

PROJECT PROPOSAL

- I. Project Title: ROBOTICS AND INNOVATION TRAINING LABORATORY
- II. Target: Class of 40 students
- III. History:

Educational Robotics in the Last 20 Years

Over the past two decades, educational robotics has become a powerful tool for transforming how students learn science, technology, engineering, and mathematics (STEM). Between 2005 and 2025, advancements in robotics technology, coding education, and hands-on learning have reshaped classrooms around the world.

In the early 2000s, educational robotics was largely limited to kits like LEGO Mindstorms. By 2005, Arduino began shaping a maker's culture while VEX Robotics in the US developed tools for FIRST Robotics Competition. This maker's culture introduced students to tinkering while promoting basic engineering and programming concepts through building and problem-solving. These systems encouraged creativity and teamwork while providing a tangible way to understand abstract concepts such as algorithms, applied science with automation.

The values of the Maker's culture was reshaped into robotics education in the K12. Countries included robotics, building, coding, as part of the curriculum instead of a hobby group. This challenged the hardware and software developers to make their tools easy to use. This gave birth to robot kits, blocks programming, simple connections, and many more. It also gave rise to learning materials that integrate the use of robotics in learning STEM. Making projects for UNSDG was the goal. Educators also realized the value of robot games to get learners initially hooked in developing skills for robotics. Coding is now physical computing.

The exponential development of AI starting 2020 found its way in education and robotics for education. The new hardware allows the creation of sensors with embedded AI called EDGE AI. AI is also used for image and audio processing in the fields of agriculture, medicine, defense, and many more. A new generation of makers using AI is born. Like any starters, they would eventually find themselves in the regular classroom as an essential skill.

Since the early 2000, K12 schools in countries like Singapore have had a **robotics club tinker laboratory**. This is a maker space or Tinker space where learners explore building but also prepare for competitions. By 2010, robotics became part of physical computing and was made part of the regular curriculum through the "hour of code". This gave rise to **robotics training laboratories** for mainstream classes using platforms that nurture creativity, problem-solving, and digital literacy. The **robotics tinker lab**, including robotics and innovation, focuses on games and creating solutions in response to the UNSDG.

Change and development is exponential. Let's prepare our young for the future!

IV. A vision of learning robotics

Good Education = right equipment + dedicated teacher + supportive community

Robotics Training Lab



Characteristics

- Enough space to move around. In rows or U-shaped order of tables.
- Tables for computers with robots during coding and minor construction. Included are outlets for each table. Ratio of 1 table with 1 computer and 1 robot kit can seat two students.
- Shelf storage of robots/kits and charging stations.
- Safe Operating Area at the front of the classroom or the center if U-Shaped arrangement.
- Utility boxes for tools and small parts.

Teacher Requirements

- Enough space to move around and check learners' work and code.
- Limited class time allows only for safe and easy to use equipment. No time for complex building situations.
- Safety area where robots may be operated
- Facilities (tarpaulin for line following, sumo ring) for robot activities and tasks
- Robot equipment are safe to handle and can last for 6 hours on a single charge.

Teacher Requirements on robot kit and equipment

- Robots should be pre-built and can last for 6 hours on a single charge.
- Standard mobile Robots should operate in relation of Physics and can be programmed for precise turns and movements.
- Runs on rechargeable batteries that can last for two years and can be replaced by the supplier.
- Limited class time allows only for safe and easy to use equipment. No time for complex building situations. Meeting of applied Science and Math objectives take precedence over functional skills in electronics and electrical.
- Availability of examples, libraries, various applications that map with the curriculum of Science, Math and Technology. Ready-to-use materials that support the teaching and learning of the curriculum.

Robotics Tinker lab

Robotics and Innovation training laboratory. Such a lab caters to beginners until intermediate learners with physical computing as a curriculum item.

The purpose of this laboratory is to teach beginners the basic tools, equipment, software, coding by using pre-built equipment to explore. This has a HIGH LEVEL of ease of use for both teachers and learners. An area where the equipment can be safely operated is also provided. It is upon the teacher and the lessons to expose the learners to the equipment and relate it to real-life applications. An open-ended question is used to hook learners to imagine and innovate.

Characteristics of the laboratory

- a. Ample space to move from workstation (programming and building) to operating station (where robots are safely operated)
- b. Workbenches and open tables for assembly and testing
- c. Workstations containing space for computer (laptop) and robot or pre-built setup.
- d. To enhance technical skills aligned with industry demands (IoT, AI, automation).
- e. To support academic research and innovation in robotics and engineering.

The Robotics Tinker Lab will include:

- Modular robotic kits (e.g., Arduino, Raspberry Pi, Weeemake)
- Industrial-grade robotic arms (e.g., Dobot, UR, Fanuc)
- 3D printers and CNC machines for prototyping
- Workstations with simulation software (ROS, MATLAB, SolidWorks)
- VR/AR integration for immersive learning (optional)
- Networking and IoT tools

- Safety equipment and lab protocols

Here are some ways you could organize the space:

1. Front-Demonstration + Row Workstations

- Instructor/demo area at front (with screen or whiteboard).
- Rows of workbenches / tables behind, each with chairs.
- Shelves along the walls for storage of parts/tools.
- Folding or stackable chairs for space conservation.
- One or two islands of tables in middle that can be used for collaborative work.

2. U-Shape or Horseshoe Seating for Discussions

- Tables arranged in a U-shape so students face center.
- Folding or stackable chairs for space conservation.
- Instructor stands in the middle for demo.
- Shelving/storage behind seating or at back of room.

V. Estimate Budgetary Requirements:

Robotics Training Lab

Particulars		Quantity
Robot kits	Mobile Robot Kit for Movement and Sensing Smart Home for IOT Applications and Innovations	22 sets
Robot kits	SumoBot Kit 1kg	2 sets
PC Workstation/Laptop	Laptops for teacher and students use	22 sets
Competition materials	Sumo ring 1.2m	1 set
Furniture and Lab setup	Tables, chairs, shelves, tray organizer, utility boxes, LED TV, whiteboard	1 lot
Misc. supplies	Wheels and hub, motor cables, battery, sensors, wires, etc	1 lot
Electronics/Mechanical Tools	screwdrivers, soldering iron, lead and holder, screws, pliers, etc	1 lot
Training	2 days on-site training for teachers	

Robotics Tinker lab


Particulars		Quantity
Robot kits	12-in-1 Robotstorm kit SumoBot kit 1kg	10 sets
PC Workstation/Laptop	Laptop for teacher use	1 set
Equipment	3D Printer kit	1 set
Furniture and Lab setup	Tables, chairs, shelves, utility boxes, LED TV, whiteboard	1 lot
Competition materials	Sumo ring, LT playing fields	1 lot
Misc. supplies	Screws, wires, batteries, filaments, etc	1 lot
Electronics/Mechanical Tools	screwdrivers, soldering iron, lead and holder, screws, drill, pliers, multimeter, etc	1 lot
Safety Gear	Goggles, gloves	
Training	2 days on-site training for teachers	

VI. Expected Outcomes

- Improved student performance in STEM and robotics competitions.
- Enhanced capacity for innovation and prototype development.
- Creation of student-led robotics projects applicable to real-world problems
- Improved teaching strategies through robotics integration.
- Cultivation of innovation and design thinking skills among others
- Strengthened institutional reputation as a hub for robotics and technology education.

VII. Conclusion

The Robotics Training Room and Tinker Lab will serve as a cornerstone for advancing robotics education and innovation. By integrating structured instruction with open-ended exploration, the facility will empower learners to transition from theory to practice, equipping them with the skills needed for the digital and automated future.

MEMORANDUM		Date: <u>04-28-2026</u>	Released/Records: <u>l.e.p</u>
To:	<input checked="" type="checkbox"/> PSDS/DICs	<input checked="" type="checkbox"/> Elem/Sec School Heads	
	<input type="checkbox"/> Private Schools	<input type="checkbox"/> Others:	
For:	<input checked="" type="checkbox"/> Information	<input checked="" type="checkbox"/> Dissemination	
	<input type="checkbox"/> Guidance	<input type="checkbox"/> Strict Compliance	
ORLANDO E. MANUEL Ph.D., CESO V Schools Division Superintendent			
By:	<input type="checkbox"/> ASDS	<input type="checkbox"/> CID Chief	<input type="checkbox"/> SGOD Chief
	<input type="checkbox"/> AO	<input type="checkbox"/> Atty	Signature: 

Mobile Robot for Movement and Sensing

I. Technical Specifications

Item Description
Mobile Robot for Movement and Sensing <ul style="list-style-type: none">● STEM AI Voice Coding IOT Robot
Features <ul style="list-style-type: none">● Can recognize voice commands (voice recognition)● Can respond to voice commands.● Has speech synthesizer● Has library of different voice commands as applied to different contexts (i.e medicines, engineering, earthquake, road safety)● Can communicate via Bluetooth, WiFi● Has motor encoder for precise movements● Safe and rechargeable batteries
Microcontroller Board :: ESP32 with builtin motor drivers, child-safe RJ11 and 3-pin connectors (no soldering necessary) for more advanced projects
Programming Environment :: Drag-and-drop SCRATCH based graphical programming with simultaneous translation to microPython in an easy-to-use IDE.
Communication: Type C USB, builtin Wi-Fi / Dual-mode Bluetooth
Instrumentation (Actuators and Sensors): includes gyroscope, ultrasonic sensor, light sensor, 4 line follower sensors, voice recognition, 5 RGB LEDs, LCD color display, 2 push buttons, 5 direction joystick, microphone, speaker, and 2 encoder motors for a comprehensive educational experience.
Estimated Price range: P15,000 to P20,000 per kit
Delivery in 60-90 days



II. Other Requirements

- Certification and Test Reports
 - Certificate of distributorship issued to Philippine suppliers
 - Certificate of Compliance
- Product and Battery Certification
 - Certificates of Compliance for Safety, EMC, Radio, and Health
 - Material Safety Data Sheet for batteries
 - IEC 62133 Test Report
 - UN38.3 Lithium Battery Test Summary
 - Verification of EMC Compliance
 - UL 1642
- Supplier must submit a demo unit for inspection and testing during the bidding process

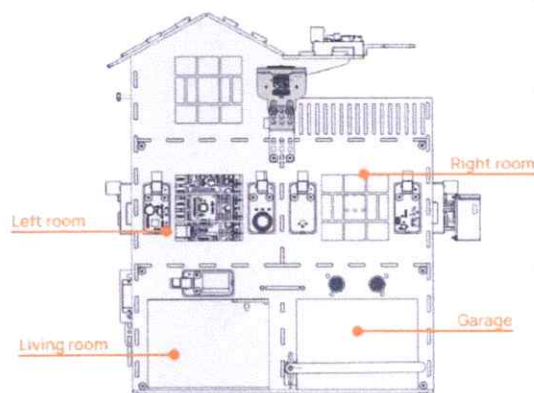
III. Testing Standards

- Lessons and sample programs
 - with 7 video lessons and Activity Book
 - with 40+ sample programs
 - with 40+ corresponding videos (displaying the output of each programs)
- Sample programs and video outputs
- Robots can be charged for 30-45 minutes and can be used continuously for 2-3 hours.
- Robot can move with precision
 - can move forward and backward for one meter with precision
 - can move in a straight path
 - can draw a circle, square, rectangle and other shapes with precision
- Robot can follow a black and white line
 - can follow straight and curve lines
 - can navigate through intersecting lines
- Can measure distance with accuracy and with the minimum range of 4cm - 150cm.
- With a colored LCD screen that can display text, numbers, characters, shapes, emoticons (smile, laugh, cheer, and cry) as part of the programming.
- Robot can recognize and respond (speak) to voice commands
- Robot can recognize and follow voice commands for different robot functions that have been programmed
 - Test on movement, display, sound, and more.
 - Voice command libraries for applied and contextual use in medical, disaster, and smart homes. More voice commands can be added.

SMART HOME FOR IOT APPLICATIONS AND INNOVATIONS

I. Technical Specifications

Item Description
Smart Home for IOT applications and Innovations (AI)
<p>Features</p> <ul style="list-style-type: none"> ● Smart Home Security and Alarm System ● Equipped with an AI camera for vision sensing, speech recognition and synthesis modules ● Face recognition ● Car plate number recognition ● Car parking system ● Temperature and Humidity detection ● Voice-controlled lighting, doors and windows ● Music playback ● Weather detection, and even a smart irrigation system using the ultrasonic atomizer, providing a glimpse into the future of home automation. ● Gas detection, earthquake detection, rain drop detection, Has Solar panel and module ● Can communicate via Bluetooth and WiFi
Microcontroller Board :: Arduino ATmega256 with builtin motor drivers, child-safe RJ11 and 3-pin connectors (no soldering necessary) for more advanced projects.
Its mainboard has the ability to support interchangeable main control MCUs. Currently, it offers compatibility with three different MCUs: MEGA-328P, MEGA-2560, and ESP32
Programming Environment :: Drag-and-drop SCRATCH based graphical programming with simultaneous translation to Arduino C language in an easy-to-use IDE.
Communication: Type B USB, Bluetooth, Wifi
Safe and rechargeable batteries
Instrumentation (Actuators and Sensors): Ultrasonic, Gyroscope, Barometer, Combustible gas, PM2.5, WIFI module, OLED (Organic Light-Emitting Diode) display module, Atomizer module, MP3 module, 9g servo x3, Temperature and humidity sensor, RGB LED strip x2, solar panel power generation module
Intelligent modules: AI camera (vision sensor), speech recognition module, speech, synthesis module
Estimated Price Range: P40,000 to P50,000 per kit
Delivery in 60-90 days



II. Other Requirements

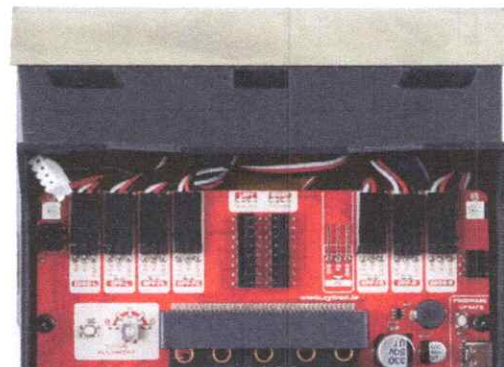
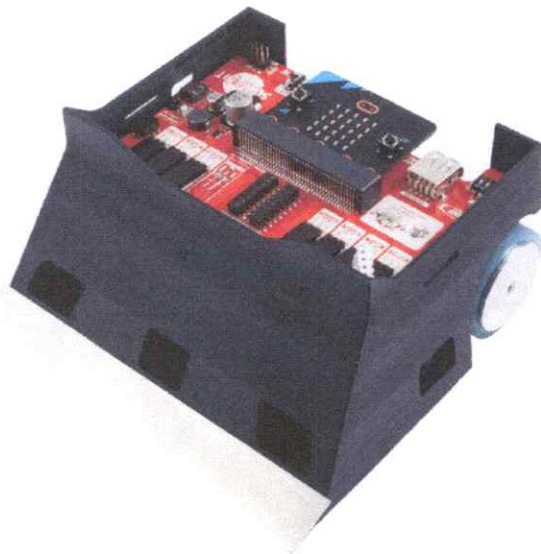
- Learning Materials
- Sample programs
- Electronics are safe for educational use and compliant with electromagnetic and hazardous material limits
- Functional Testing: all sensors (temperature, light, motion) respond accurately
- Certification and Test Reports
 - Certificate of distributorship issued to Philippine suppliers
 - Certificate of Compliance
- Battery Certification
 - IEC 62133 Test Report
 - Verification of EMC Compliance
 - UL 1642
 - UN 38.3 Test Report
 - Material Safety Data Sheet for batteries
- Supplier must submit a demo unit for inspection and testing during the bidding process

III. Testing Standards

- Using voice commands, it can:
 - Open/close the garage gate, door, and windows
 - Turn off/on lights, humidifier,
 - Control color and brightness of the light
 - display weather (temperature, humidity, air pressure, air quality)
 - play songs / music playback
 - control appliances (like aircon, tv, etc)
- Use AI camera for security and alarm system
 - open the garage gate using car's plate number
 - open the door using facial recognition
 - Car parking system
- Weather detection, and even a smart irrigation system using the ultrasonic atomizer, providing a glimpse into the future of home automation.
- Gas detection, earthquake detection, rain drop detection
- Has Solar panel and module
- Can communicate via Bluetooth and WiFi

I. Technical Specifications

Item Description
<ul style="list-style-type: none">● An autonomous sumo robot that be controlled wirelessly via USB JoyStick
Features: <ul style="list-style-type: none">● Designed for micro:bit, beginner friendly, easy drag and drop code with MakeCode for autonomous Sumo robot● Detachable motor driver, replace without hassle whenever needed● One motor driver per DC motor● Powerful Motor Driver that supports up to 13A (continuous) motors and 30A peak current.● Mode interchangeable without reprogramming.<ul style="list-style-type: none">- USB host for wireless USB joystick, easily interchangeable between autonomous and remote-controlled within seconds!● Onboard motor alignment adjust and calibration● 4-way DIP switch for 16 different winning strategies!
Programming Environment : Drag-and-drop graphical programming interface. Can easily switch into JavaScript or Python for text-based programming.
Wireless Controller: with USB port for Wireless RC Joystick Control
Sensors: 2 reflector sensors (edge detection), and 5 object sensor
Estimated Price range: P25,000 to P30,000 per kit
Delivery in 60-90 days



II. Other Requirements

- Product and Battery Certification
 - UN38.3 Lithium Battery Test Summary
 - IEC 62133 Test Report
- Supplier must submit a demo unit for inspection and testing during the bidding process

III. Testing Standards

- Manuals and video tutorials
 - Robot assembly video guide
 - sample programs for Auto
 - guide and sample programs for RC
- Motors
 - can push 3kg objects
 - motor can be aligned and calibrated via onboard potentiometer
- Edge Sensors
 - can be used as digital or analog input
 - Sensing Distance (Height): 1mm to 40mm
- Object Sensor
 - reverse polarity protection
 - with builtin adjustable sensing range

12-in-1 Robot Kit for STEM Learning

I. Technical Specifications

Item Description
Mobile Robot for Movement and Sensing <ul style="list-style-type: none">● 12-in-1 Robot Kit for STEM Learning
Features <ul style="list-style-type: none">● Can be assembled to over 12 different forms (one form at a time)● Mechanical parts are made of metal beams. Can build and dismantle safely● Can communicate via Bluetooth● Has motor encoder for precise movements● Safe and rechargeable batteries
Microcontroller Board: Arduino Uno with max 4A motor drivers and expandable to 10 motor capacity; child-safe RJ11 and 3-pin connectors (no soldering necessary); SCL-SDA expansion for more advanced projects
Programming Environment: Drag-and-drop SCRATCH based graphical programming with simultaneous translation to Arduino C in an easy-to-use IDE.
Communication: Type B USB, Bluetooth
Mechanical Building Blocks: Anodized aluminum and stainless steel composition for main parts including slotted beams, gears, belts, sprocket, bearing, tracks, wheels, screws, nuts and bolts; Combining parts can build 13 pre-set forms including 3-wheeled, 4-leg spider, robot tank, penguin, wall-e, bi-ped walking, self-balancing, bar-tender, 4-DOF robot arm, fork-lift, ball-launcher, Robot-Sumo, camera dolly, robot-arm tank, robot-arm 3-wheels. Uses stable metal gear motors
Instrumentation (Actuators and Sensors): Includes 3 metal gear motors, IR sensor with IR remote, bluetooth module, light sensor, sound sensor, RGB LED, buzzer, RGB RING, line-follower, ultra-sonic distance sensor, gyroscope sensor, switch sensor and 2 motor encoder sensor
Estimated Price range: Php40,000 to Php50,000 per kit
Delivery in 60-90 days



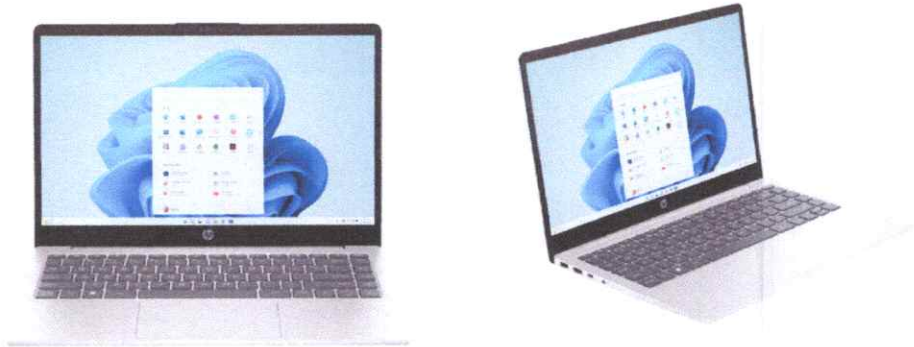
II. Other Requirements

- Learning Materials
- Sample programs
- Certification and Test Reports
 - Certificate of distributorship issued to Philippine suppliers
 - Certificate of Compliance
- Product and Battery Certification
 - IEC 62133 Test Report
 - Verification of EMC Compliance
 - UL 1642
 - UN 38.3 Test Report
 - Material Safety Data Sheet
 - Certificate of Conformity
 - EN IEC 62368-1
 - EN 301489 - EMC Test
 - EN 62479
 - EN 300 328 V2.2.2
- Supplier must submit a demo unit for inspection and testing during the bidding process

III. Testing Standards

- Lessons and sample programs
 - with more than 12 for 12 pre-set designs
 - with 35+ sample programs
 - with 35+ corresponding videos (displaying the output of each programs)
 - Provided are the lessons and activities in video forms
- Robots can be charged for 30-40 minutes and can be used continuously for 3-4 hours.
- Building all 12 designs and running sample programs
- Basic robot car (one of the designs) follows lines and avoids obstacles. Can move up an inclined plane of 20 degrees. Can pull additional load of up to 300 grams.
- Robot can move with precision
 - can move forward and backward for one meter with precision
 - can move in a straight path
 - can draw a circle, square, rectangle and other shapes with precision
- Can measure distance of objects from 4cm - 300cm with accuracy. Can detect sound (determine frequency range) and Light (lumens range)
- Add regular sensors to extend functionality (using Arduino 37-in-1 sensor kit)

Technical specifications for Laptop:



Key specifications

- **Processor:** Intel Core i5 or equivalent AMD processor
- **Memory:** 8GB
- **Storage:** 256GB PCIe NVMe M.2 SSD
- **Display:** 14-inch diagonal, FHD (1920 x 1080)
- **Graphics:** Integrated Intel UHD Graphics
- **Operating System:** Windows 11 Home

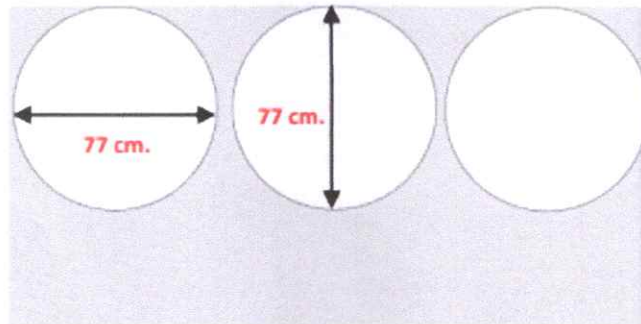
Price range: 40,000.00 to 60,000.00

Delivery in 60-90 days

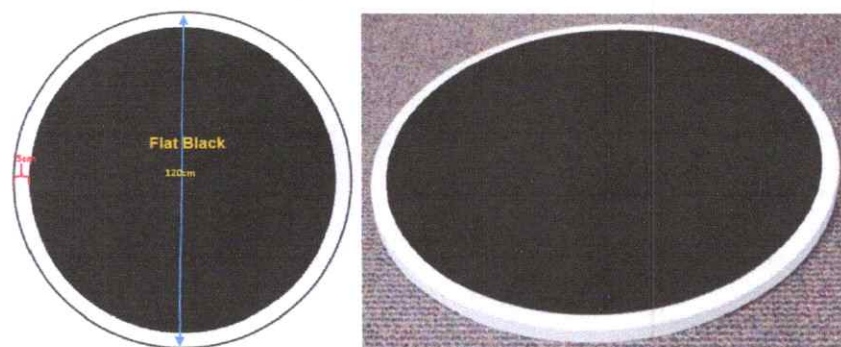
SUMOBOT RINGS FOR TRAINING AND COMPETITION

1. SUMOBOT RING FOR TRAINING

- 1.1. 500g Sumobot Ring
- 1.2. Estimated Price range: 8,000.00 to 12,000.00
- 1.3. Materials Needed
 - 1.3.1. $\frac{3}{4}$ inch Marine Plywood Class A
 - 1.3.2. Duco finish
 - 1.3.3. Primer
- 1.4. Ring Diameter: 77cm
- 1.5. Procedure:
 - 1.5.1. Cut your $\frac{3}{4}$ " Marine plywood into 3 rings with 77cm diameter (See cut-sheet below).

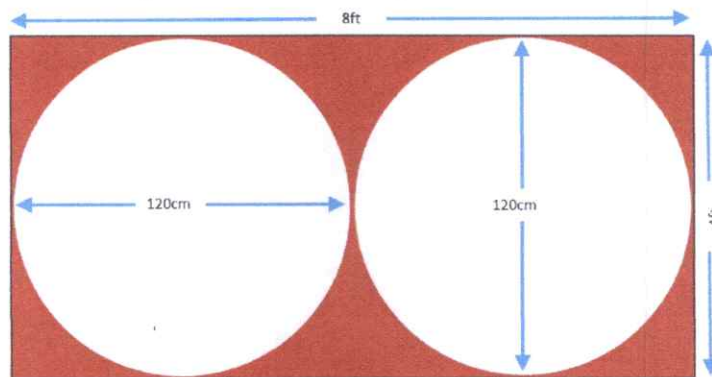


- 1.5.2. Use primer and DUCO FINISH for the wood. The top should have a flat matte finish (NO GLOSSY).
- 1.5.3. The sides are painted white together with the 2.5cm border. The UNDERSIDE (BOTTOM) does not need to be painted.

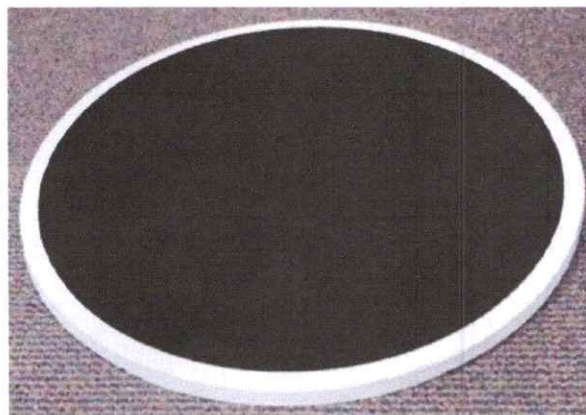
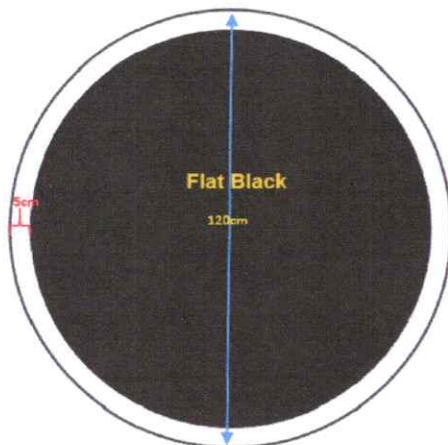


2. SUMOBOT RING FOR COMPETITION

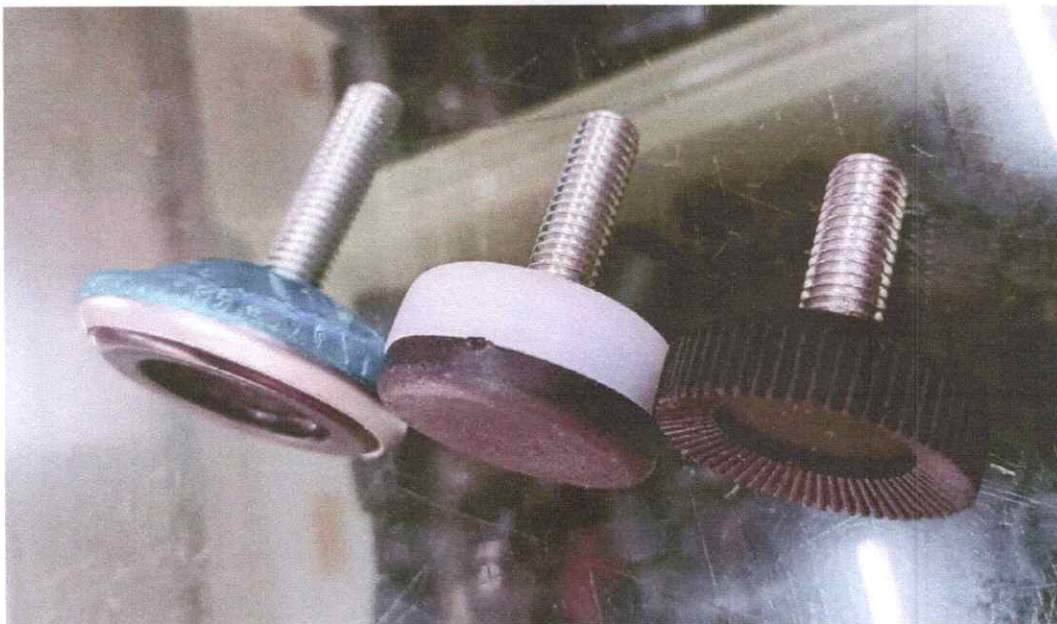
- 2.1. 1kg Sumobot Ring
- 2.2. Estimated Price range: 8,000.00 to 12,000.00
- 2.3. Materials Needed
 - 2.3.1. $\frac{3}{4}$ inch Marine Plywood Class A
 - 2.3.2. Duco finish
 - 2.3.3. Primer
 - 2.3.4. 2mm metal plate (120cm diameter) bolted to the wood
 - 2.3.5. Metal sheet
- 2.4. Ring Diameter: 120cm
- 2.5. Procedure:
 - 2.5.1. Cut your $\frac{3}{4}$ " Marine plywood and metal plate into 2 rings with 120 cm diameter (See cut-sheet below).

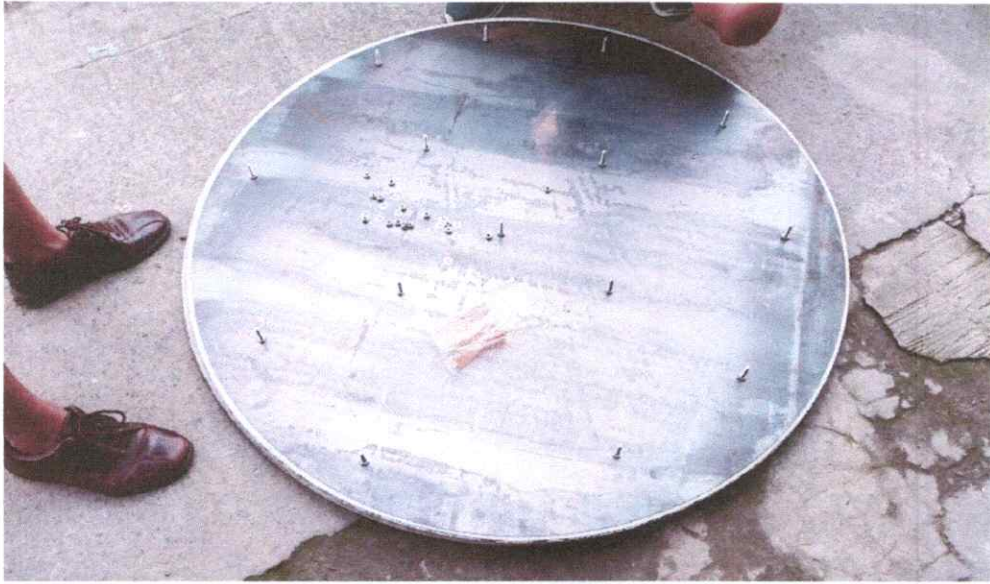


- 2.5.2. Mount the metal plate on the wood with bolts and nuts.
- 2.5.3. Use a metal sheet for the edging.
- 2.5.4. Use primer and DUCO FINISH for the metal plate. The top should have a flat matte finish (NO GLOSSY).
- 2.5.5. The sides are painted white together with the 5 cm border. The UNDERSIDE (BOTTOM) does not need to be painted.



Additional Pictures of 120cm Sumo Ring (with metal plate)





DRAFT Training Matrix (detailed Training Matrix to follow)

A. Materials Needed

The following are needed during the TRAINING

- Computer (desktop or laptop) per trainee. One computer for each robot.
MINIMUM specs below:
 - OS: Windows 10 and above (MAC OS not compatible)
 - Processor: Core i5 and above (or equivalent AMD)
 - RAM: at least 4GB
 - Disk space: at least 8GB
 - Programming Software and Sample Programs
- A table where trainees can program their robot comfortably (with their laptop and the robot)
- An outlet / extension cord where participants can charge their laptop.
- An area where participants can run and test the robot (at least 3 x 3m.)
- Playing Field

B. Training Outline (max of 8 hours per day)

Time	Day 1	Day 2
8:00 AM	<ul style="list-style-type: none">- Opening Program- Distribution of robots- Checking and inventory of robot kits	Opening Program Project plan & proposal (30 min)
9:00 AM	Introduction <ul style="list-style-type: none">- Safety Tips- Assemble the robot (if needed)	Programming the sensors
1:00 PM	Project ideas discussion and presentation (30mins) Programming	- Sensor Activities
3:00 PM	Project ideas presentation (30mins) Programming (continuation) Performance Tasks	Mini Competition
5:00 PM	END OF THE TRAINING	END OF THE TRAINING

C. Participants

- Max 40 participants

D. Trainers (2 pax):



- Names to follow

**GABIGROUP INC.**

3/F Unit A & B, 6 Guirayan St. cor. Lantawan St., Barangay Doña Imelda, Quezon City, Philippines, 1113
 Tel no. +639190664759 | +639190664760

Date	April 25, 2026
To	Dr. Orlando E. Manuel, CESO V Schools Division Superintendent DepEd - Schools Division of Nueva Vizcaya
SUBJECT	Quotation - Robotics Laboratory

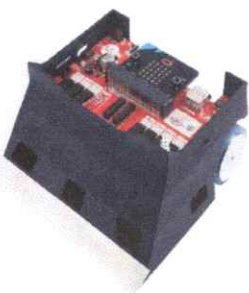
We are pleased to send you the price quotation of the following:

QTTY.	ITEM DESCRIPTION	UNIT PRICE	TOTAL
20 sets	<p>Mobile Robot for Movement and Sensing</p>  <p>Item Description: Mobile Robot for Movement and Sensing STEM AI Voice Coding IOT Robot</p> <p>Features:</p> <ul style="list-style-type: none"> • Can recognize voice commands (voice recognition) • Can respond to voice commands. • Has speech synthesizer. • Has library of different voice commands as applied to different contexts (i.e medicines, engineering, earthquake, road safety) • Can communicate via Bluetooth, WiFi • Has motor encoder for precise movements • Safe and rechargeable batteries <p>Microcontroller Board :: ESP32 with builtin motor drivers, child-safe, RJ11 and 3-pin connectors (no soldering necessary) for more advanced projects</p> <p>Programming Environment :: Drag-and-drop SCRATCH based graphical programming with simultaneous translation to microPython in an easy-to-use IDE.</p> <p>Communication: Type C USB, builtin Wi-Fi / Dual-mode Bluetooth</p> <p>Instrumentation (Actuators and Sensors): includes gyroscope, ultrasonic sensor, light sensor, 4 line follower sensors, voice recognition, 5 RGB LEDs, LCD color display, 2 push buttons, 5 direction joystick, microphone, speaker, and 2 encoder motors for a comprehensive educational experience.</p>	Php 19,000.00	Php 380,000.00
20 sets	<p>Smart Home For lot Applications and Innovations</p>  <p>Item Description: Smart Home for IOT applications and Innovations AI Smart Home Learning Kit</p> <p>Features:</p> <ul style="list-style-type: none"> • Smart Home Security and Alarm System • Equipped with an AI camera for vision sensing, speech recognition and synthesis modules • Face recognition • Car plate number recognition • Car parking system • Temperature and Humidity detection • Voice-controlled lighting, doors and windows 	Php 49,000.00	Php 980,000.00







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3/F Unit A & B, 6 Guirayan St. cor. Lantawan St., Barangay Doña Imelda, Quezon City, Philippines, 1113
 Tel no. +639190664759 | +639190664760

	<ul style="list-style-type: none"> • Music playback • Weather detection, and even a smart irrigation system using the ultrasonic atomizer, providing a glimpse into the future of home automation. • Gas detection, earthquake detection, rain drop detection • Has Solar panel and module • Can communicate via Bluetooth and WiFi <p>Microcontroller Board :: Arduino ATmega256 with builtin motor drivers, child-safe RJ11 and 3-pin connectors (no soldering necessary) for more advanced projects. Its mainboard has the ability to support interchangeable main control MCUs. Currently, it offers compatibility with three different MCUs: MEGA-328P, MEGA-2560, and ESP32</p> <p>Programming Environment :: Drag-and-drop SCRATCH based graphical programming with simultaneous translation to Arduino C language in an easy-to-use IDE.</p> <p>Communication: Type B USB, Bluetooth</p> <p>Safe and rechargeable batteries</p> <p>Instrumentation (Actuators and Sensors): Ultrasonic, Gyroscope, Barometer, Combustible gas, PM2.5, WIFI module, OLED (Organic Light-Emitting Diode) display module, Atomizer module, MP3 module, 9g servo x3, Temperature and humidity sensor, RGB LED strip x2, solar panel power generation module</p> <p>Intelligent modules: AI camera (vision sensor), speech recognition module, speech, synthesis module</p>		
4 sets	<p>Sumobot</p> <p>Item Description:</p> <p>An autonomous sumo robot that be controlled wirelessly via USB JoyStick</p>  <p>Features:</p> <ul style="list-style-type: none"> • Designed for micro:bit, beginner friendly, easy drag and drop code with MakeCode for autonomous Sumo robot • Detachable motor driver, replace without hassle whenever needed • One motor driver per DC motor • Powerful Motor Driver that supports up to 13A (continuous) motors and 30A peak current. • Mode interchangeable without reprogramming. • USB host for wireless USB joystick easily interchangeable between autonomous and remote- controlled within seconds! • Onboard motor alignment adjust and calibration • 4-way DIP switch for 16 different winning strategies! <p>Programming Environment : Microsoft MakeCode Editor, drag-and-drop graphical programming interface. Can easily switch into JavaScript or Python mode on MakeCode Editor for text-based programming.</p> <p>Wireless Controller: with USB port for Wireless RC Joystick Control.</p> <p>Sensors: 2 reflector sensors (edge detection), and 5 object sensors.</p>	Php 29,000.00	Php 116,000

**GABIGROUP INC.**

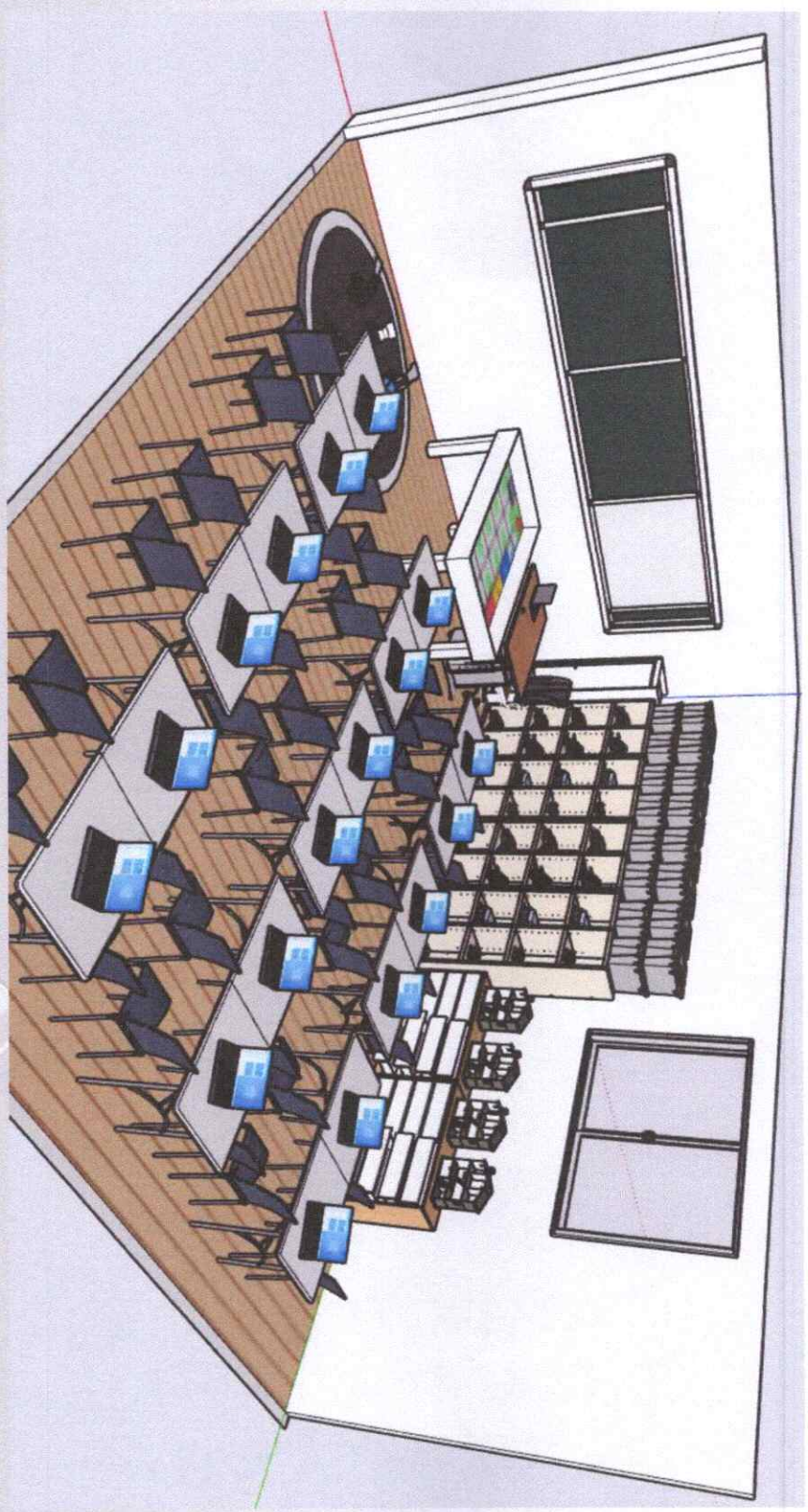
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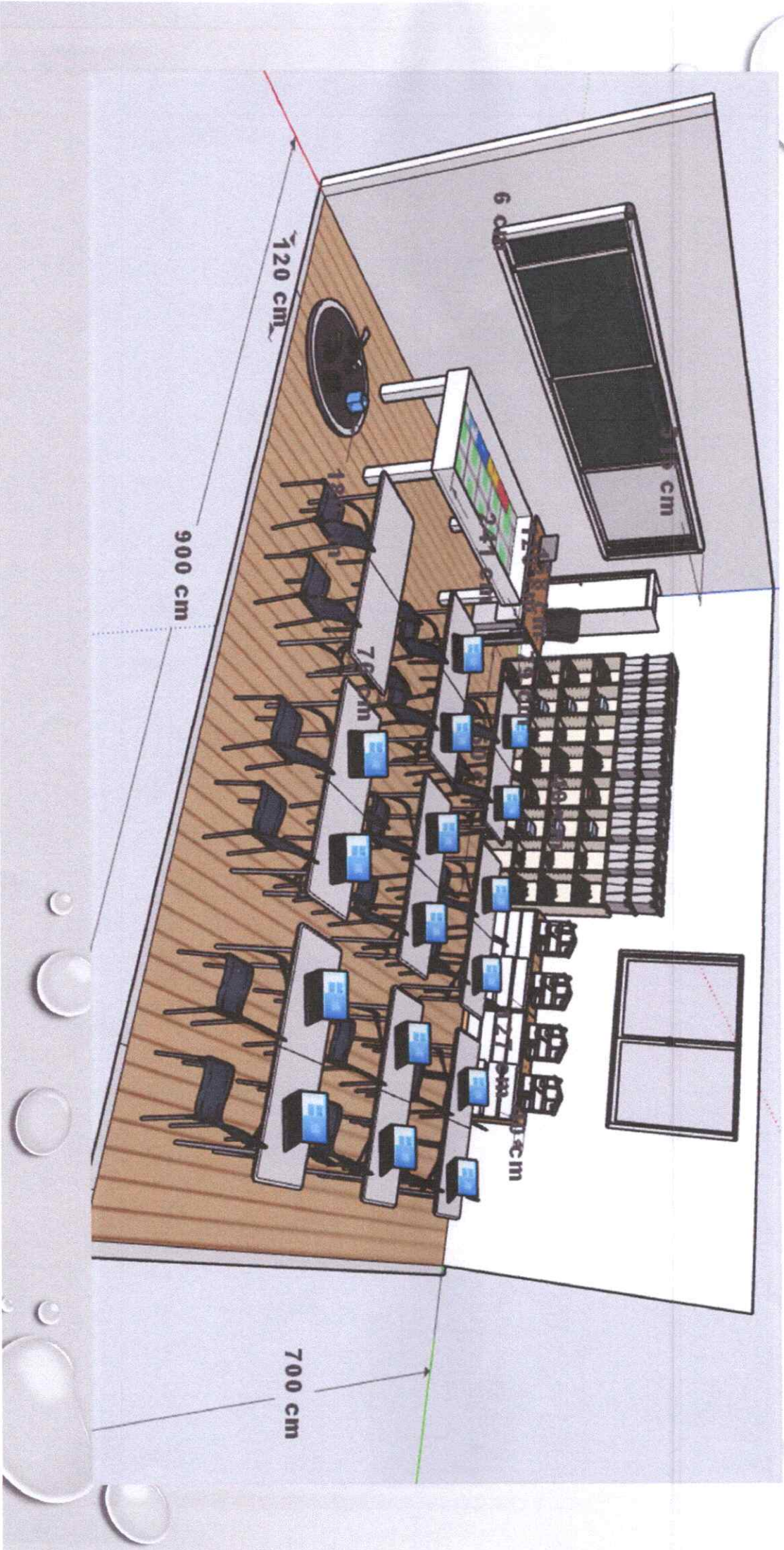
20 sets	<p>12-in-1 Robot Kit for STEM Learning</p> <p>Item Description: Mobile Robot for Movement and Sensing 12-in-1 Robot Kit for STEM Learning</p>  <p>Features:</p> <ul style="list-style-type: none"> • Can be assembled to over 12 different forms (one form at a time) • Mechanical parts are made of metal beams. • Can build and dismantle safely • Can communicate via Bluetooth • Has motor encoder for precise movements • Safe and rechargeable batteries  <p>Microcontroller Board: Arduino Uno with max 4A motor drivers and expandable to 10 motor capacity; child-safe RJ11 and 3-pin connectors (no soldering necessary); SCL-SDA expansion for more advanced projects</p> <p>Programming Environment: Drag-and-drop SCRATCH based graphical programming with simultaneous translation to Arduino C in an easy-to-use IDE.</p> <p>Communication: Type B USB, Bluetooth</p> <p>Mechanical Building Blocks: Anodized aluminum and stainless steel composition for main parts including slotted beams, gears, belts, sprocket, bearing, tracks, wheels, screws, nuts and bolts; Combining parts can build 13 pre-set forms including 3-wheeled, 4-leg spider, robot tank, penguin, wall-e, bi-ped walking, self-balancing, bar-tender, 4-DOF robot arm, fork-lift, ball-launcher, Robot-Sumo, camera dolly, robot-arm tank, robot-arm 3-wheels. Uses stable metal gear motors</p> <p>Instrumentation (Actuators and Sensors): Includes 3 metal gear motors, IR sensor with IR remote, bluetooth module, light sensor, sound sensor, RGB LED, buzzer, RGB RING, line-follower, ultra-sonic distance sensor, gyroscope sensor, switch sensor and 2 motor encoder sensor</p>	Php 49,000.00	Php 980,000.00
20 sets	<p>Laptop Computer</p> <p>Key specifications:</p> <ul style="list-style-type: none"> • Processor: Intel Core i5 or equivalent AMD • Memory: 8GB • Storage: 256GB PCIe NVMe M.2 SSD • Display: 14-inch diagonal, FHD (1920 x 1080) • Graphics: Integrated Intel UHD Graphics • Operating System: Windows 11 Home 	Php 59,000.00	Php 1,180,000.00
1 set	<p>Sumobot Ring for Training and Competition</p> <p>Materials to use:</p> <ul style="list-style-type: none"> • Ring Diameter: 120cm • 3/4 inch Marine Plywood Class A • Duco finish • Primer • 2mm metal plate (120cm diameter) • Metal sheet for the side of the ring 	Php 11,000.00	Php 11,000.00

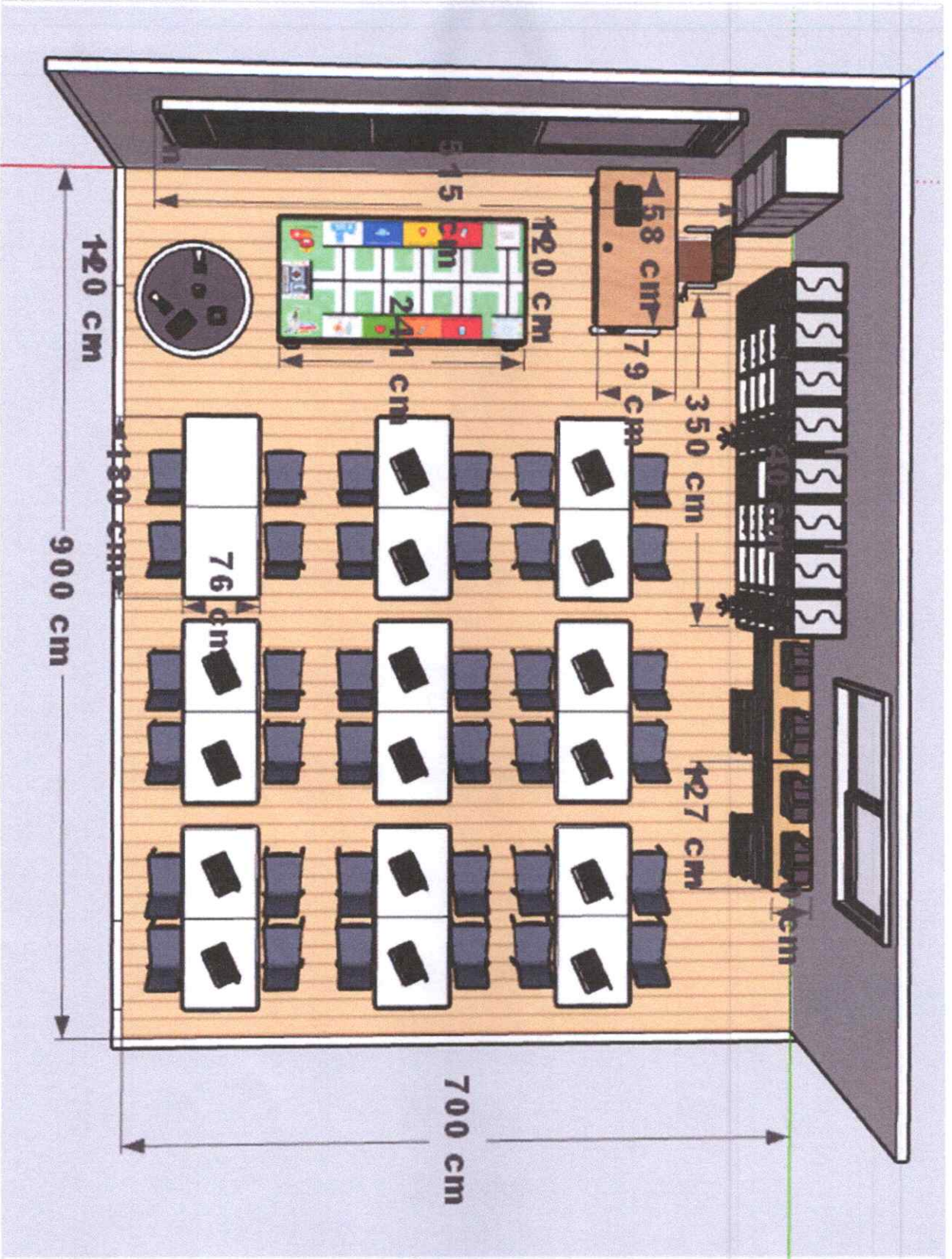
ROBOTICS LABORATORY DESIGN



SIDE VIEW

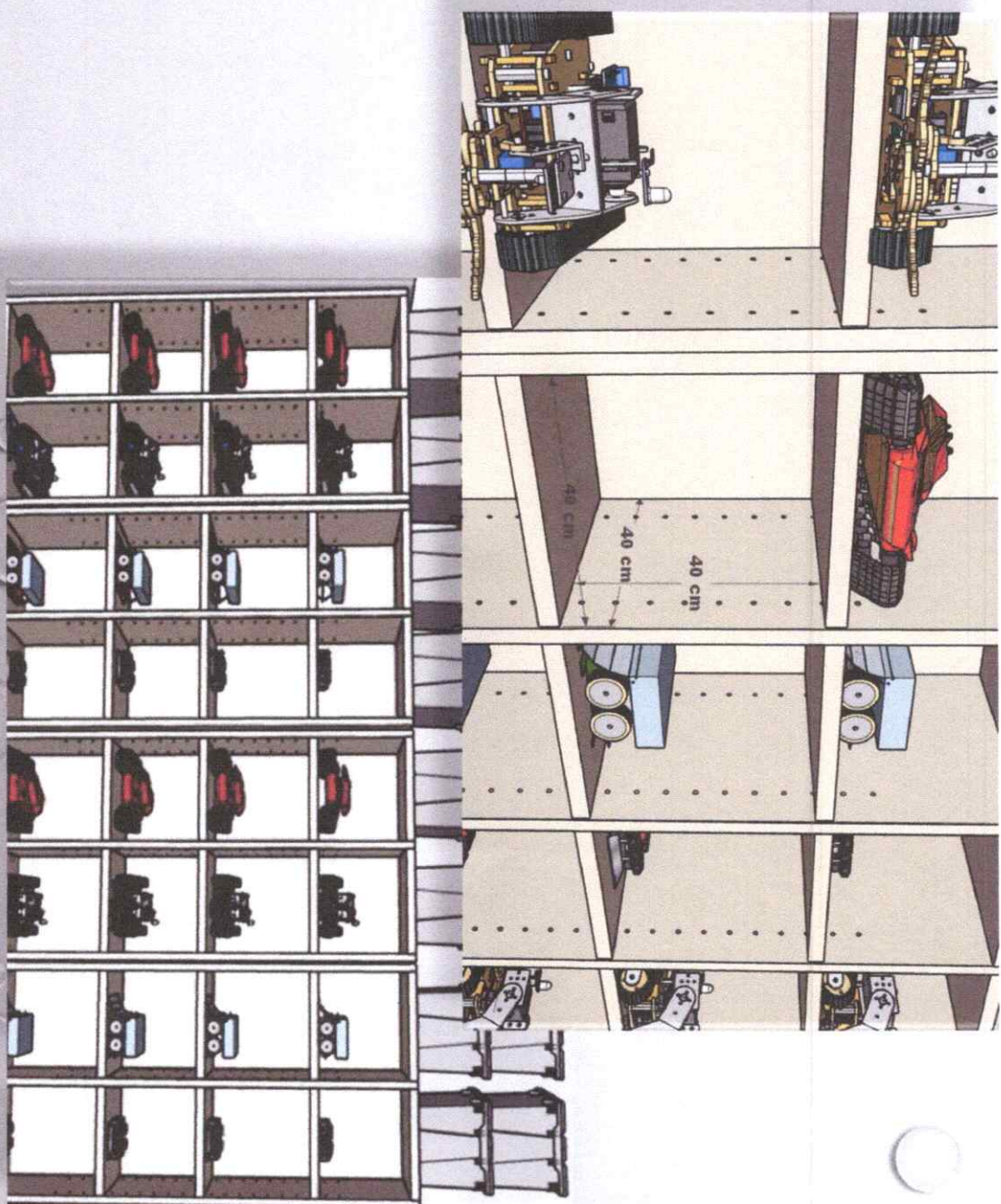
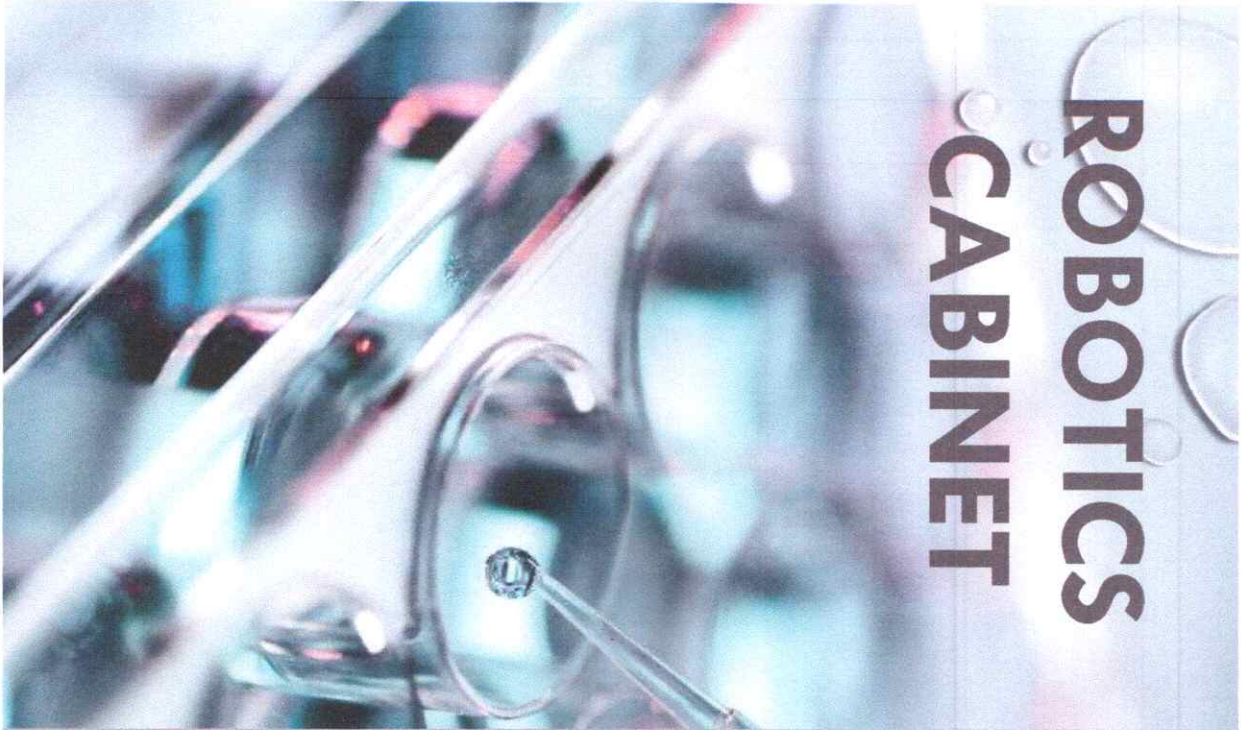


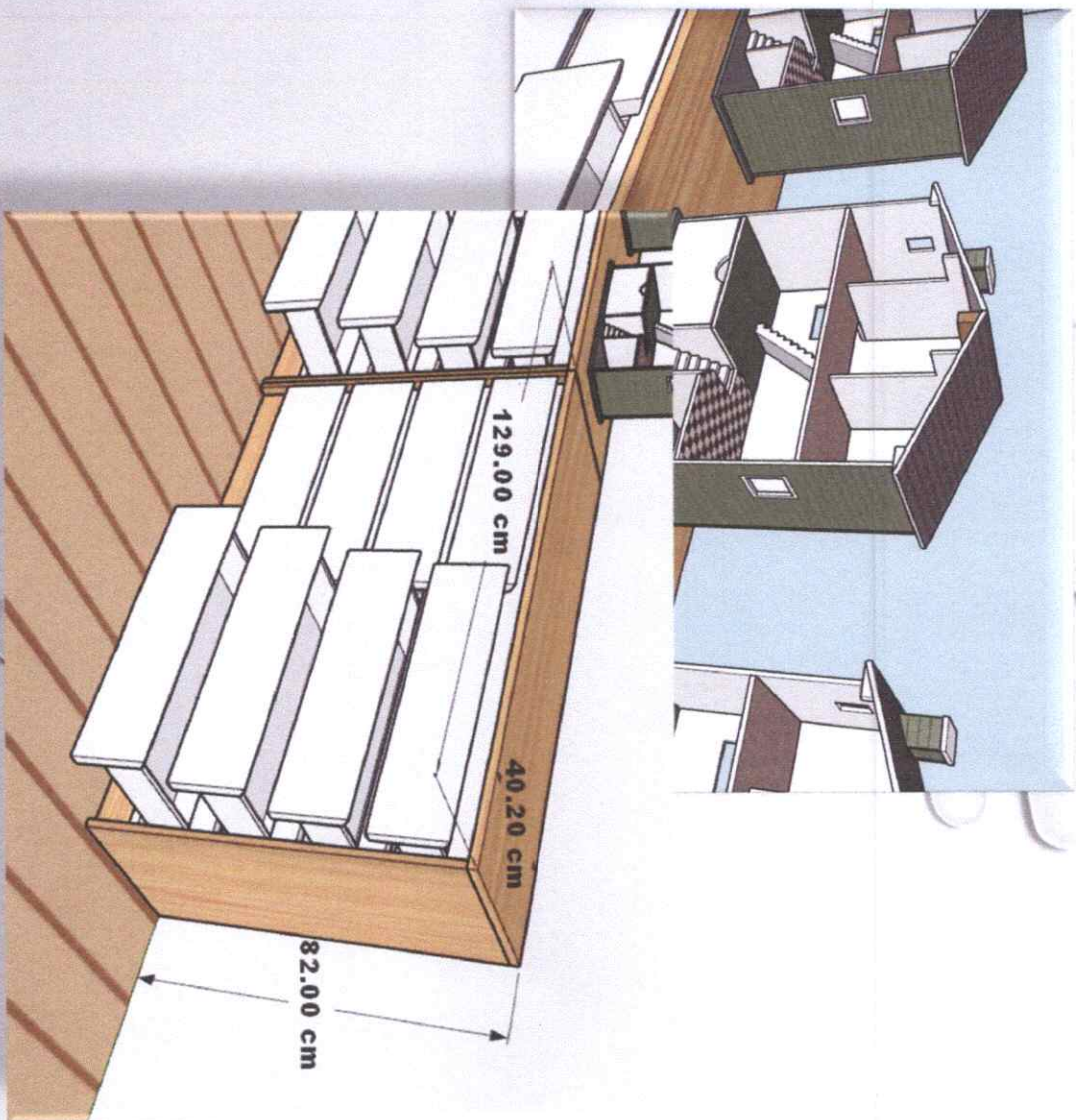




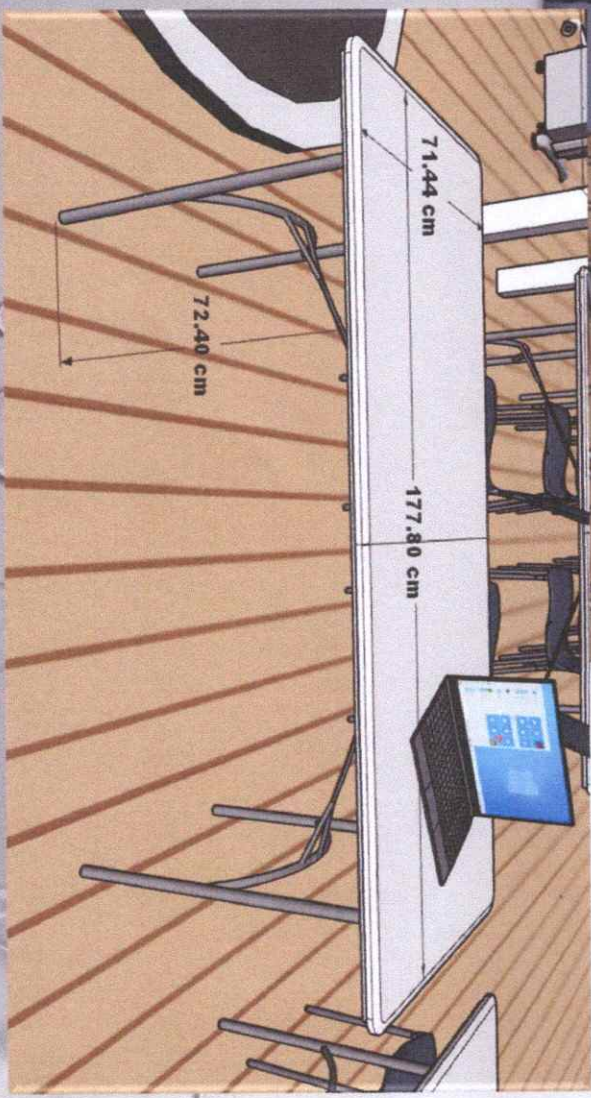
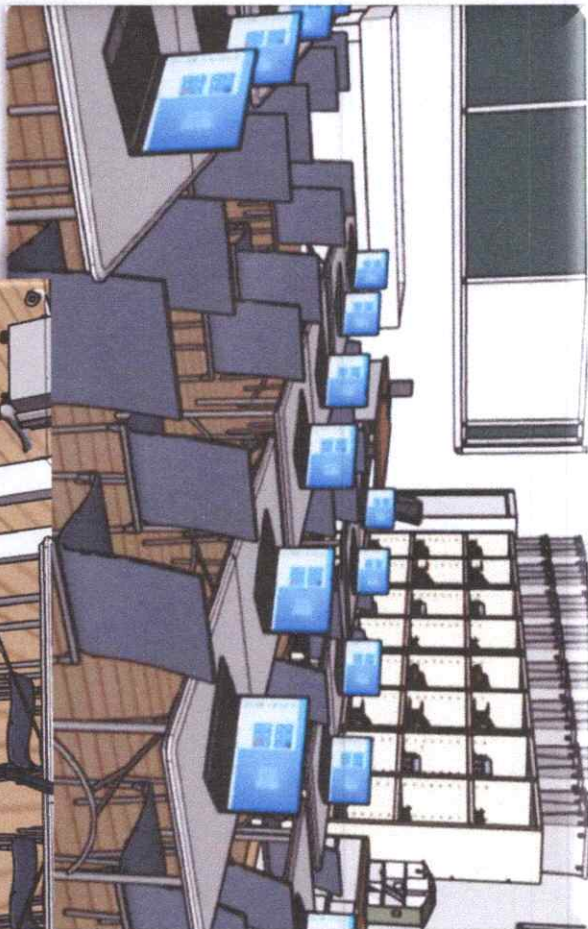
TOP VIEW

ROBOTICS CABINET



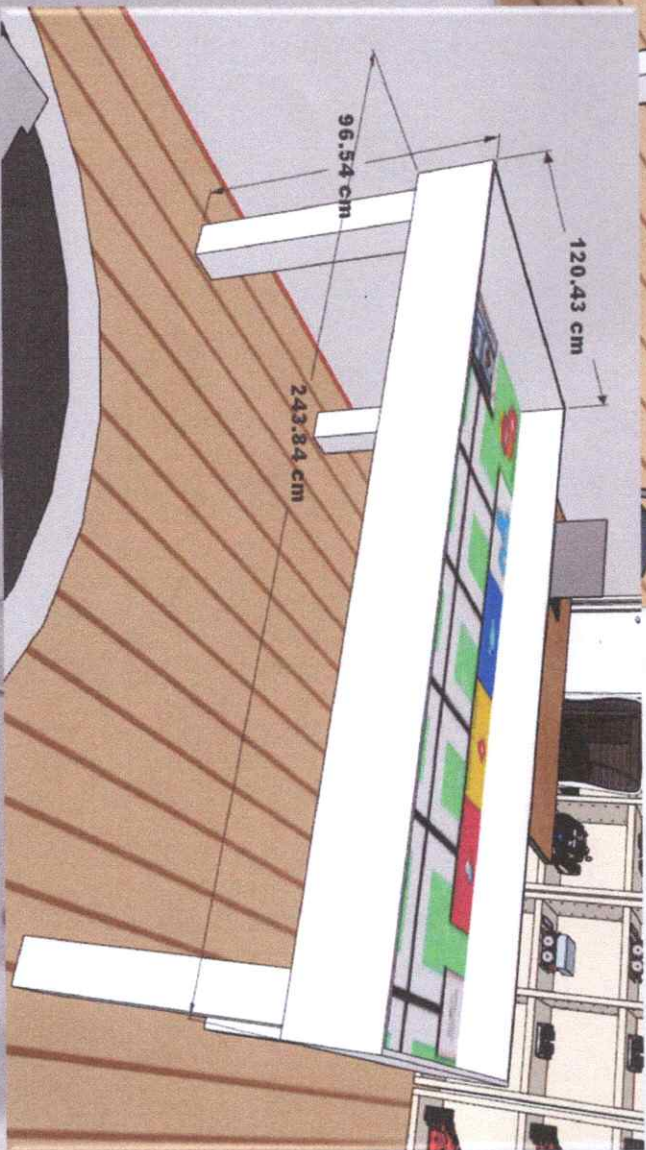
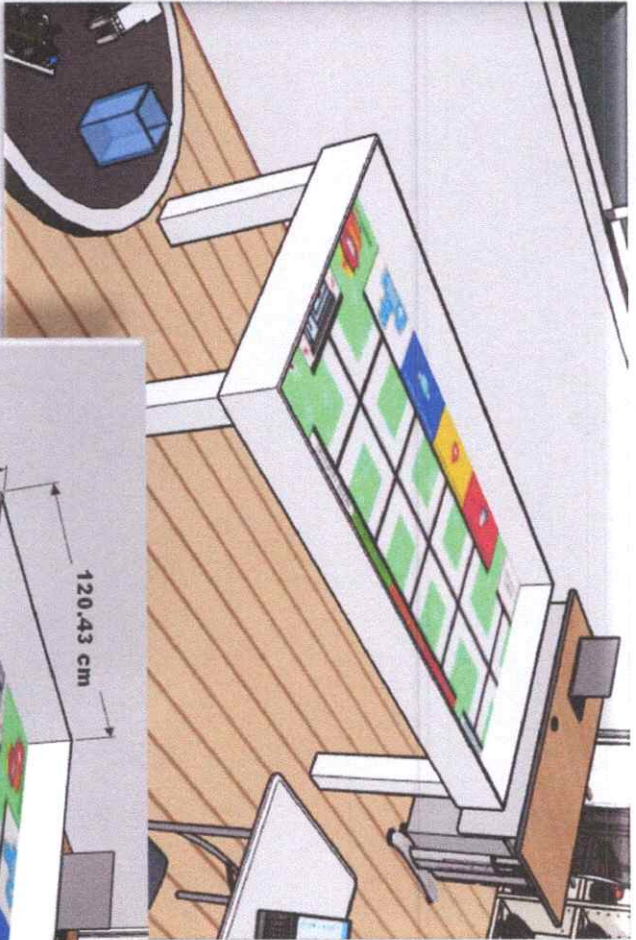


DRAWER CABINET FOR SMART HOME

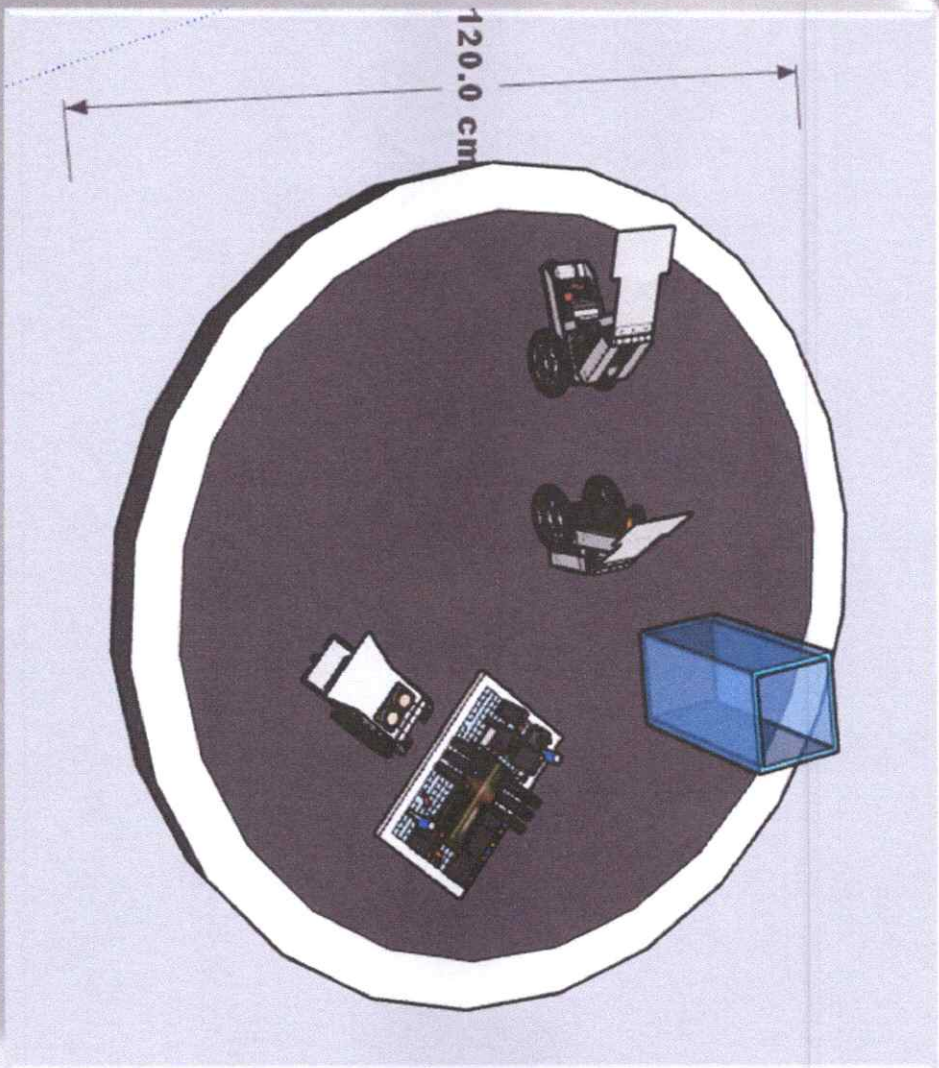


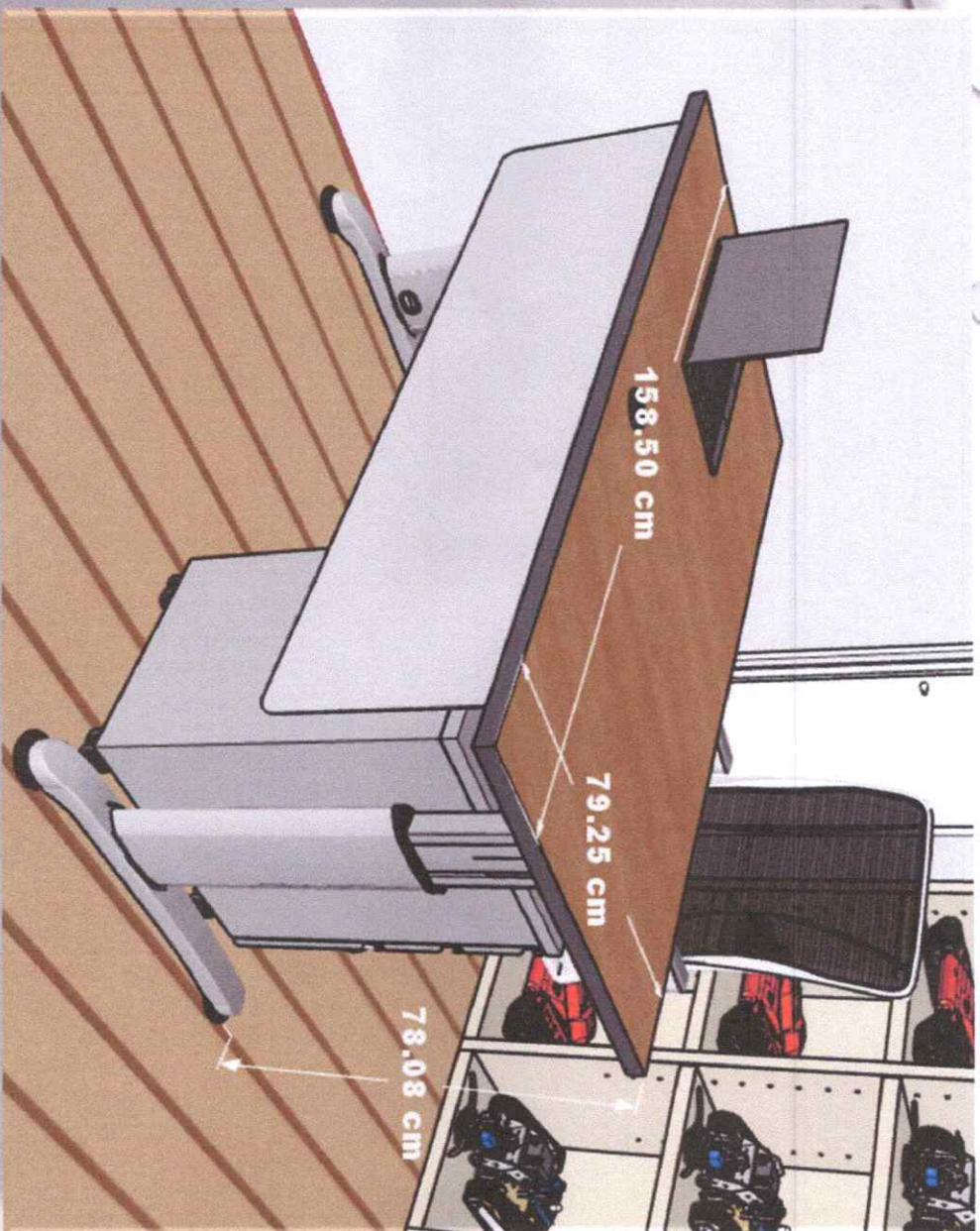
COMPUTER TABLES AND CHAIRS

PLAYING FIELD

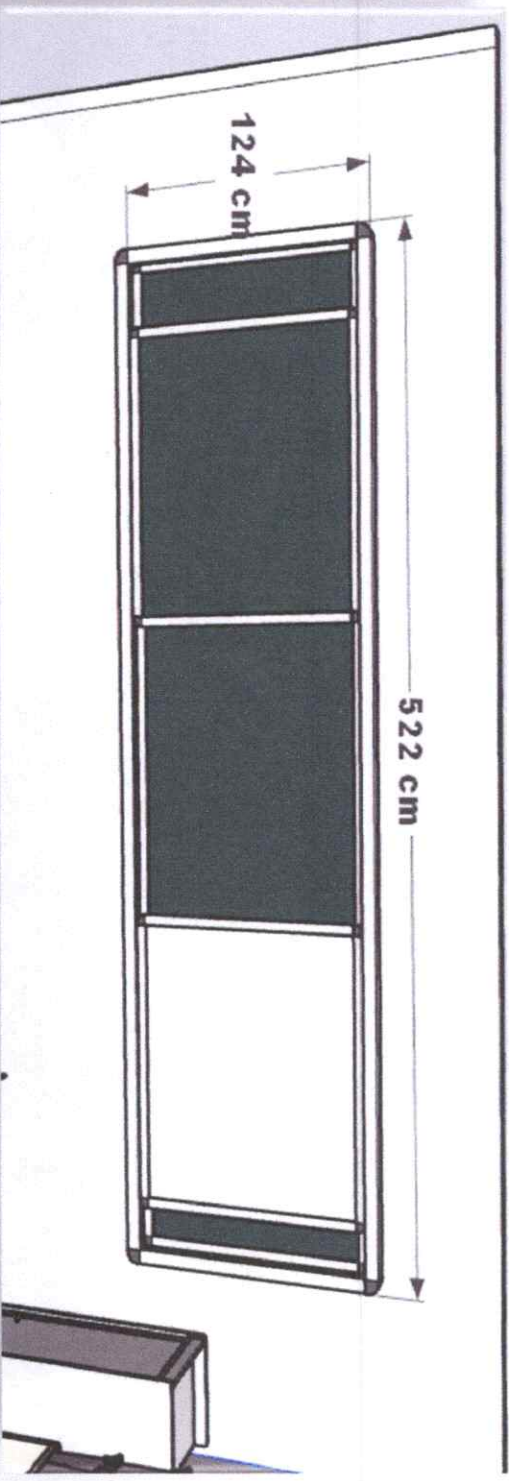


SUMO PLAYING FIELD





ROBOTICS TEACHER'S TABLE



WHITEBOARD SCREEN

DRAFT Training Matrix (detailed Training Matrix to follow)

A. Materials Needed

The following are needed during the TRAINING

- Computer (desktop or laptop) per trainee. One computer for each robot.
MINIMUM specs below:
 - OS: Windows 10 and above (MAC OS not compatible)
 - Processor: Core i5 and above (or equivalent AMD)
 - RAM: at least 4GB
 - Disk space: at least 8GB
 - Programming Software and Sample Programs
- A table where trainees can program their robot comfortably (with their laptop and the robot)
- An outlet / extension cord where participants can charge their laptop.
- An area where participants can run and test the robot (at least 3 x 3m.)
- Playing Field

B. Training Outline (max of 8 hours per day)

Time	Day 1	Day 2
8:00 AM	<ul style="list-style-type: none">- Opening Program- Distribution of robots- Checking and inventory of robot kits	Opening Program Project plan & proposal (30 min)
9:00 AM	Introduction <ul style="list-style-type: none">- Safety Tips- Assemble the robot (if needed)	Programming the sensors
1:00 PM	Project ideas discussion and presentation (30mins) Programming	- Sensor Activities
3:00 PM	Project ideas presentation (30mins) Programing (continuation) Performance Tasks	Mini Competition
5:00 PM	END OF THE TRAINING	END OF THE TRAINING

C. Participants

- Max 40 participants

D. Trainers (2 pax):

- Names to follow