

Role of Organization in STEM for kids

What is STEM?

STEM stands for **Science, Technology, Engineering, and Mathematics**. It is an educational approach that integrates these four disciplines to encourage problem-solving, creativity, and critical thinking in students.

Technobots53:

Technobots53 is a STEAM (Science, Technology, Engineering, Arts, and Mathematics) education organization based in Karachi, Pakistan, founded in 2018. It provides hands-on learning experiences for students aged 5 to 18, fostering innovation, critical thinking, and problem-solving skills.

The organization offers interactive workshops, robotics programs, coding sessions, and competitions to engage young learners. It actively collaborates with schools and communities to make STEAM education accessible, especially for underprivileged students.

Led by Muhammad Ali Akbar and Yousuf Fakhruddin, Technobots53 aims to inspire the next generation of innovators through creative and practical learning.

Website: <https://technobots53.com/>

Products:

1. Lego Wedo 2.0:

LEGO WeDo 2.0 is an educational robotics kit designed for children to explore STEM concepts through hands-on learning. It includes electronic components.

The kit allows students to build and program interactive models using LEGO Education WeDo 2.0 software, which features a simple, block-based coding interface.

Electronic Components:

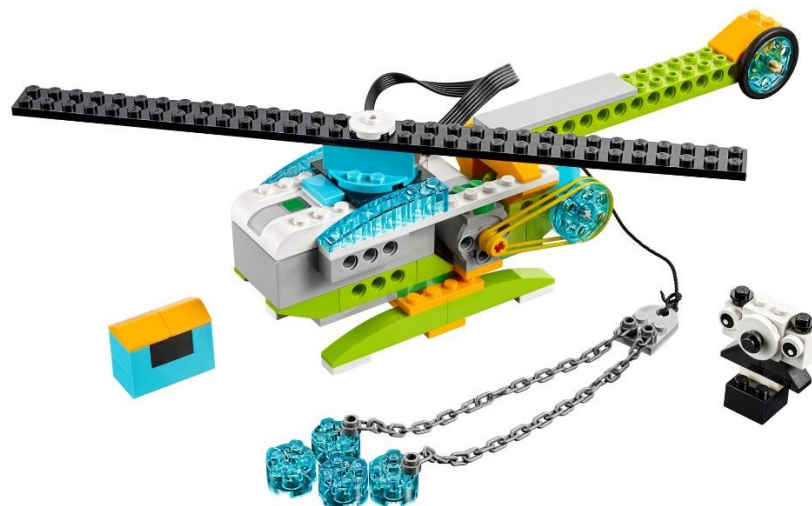
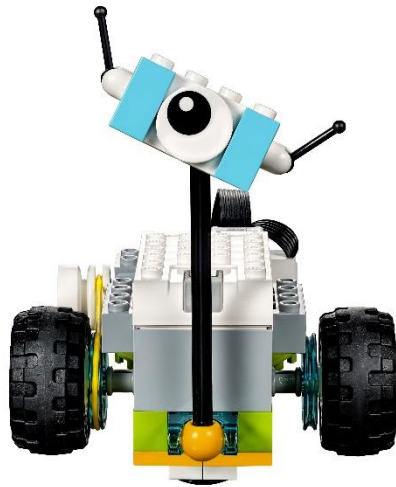
- **Smarthub** – A Bluetooth-enabled control unit that connects sensors and motors.
- **Medium Motor** – Provides movement to models with adjustable speed and direction.
- **Motion Sensor** – Detects objects within a 1–15 cm range for interactive responses.
- **Tilt Sensor** – Recognizes six different tilt positions for movement-based interactions.

Building Components (280 Pieces):

- **Bricks & Plates** – Used for constructing structures and designs.

- **Beams & Axles** – Provide support and enable rotational movements.
- **Gears & Pulleys** – Help in transferring motion and demonstrating mechanical principles.
- **Connectors & Hubs** – Join different LEGO elements securely.
- **Wheels & Tires** – Allow for the creation of moving robots and vehicles.

Website: <https://education.lego.com/en-us/products/lego-education-wedo-2-0-core-set/45300/?>



2. Lego Spike Prime:

The **LEGO® Education SPIKE™ Prime Set** is an advanced STEAM educational tool designed to engage students aged 8 and above in hands-on learning. Combining colorful LEGO building elements with easy-to-use hardware and an intuitive coding platform, SPIKE Prime fosters critical thinking and problem-solving skills.

LEGO SPIKE Prime Components

- **STM32F413 Microcontroller** – A powerful control unit that processes data and executes programs.

Sensors:

- **Color Sensor** – Detects colors and measures light intensity.
- **Distance Sensor** – Uses ultrasonic waves to measure the distance of objects.
- **Force Sensor** – Measures pressure and detects touch-based interactions.

Motors:

- **Two Large Angular Motors** – Provide precise motion control for advanced robotics projects.
- **One Medium Angular Motor** – Offers flexible movement for various mechanical functions.

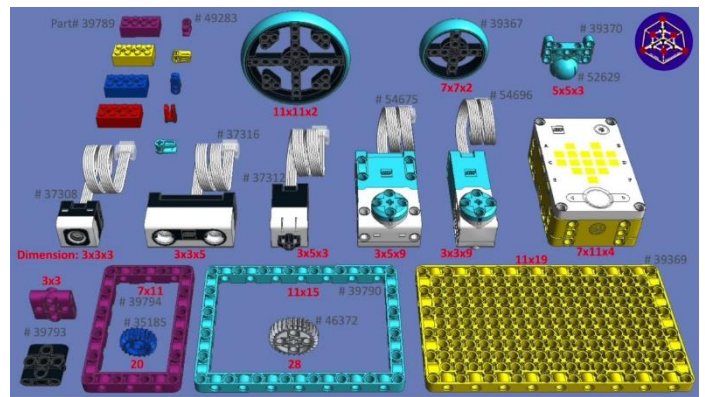
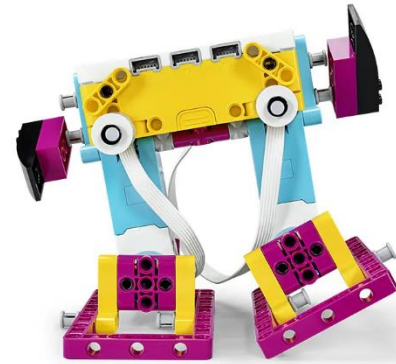
Building Elements:

- **LEGO Technic™ Beams & Connectors** – Used for structural stability and assembling models.
- **Gears & Axles** – Enable rotational motion and mechanical functions.
- **Wheels** – Allow for mobility in robot designs.

Additional Components:

- **Cables** – Connect motors and sensors to the microcontroller for communication and power.
- **Storage Box** – Comes with sorting trays for organized component management.

Website: <https://technobots53.com/lego-spike-prime/>



For more details click the link: <https://youtu.be/IdOVOX5GQmg>

3. Drone Dreybots:

The **Drone Dreybots Program** by Technobots53 introduces students (ages 6+) to drone technology and block-based coding. Using the DroneBlocks platform, students learn to program and automate drone flights through interactive DJI drones, hands-on sessions.

Electronic Components:

- **DJI Drones:** Reliable drones for hands-on flight learning.
- **DroneBlocks Platform:** Block-based coding environment for programming drone flights.
- **Educational Resources:** Lessons on drone operation, coding, and robotics.
- **Safety & Navigation Features:** Training on flight control, navigation, and safety protocols.

Website: <https://technobots53.com/drone-dreybots/>

AceLabs:

AceLabs is one of the best STEM education organizations in Pakistan that provides hands-on learning kits and courses for children. They offer interactive products like chemistry kits, programmable robots, and electronics sets to encourage curiosity and innovation in young learners. Their approach focuses on **Science, Technology, Engineering, Arts, and Mathematics (STEAM)** education.

The organization is led by CEO **M. Jamal Nasim**, who has been actively involved in promoting STEM education in the country. The AceLabs team comprises professionals dedicated to enhancing STEM education, including co-founder **John Doelenni**, designer **Malissa Trebiannu**, and manager **John Capertner**.

Website: <https://theacelabs.com/>

To visit Facebook account click the link: https://www.facebook.com/theacelabs/posts/our-ceo-m-jamal-nasim-had-the-honor-of-being-a-guest-on-fm-886s-seekho-sikhao-ho/122138150468086965/?utm_source=chatgpt.com

Products:

1. Dexter Smart Programmable Robot:

The **Dexter Smart Programmable Robot** by AceLabs is an educational STEM kit designed to introduce children to programming, electronics, mechanics, and robotics. This hands-on learning tool aims to develop real-life problem-solving skills, logical reasoning, and creativity in young learners.

Key Features:

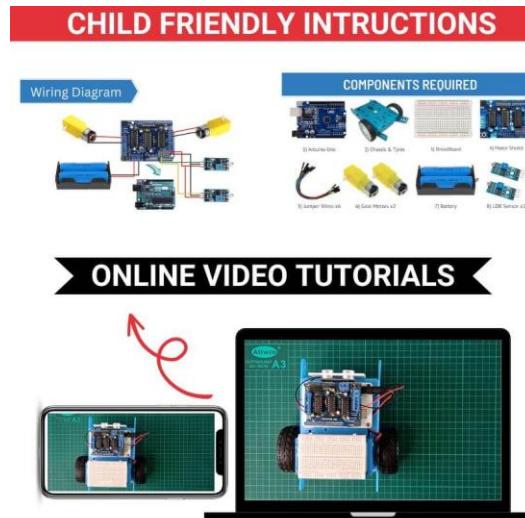
- **Educational Focus:** Provides training in 21st-century skills, including robotics, programming, electronics, design thinking, and mechanics.
- **Hands-On Projects:** Offers over 20 engaging projects, such as:
 - Light Following Robot
 - Line Following Robot
 - Smart Distance Meter
 - Smart Traffic Lights
 - Bluetooth Control Robot

Kit Components:

- **Microcontroller:** An Arduino-compatible board serving as the robot's brain.
- **Chassis:** Durable frame housing all components.
- **Motors:** DC motors enabling movement.
- **Wheels:** Attached to motors for navigation.

- **Sensors:**
 - **Ultrasonic Sensor:** Detects obstacles and measures distance.
 - **Line Tracking Sensors:** Allows the robot to follow lines.
 - **Light Sensors:** Enables light-following capabilities.
- **Bluetooth Module:** Facilitates wireless control via mobile devices.
- **Battery Pack:** Powers the robot.
- **Wiring and Connectors:** For assembling and connecting components.
- **Instructional Materials:** Guides and video tutorials for assembly and project execution.

Website: <https://theacelabs.com/product/dexter-smart-programmable-robot/>



For a detailed assembly guide, you can refer to this video tutorial:

https://youtu.be/Hft7fm30QVw?si=ASi1OAW02_bn5FVQ

2. Electric Explorer:

The **Electric Explorer Activity Box** by AceLabs is a comprehensive STEM education kit designed to introduce children to the fundamentals of electricity and electronics through hands-on projects. This kit offers over 20 engaging experiments, fostering creativity, critical thinking, and a deeper understanding of scientific principles.

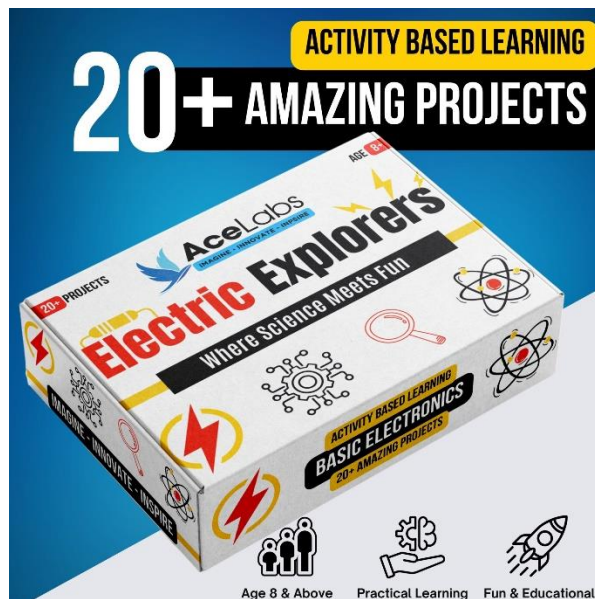
Key Features:

- **Diverse Projects:** The kit includes a variety of experiments, such as:
 - Light Bulb Circuit
 - Series and Parallel Circuits
 - Electromagnet
 - Electric Motor
 - Simple Telegraph

Project lists and components:

- **Light Tracker** – Uses LDR (Light Dependent Resistor) to detect light intensity and adjust movement accordingly.
- **Smart Night Lights** – Includes LDR, LED, and transistor to automatically turn on lights in the dark.
- **Salt-Water Experiment** – Uses electrodes, saltwater, and a small LED to demonstrate electricity conduction.
- **Gates** – Involves logic gate ICs (AND, OR, NOT), switches, and LEDs to explain digital logic.
- **Fan Circuits** – Uses DC motor, battery, switch, and wires to create a simple fan system.
- **Sunrise Alarm** – Includes LDR, buzzer, and transistor to activate an alarm based on light levels.

Website: <https://theacelabs.com/product/electric-explorer-s-t-e-m-box/>



For a detailed assembly guide, you can refer to this video tutorial: https://youtu.be/XsPI7VYLd_Y

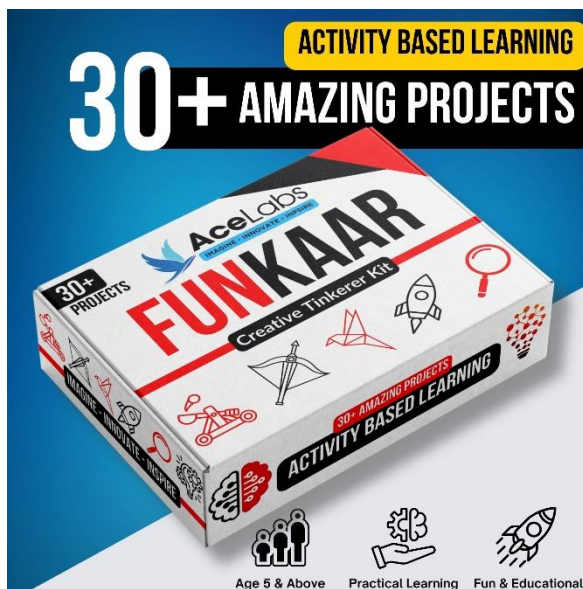
3. FUNKAAR Creative Tinkerer Kit (35 projects)

The **FunKaar Creative Tinkerer Kit** by AceLabs is an all-in-one activity box designed to ignite creativity and innovation in children. Packed with over 35 engaging projects, this kit offers a hands-on approach to learning, blending art with science to foster a love for STEM (Science, Technology, Engineering, and Mathematics) disciplines.

Key Components & Their Uses:

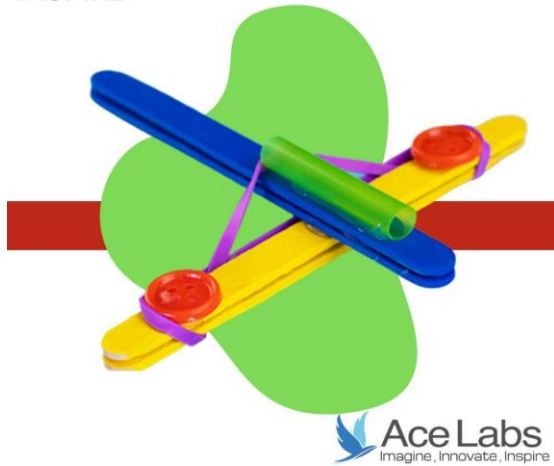
- **Balloon & Straws** – Used in air-powered projects like balloon cars and hovercrafts.
- **DC Motor & Propeller** – Helps create simple fans, boats, and air-powered experiments.
- **Battery Holder & Wires** – Provides power for electrical experiments.
- **Switches & LEDs** – Used in basic circuit-building projects to demonstrate electricity flow.
- **Plastic Gears & Pulleys** – Teach mechanical motion and are used in gear-based projects.
- **Rubber Bands & Popsicle Sticks** – Support catapult and crossbow experiments.
- **Paper Clips & Magnets** – Used in magnetism-based experiments.
- **Light Dependent Resistor (LDR)** – Helps in light-sensitive projects like night lights.
- **Buzzer & Resistors** – For alarm circuits and sound-based experiments.
- **Wooden Blocks & Craft Materials** – Used for structural and creative projects like towers and bridges.
- **Syringes & Tubes** – Introduce hydraulic system concepts.
- **Metal Wires & Aluminum Foil** – Used for conductivity experiments.
- **Instruction Manual & Video Guides** – Provide step-by-step instructions for all projects.

website: <https://theacelabs.com/product/funkaar-diy-activity-box/>



CROSSBOW

INSPIRE



AIRCAR

INNOVATE



4. Magnet Lab STEM Kit (12 Experiments):

The Magnet Lab STEM Kit by **AceLabs** offers an engaging way for children to explore the fascinating world of magnetism through 12 interactive experiments. Designed to blend education with fun, this kit aims to foster creativity and a deeper understanding of magnetic principles.

Key Features:

- **Hands-on Learning:** The kit provides practical experiments that help children grasp magnetic concepts effectively.
- **Comprehensive Materials:** All necessary components for the experiments are included, ensuring a seamless learning experience.
- **Affordable Pricing:** Originally priced at Rs4,500, the kit is now available for Rs2,950, making it accessible to a broader audience.

Customer Feedback:

With over 5,000 satisfied customers, the Magnet Lab STEM Kit has received positive reviews for its quality and educational value. One customer noted that it made learning about magnets enjoyable and was useful for a school science exhibition.

Product Specifications:

- **Weight:** 0.8 kg
- **Dimensions:** 10 × 8 × 2.5 inches

website: <https://theacelabs.com/product/magnet-stem-kit-12-experiments/>

