PUTTING THE FUN BACK INTO LEARNING!

Robotics Curriculum Guide

February 2018

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 February

Grade 4:

Session Name	Activity Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
Catapult challenge	Construction of a catapult and identify the effective position of fulcrum to increase the distance an object moves.	**Science**- Identification of lever as simple machine. **Mathematics**- Build new knowledge through problem solving.	Simple machine lever Design Build Problem solving energy
My first toy car	Construction of a car to observe how stored energy gets converted into movement energy.	**Science**-Conservation of energy.	

Grade 5:

Session Name	Activity Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
Let's start THINKing.	Introduction to THINK, Programming the i-Pitara brick to	**Science**-Understanding science and technology. **Technology**-Algorithm development, Introduction to	Design motors build problem

Blinking lights\Glowing lights	Programming the LED to glow for a specified time.	**Technology**-Algorithm development, sequential programming.	solving Simple machine Programming Buzzer Algorithm
Create your own music.	Program the i-Pitara brick to blow the buzzer, play various tunes. Using multiple	**Technology**- 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

Grade 6:

Session Name	Activity Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
I respond to only touch	Construction of an autonomous car using touch sensor and programming it to detect obstacles.	Technology- Exploring digital sensor (i-Pitara touch sensor), Algorithm development, Use of multiple control construct IF. Mathematics- Represent mathematical situations using algebraic symbols, Analyse change in various contexts (Algebra).	Design Build Problem solving Programming Algorithm Forward Backward Touch Sensor
Touch activated fan	Construction of an automatic fan and programming it to switch on when the touch sensor is pressed.	Science- Conservation of energy	

Grade 7:

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

Grade 8:

Session Name	Activity Description	Science, Technology, Engineering & Mathematics Relevance	Key Words
I respond to only sound.	Constructing an autonomous car and programming it to take left turn on the sound of a clap.	**Science**-Measurement of sound. **Technology**-Algorithm development, Use of IF Else decision construct. **Mathematics**- Represent and Analyse mathematical situations using algebraic symbols, Analyse change in various contexts (Algebra). Understand measurable attributes of object (Measurement).	Design Build Problem solving Programming Algorithm Sensor Conductors Insulators

Conductivity fan	Construction of a fan and programming it to rotate with different speeds depending on the conductivity of the material.	**Science**-Differentiation of conductors and insulators. **Technology**- Algorithm development, Use of conditional construct IF. **Mathematics**-Represent and analyze mathematical situations using algebraic symbols, Analyze change in various contexts (Algebra).	Algebra Degree Sound Sensor

Kind regards

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