



PUTTING THE FUN BACK  
INTO LEARNING!

RoboLAB is a yearlong robotics program aimed at implementing technology enhanced learning in classrooms. It aims to promote robotics as a tool for application of concepts learnt by students in classroom using STEM (Science, technology, Engineering and Mathematics) integration by creating multiple intelligence based learning environment.

## Curriculum Content for November

### Grade 4:

| Session Name                      | Activity Description   | Science, Technology, Engineering & Mathematics Relevance  | Key Words  |
|-----------------------------------|--|---|--|
| <b>Unusual means of transport</b> | Construction of a remote controlled ropeway and observing that pulleys are used to change the direction of pull and make it easier to lift a load. | <b>Science</b> - Identification of pulley as a simple machine.<br><b>Technology</b> -Relating to real world examples through technology.<br><b>Mathematics</b> - Build new knowledge through problem solving (Problem solving). | Simple machine<br>pulley<br>Design<br>Build<br>Problem solving |
| <b>Understanding vehicles</b>     | Construction of remote controlled car using two motors.  | <b>Science</b> -Transfer of energy.<br><b>Technology</b> -Relating to real world examples through technology.   | Energy<br>Remote control<br>Motor                              |

### Grade 5

| Session Name               | Activity Description   | Science, Technology, Engineering & Mathematics Relevance    | Key Words                          |
|----------------------------|--|---|------------------------------------|
| <b>Play with tricycle.</b> | Construction of a remote controlled tricycle and observe the use of gears in it. | <b>Science</b> - Identification of gears as simple machine. | Design<br>Motors<br>Gears<br>build |

|                         |   |  |   |
|-------------------------|---|--|---|
| <b>How things move?</b> | Construction of a remote controlled car and exploring the steering mechanism. | <b>Technology</b> -Relating to real world examples through technology. | problem solving<br>Simple machine<br>Programming<br>Algorithm |
| <b>My robotic fan</b>   | Construction & programming of a fan to rotate for a specified time.           | <b>Technology</b> -Algorithm development, sequential programming.      |   |

**The Core Competency Focus:** Problem solving, creativity, cooperation, project based learning, critical thinking

**How Can You Help?** Please could you make sure your children bring; robotics book, pen (black or blue) and pencil for all Robotics lessons and help your children to learn the meanings of the key words.

**Homework:** Students will carry out an independent research task to enable them to come up with a design solution.

**Useful Website:** Here is a useful website to help the student in robotics: [www.thinklabs.in](http://www.thinklabs.in)

## **Grade 6 :**

| Session Name                 | Activity Description   | Science, Technology, Engineering & Mathematics Relevance  | Key Words   |
|------------------------------|--|---|---|
| <b>How are cars steered?</b> | Construction of an autonomous car and programming it to take turns to follow a specified path. | <b>Technology</b> -Algorithm development, Sequential programming.<br><b>Mathematics</b> -Develop and demonstrate spatial sense, Specify location and describe spatial relationships using programming (Geometry).                 | Design<br>Algorithm<br>Programming<br>Geometry<br>Problem solving |
| <b>Challenge Day 1</b>       | Construction of an autonomous car and programming it to trace a square.                        | <b>Engineering</b> - Exposure to Engineering Design Process.<br><b>Mathematics</b> -Develop and demonstrate spatial sense (Geometry).<br>Apply and adapt a variety of appropriate strategies to solve problems (Problem solving). |   |

## Grade 7

| Session Name                                   | Activity Description  | Science, Technology, Engineering & Mathematics Relevance   | Key Words  |
|--|---|--|--|
| <b>Conductivity fan</b>                        | Construction of a fan and programming it to rotate with different speeds depending on the conductivity of the material. | <b>Science</b> -Differentiation of conductors and insulators.<br><b>Technology</b> - Algorithm development, Use of conditional construct IF.<br><b>Mathematics</b> -Represent and analyze mathematical situations using algebraic symbols, Analyze change in various contexts (Algebra). | Design<br>Build<br>Problem solving<br>Programming<br>Algorithm<br>Sensor |
| <b>Turns. 90 degree, 30 degree, 120 degree</b> | Construction of an autonomous car and programming it to take angular turns (90, 30 and 120) using different methods.    | <b>Technology</b> -Algorithm development, Sequential programming.<br><b>Mathematics</b> - Tracing angles (Geometry).   | Conductors<br>Insulators<br>Algebra<br>Degree                            |

## Grade 8

| Session Name                                  | Activity Description   | Science, Technology, Engineering & Mathematics Relevance  | Key Words  |
|---|--|---|--|
| <b>Turns 90 degree, 30 degree, 120 degree</b> | Construction of an autonomous car and programming it to take angular turns (90, 30 and 120) using different methods. | <b>Technology</b> -Algorithm development, Sequential programming.<br><b>Mathematics</b> - Tracing angles (Geometry).  | Design<br>Build<br>Problem solving<br>Simple machine<br>Complex machine<br>Programming |
| <b>I respond to only sound.</b>               | Constructing an autonomous car and programming it to take left turn on the sound of a clap.                          | <b>Science</b> -Measurement of sound.<br><b>Technology</b> -Algorithm development, Use of IF Else decision construct.<br><b>Mathematics</b> - Represent and Analyze mathematical situations using algebraic symbols, Analyze change in various contexts (Algebra).<br>Understand measurable attributes of object (Measurement). | Algorithm<br>Algebra<br>Measurement<br>Analog Sensor                                   |
| <b>Challenge Day I</b>                        | Tracing a predefined path (triangle)<br>Engineering- Exposure of Engineering design process.                         | <b>Technology</b> - Algorithm development, Reinforcement of sequential programming, understanding motor synchronization.  |  |

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|  |  | <b>Mathematics-</b> Develop and demonstrate spatial sense using programming (Geometry).<br>Make reasonable estimates (Numbers and operations). |  |
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Kind regards

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