

# AI & Robotic Lab-1

Order Code - 23246646.1

```
1 2 months ago | 1 author (fork)
2 <script>
3   import sidebarController from './sidebarController.js'
4   import mementoes from './store.js'
5   import './sidebar.scss'
6 </script>
7
8 <div class="sidebar">
9   <button class="add-memento" on:click={() => sidebarController.addMemento()}>Add Memento
10
11   <ul class="mementoes">
12     {#each $mementoes as memento}
13     <li class="memento-item" class:active={memento.is_active}>
14       {memento.title}
15     </li>
16   {/each}
17 </ul>
18 </div>
```

# PROPOSAL

## INTEGRATED STEAM, ROBOTICS & AI PROGRAM

Future Ready 21<sup>st</sup> Century Programs for K-12  
Schools & Students.

# WHAT IS STEAM, ROBOTICS & AI?

Integrated STEAM-Robotics and AI (Artificial Intelligence) is an interdisciplinary approach to teaching and learning that combines Science, Technology, Engineering, Art and Mathematics (STEAM) with Robotics and AI. This approach emphasizes problem-solving, critical thinking, and hands-on learning experiences, allowing students to apply STEM concepts to real-world challenges.

Through integrated STEAM-Robotics and AI, students learn how to design, build, program, and operate robots and other automated systems using a variety of tools, such as sensors, motors, and microcontrollers. They also learn about the principles of AI, including machine learning and computer vision, and how to apply these principles to solve complex problems.

Integrated STEAM-Robotics and AI programs typically focus on project-based learning, where students work in teams to design and build solutions to real-world challenges. This approach promotes collaboration, communication, and creativity, and prepares students for the 21st-century workforce, where STEM skills and knowledge are in high demand.



## How will young students be benefited?

- To provide exposure of future technological world.
- To introduce learning by doing at an early age.
- To build innovative solutions for real-life problems.
- To nurture 21st Century skills by Project-based learning.
- To enhance their problem solving approach towards community problems in line with UNSDGs.

## Top Skills in Demand



Analytical thinking and innovation



Active learning and learning strategies



Complex problem-solving



Technology design and programming



Critical thinking and analysis



Creativity, originality and initiative



Leadership and social influence



Reasoning and ideation

# END-TO-END IMPLEMENTATION & SUPPORT PLAN



## Resources Required

for setting up a Lab at School

A room/built space of around 600-1200 sq. Ft.





A set of 4-6 work tables for carrying out hands-on activities in a group.






Around 25-30 Mini Tables/Chairs for students to sit.



A set of Cabinets/Cupboards Sideboards for keeping the Hardware DIY Kits/Equipment.

A set of 4-6 Computers/Laptops with Internet Access & Connectivity

Access to Projector/Whiteboard/LED Screen for presenting contents, Videos & PPTs

Sr. No.	Category	DIY Kit Name	SKU Number	Description	Image	Programmable/ Non-Programmable	Kit to Student Ratio	Grade Category
1	AI, IoT & Robotics	Tinker Orbits	SKU STEMROBO 1609	Tinker Orbits is a STEAM Robotics kit for kids to explore the basic concepts of electronic circuits, sensors, Robotics, logics and programming with the help of plug 'n' play modules. It is an educational DIY kit for students which covers the learners' journey around Robotics from Beginner level to the advanced Robotics concepts. This contains both programmable and non-programmable activities. Also, Programmable activities are covered through Block Coding as well as Textual programming.		Both	1:5	3rd to 12th
2	AI Project Based Learning Kit	Tinker Orbits - Extended PBL Box	SKU: 1652	Tinker Orbits extended Project based kit offer students to create 12 unique projects around the the concepts of AI like Smart Home, Smart Irrigation System, Railway Crossing, Smart dustbin etc.		Programmable	1:4	5th to 12th
3	STEM-Robotics	Arduino Robotics Kit	SKU: 1606	End-To-End Platform for students to Kick start child's journey in Robotics. Students can learn Robotics programming through Block Coding and Textual Coding. Also, Interfacing of Sensors and actuators with Arduino controller.This kit is aimed at beginners to advanced level learners and can be used to jump start child' growth and learning towards DIY electronics and robotics system.		Programmable	1:5	6th - 10th
4	STEM-Robotics	Mechatron Kit	SKU-STEMROBO 1612	MECHATRONICS Robotic Kit is for 6+ Age Kids. Contains 150+ parts such as metallic strips, Remote control, control card, motors, gears, etc. Comes with an assembly guide with step-by-step instructions to help students build the robot-associated concepts of science and math mentioned with every design. Robotics kits for Kids & Robotic kits for students to make their own Robotics projects.		Non-Programmable	1:4	2nd to 8th

Sr. No.	Category	DIY Kit Name	SKU Number	Description	Image	Programmable/ Non-Programmable	Kit to Student Ratio	Grade Category
5	STEM-Robotics	Sensor Box	SKU: 1608	<p>This Sensor Kit compatible with Arduino is supplied with a variety of sensors that are compatible with Arduino Boards. This is the most complete performance starter kit with all the essential Arduino sensors.</p> <p>This kit contains excellent sensors which are compatible with Arduino. You can find the best sensors, whether you're a beginner or an expert in this field, and use them to create the best DIY projects on your own. Prototyping will be easy and fun-loving with this Kit.</p>		Programmable	1:All	For Project Purpose
6	Accessories	Soldering Box	SKU: 1601	<p>Hookup Wire Roll (Red), Hookup Wire Roll (Black), Hot glue gun, Soldering Iron 30 watts/230 volts, De-Soldering Pump, Soldering Flux (Paste)- 50grams, DE-soldering Copper Braid (Solder Wick), Soldering Wire: 20/22 AWG soldering Wire with rosin core flux (100 Grams), Soldering Helping hand, Glue Sticks, Safety goggles, Safety Gloves Pairs, Safety Mask</p>		NA	1:All	For Project Purpose
7	STEM-Electronics	STEM-Electronics	SKU-STEMROBO 1604	<p>The Smart Circuit kit contains more than 50 DIY (Do It Yourself) projects with more than 40 interactive simulations and 10 real-world model templates and a colorful user manual with its easy-to-follow instructions, smart electronics kit gives a hands-on education in how electrical circuits work to run the everyday devices that they're familiar with. They'll also gain valuable lessons in building circuit design. This kit contains more than 12 electronic components, more than 30 magnetic blocks as well as more than 40 accessories for real model building along with dual power (USB + DC) which can be used to create many projects also no soldering is required.</p>		Non-Programmable	1:4	1st to 8th
8	AI Based Robotics Kit	STEMBOT	SKU-STEMROBO 1603	<p>StemBot is a graphical programming robot for STEM education, which inherits playability and simple operation on the micro:bit (Version 2). Includes various sensors like IR (Infrared Sensor), Ultrasonic sensor, and Light sensor to make DIY robotics projects. MakeCode is a free online coding platform available to code and learns advanced coding concepts.</p>		Programmable	1:5	6th- 12th
9	AI Coding Platform	AI Connect Platform Recommended in AI STEP Up Module by NITI Aayog & CBSE	SKU: 9004	<p>"Subscription of AI Connect platform for the programming of AI (Python, Python Basics, Machine learning and AI) which will be covering 100% syllabus of CBSE and 50+ Extra Activities for 5th Onwards.</p>		Programmable	1:1	5th- 12th

Sr. No.	Category	DIY Kit Name	SKU Number	Description	Image	Programmable/ Non-Programmable	Kit to Student Ratio	Grade Category
10	Accessories	Accessories Box	SKU: 1653	This box contains the necessary tools listed below, which will be required to operate the DIY kits and hardware mentioned above: Wire Stripper, Bulb Holder, Power Strip Adaptor, Multimeter, 12 V Adaptor and USB to DC Jack Cable.		NA	1:All	For Project Purpose
11	Humanoid Robot	Humanoid Robot	SKU: 1646	Voice Intelligent RC Robot LED expression voice dialogue intelligent RC robot toy with lights. Robot can glide, dance, sing, tell stories, volume adjustments, and communicate with players according to the script. Increase the ingenuity of children, the cultivation of the independent personality. Robot toy inspires imaginative play and curiosity about science. Rotatable head, enjoy more fun. Flexible hand actions.		Programmable	1:All	6th - 10th
12	AI, & Robotics	Bitli		Bitli empowers students to unleash their creativity. From basic movements to complex AI-driven actions, it adapts to student's skill levels and encourages them to experiment with new ideas. Based on the Bitli V1, the micro: bit Bitli Bricks Pack contains 360 degrees servos, LED strips, and almost 200 pieces of bricks. It provides hands-on experience to learn AI, Robotics & Coding with 15+ robotics configurations and 50+ projects.		Programmable	1:5	3rd to 10th