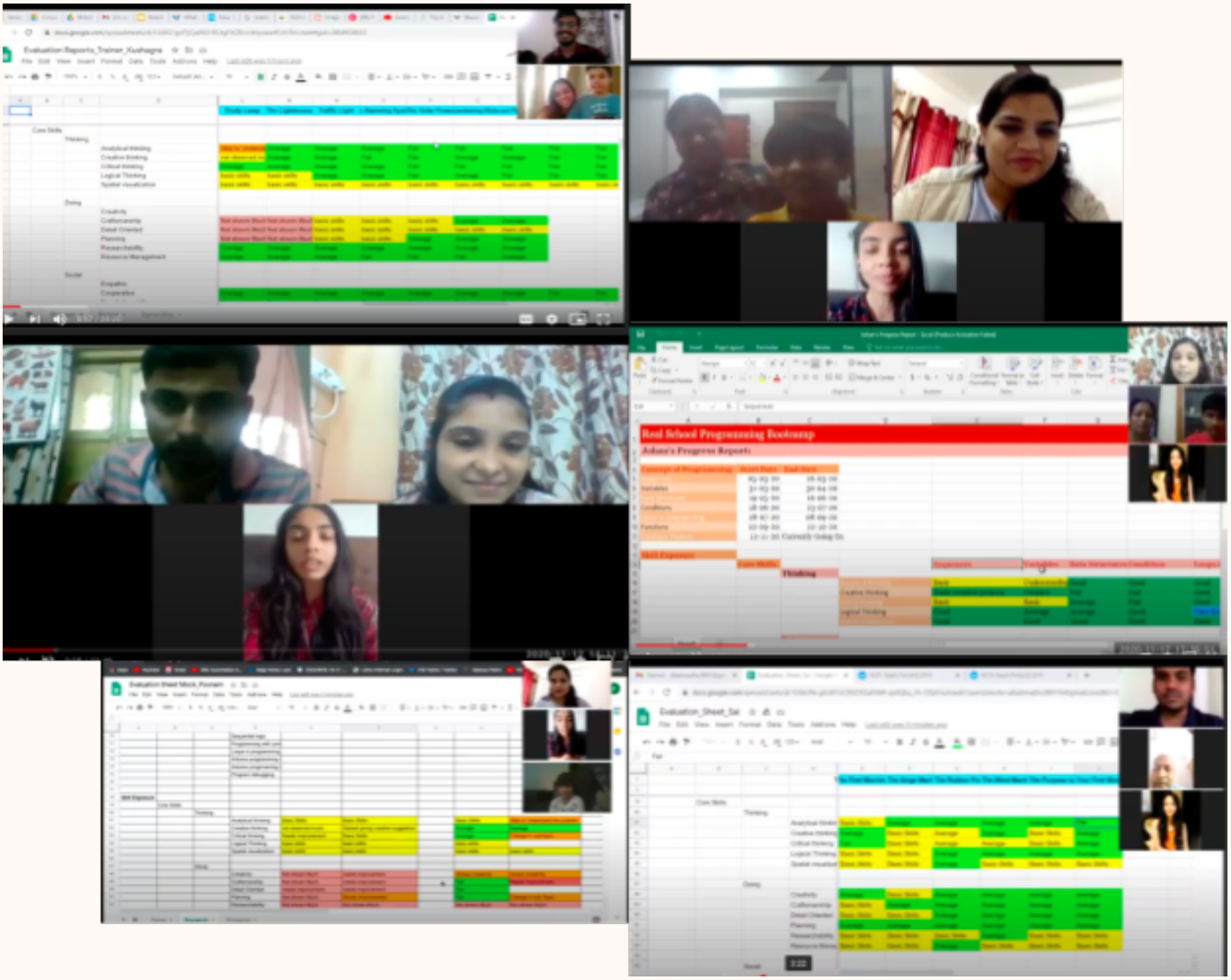
Arduino Programmed circuit using Sensors - https://www.youtube.com/watch?v=51Jhi3BaNSE

Classroom experiences

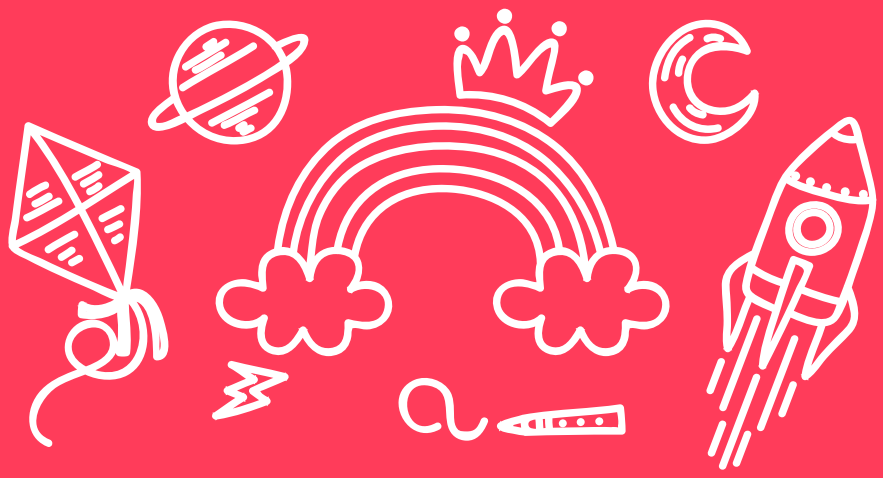




Parent-Teacher Meetings



Real School conducts parent - teacher meetings for the continuous assessment of a student.



Real School Philosophy

Real School, a product of uFaber Edutech Pvt. Ltd. is an ecosystem that transforms a young curious mind into a highly-skilled problem solver. At Real School, we've turned everything on its head. So, instead of the student going to school, the school comes home! Instead of a compartmentalised subject-oriented curriculum, we use dynamic project-based learning curated to develop skills. Instead of the stress of examinations, our students revel in the joy of discovery and creation! They learn not from books but from experiences, Their knowledge is not graded based on an answer paper but on how they have applied this knowledge to solve a real-world problem.

© Ufaber Edutech, Nov 2020, www.therealschool.in

ufaber

About Ufaber

uFaber offers courses in life-changing and transformational domains like IELTS & PTE, UPSC, GATE and English Communication. Our customized education solutions for students, professionals, corporations, and colleges are geared towards achieving excellence and high power performance. Our focus is to make Education Easily Accessible and Highly Personalized. While our training techniques continue to evolve, we work with a single aim to get the students and our clients what they need the most: RESULTS!

BeingPro IELTS NINJA HOOOP eMaester
FLUENT LIFE UPSC PATHSHALA GATE SCHOOL

REAL SCHOOL

For more information, **visit www.therealschool.in**

or reach us on **+91 84339 71759**