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FIELD VISIT TO STEAM EXPO







Vidya Pratishthan's New English Medium School, Vilyanagar, Baranati

STEAM EXPO NASCA

Developing the interest in SCIENCE & CREATIVE ARTS

EDTECH

Grade - 9

EDTECH Content development using PictoBlox



Introduction

- Makes learning simple and engaging.
- Use of animation and voice.
- Gives educators and students an advantage in every classroom.
- Making the learning process easier, interactive and more fun.

PictoBlox:
PictoBlox is a programming software based on Scratch, where you can make interactive games, animations or program robots and projects with Drone, Arduino, etc.
With a drag-and-drop functionality, logical computing, and much more, PictoBlox is perfect for decreasing the numbers of coding!
With AI features, kids can train their models to detect, recognize, and classify various images. They can make fun AI games like Rock Paper etc.

Topics developed by VPNEMS Students using PictoBlox

1. Laws of motion:
 - Newton's Laws of Motion**
 - 1st Law:** An object in motion remains in motion at a steady rate unless acted upon by an external force.
 - 2nd Law:** Force equals mass times acceleration (F=ma).
 - 3rd Law:** For every action, there is an equal and opposite reaction.
2. Structure of Heart
3. Rocket launching
4. Chemical Combination

Future application: Can be combined with AI and more things interesting.

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TANKBOT

Grade - 8

What is a tank?

- Tanks are heavily armored mobile platforms for land weapons.
- They are equipped with a large-caliber tank gun mounted in a rotating gun turret.
- They use powerful engines and tracks.
- These provide good mobility on various terrains and in various conditions including mud, snow and ice, where a wheeled vehicle would not be able to perform as efficiently.

Gear mechanism:

- Gears are wheels with teeth that mesh with each other.
- Because the teeth lock together, they can efficiently transfer force and motion.
- By meshing a pair of these elements, they are used to transmit rotations and forces from the driving shaft to the driven shaft.
- The gear which is connected to the motor is called a driver gear. The gear which is following the driver gear is called a driven gear.

EV3 Brick:

- The brick is the "brain" of the robot. Sensors and motors are connected to the brick with wires by numbered and lettered ports.
- The brick is then connected to a computer via a USB cable to run the code written using the Mindstorm software.

EV3 Motor:

- All motors have an orange or red round attachment.
- This attachment is connected to axles (long thin pieces) to which wheels or other rotating components may be attached.
- Motors must be connected to the brick via wires.
- Right and left motors are typically connected to Ports B and C, and single motors are connected to Port A.

Tankbot:

- The project is designed to replicate the actual tank model using EV3 Lego Mindstorm.
- Two large motors will provide the motion to the tank.
- One medium motor connected at front will rotate continuously with the help of gears to indicate the weapons used in battle tanks.

Applications:

1. To carry weapons on the battlefield.
2. For smooth navigation in rocky terrains.

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SAIL BOAT

Grade - HKG

Different types of Boats:



Motor boat **Paddle boat** **Yacht boat**

What is a sailboat?

- They float on force generated by wind and are used for competitive racing and other leisure activities.

How can a sailboat sail upwind?


- Sail boat catches the wind in its sail. The sail catches the wind and helps the boat to sail against the waves.

Working of the Model:

- Based on the direction of the wind, the sailboat can move and rotate along the waves and move along the water.

Sails and Axle:

- Sails are a leading wheel with wheels.
- 2 gears are installed, one connected to the gear motor.
- The gear motor is connected to the axle of the sailboat.
- The gear motor is connected to the axle of the sailboat.
- The gear motor is connected to the axle of the sailboat.



Motor boat



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AIR QUALITY INDICATOR

Grade - 8

Problem Statement : Users need to create a model to monitor quantity of air by detecting harmful gasses present in the air.

Air Quality Index : The Air Quality Index provides information on air quality and the amount of major pollutants in it. So that the air quality index is calculated according to the concentrations of these pollutants in the air. There are 6 main pollutants that are measured:

1. Ozone (O₃)
2. Nitrogen Dioxide (NO₂)
3. Sulphur Dioxide (SO₂)
4. Carbon monoxide (CO)
5. Particulate Matter
6. Lead

What is an air quality indicator ? An air quality indicator is a device that measures pollution levels in the air. They are often electronic devices with sensors that collect data about the amount of different pollutants in the air. An air quality monitor can be used to detect pollution in the immediate surroundings. Use them in your home. They are also useful for homes of those who are allergic to various pollutants or an pollutant mask outdoors, like when there is a wildfire nearby or during smog alerts.

STEAM in the project:

Science: All sorts of transportation, industries and air traffic. The government.

Technology: Arduino based air quality monitoring system.

Engineering: Monitoring of air quality monitoring using various sensors such as Arduino Uno board, MQ135 gas sensor, LCD display and buzzer.

Proposed Solution : The MQ135 gas sensor is used to detect the presence of various gases in the air. The MQ135 gas sensor is used to detect the presence of various gases in the air. The MQ135 gas sensor is used to detect the presence of various gases in the air.

Science behind the project : The MQ135 gas sensor is used to detect the presence of various gases in the air. The MQ135 gas sensor is used to detect the presence of various gases in the air.

Buzzer: A buzzer is used to alert the user when the air quality is poor. The buzzer is used to alert the user when the air quality is poor.

Scalability: The project is highly scalable as it can be used in various applications such as home automation to monitor the quality of air and presence of smoke. It can also be used in places of high pollution to determine harmful gases and their quantity present in the air.

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EXPLORER

Grade - 7

Space Explorer

What is an Explorer?

- It is a space exploration robot.
- It is an autonomous robot vehicle which projects data across the surface of the planet.

Space Explorer:

- In this project we have built a robot which can travel across the surface of the planet. Ultrasonic sensor will help robot to find distance for any of the obstacles and if detected any from take the correct action.
- Further IOT (Internet of Things) programming provides commands for the correct execution of the Explorer for movement, while facing obstacle challenge.

Motivation: There are some applications where it is difficult for humans to go. Hence, building and controlling a robot, which can do an actual exploration, is a good project. It helps to learn more about space. Paper and other things are made of plastic designed to last for a long time.

Working of Ultrasonic Sensor: Ultrasonic sensors are high frequency sound waves. These waves are sent to the robot, which can locate the distance between the robot and the obstacle. These waves are sent to the robot, which can locate the distance between the robot and the obstacle.

Coding and Programming: The code is written in C++ using the Arduino IDE. The code is written in C++ using the Arduino IDE. The code is written in C++ using the Arduino IDE.

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TRAFFIC SIGNAL

Grade - 7

Problem Statement : User has to automate traffic light to prevent traffic congestion.

What is a traffic signal ? A traffic signal is a device that controls the flow of traffic. It is used to prevent traffic congestion and accidents. It is used to prevent traffic congestion and accidents.

STEAM in the project:

Science: All sorts of transportation, industries and air traffic. The government.

Technology: Arduino based traffic light control system.

Engineering: Monitoring of traffic light control system using various sensors such as Arduino Uno board, LDR sensor, and buzzer.

Proposed Solution : The LDR sensor is used to detect the presence of vehicles in the road. The LDR sensor is used to detect the presence of vehicles in the road.

Arduino Uno Board : The Arduino Uno board is used to control the traffic light. The Arduino Uno board is used to control the traffic light.

Light emitting diode (LED): An LED is used to indicate the status of the traffic light. An LED is used to indicate the status of the traffic light.

Scalability: The project is highly scalable as it can be used in various applications such as home automation to monitor the quality of air and presence of smoke. It can also be used in places of high pollution to determine harmful gases and their quantity present in the air.

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LINE FOLLOWER

Grade - 8

Line Follower

Line Follower is an autonomous robot which follows either black line in white area or white line in black area. Robot should be able to detect and follow line and keep following it.

Entrepreneurial lead : Light sensor, motor, buzzer and IOT.

Working principle of the project : The light sensor is used to detect the presence of the line. The light sensor is used to detect the presence of the line.

How we use color : Light sensor, motor, buzzer and IOT.

Light Sensors

How does the Light Sensor detect light? The light sensor is used to detect the presence of the line. The light sensor is used to detect the presence of the line.

Algorithm: The algorithm is used to control the robot. The algorithm is used to control the robot.

Code Flow: The code flow is used to control the robot. The code flow is used to control the robot.

Applications and Future Scope: The project is highly scalable as it can be used in various applications such as home automation to monitor the quality of air and presence of smoke. It can also be used in places of high pollution to determine harmful gases and their quantity present in the air.

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