

Karisma Mutiara

Innovation & Robotics Program

(For Schools & Education)



Hands-On Innovation | AI, Robotics & IoT | STEM - Based

Foreword

At **Karisma Mutiara** with international collaboration, we believe the future belongs to innovators. Our Innovator Curriculum introduces children to AI, Robotics, IoT, Coding, and more, helping them develop the skills to innovate. Through hands-on, fun activities, students explore creativity, problem-solving, and critical thinking. Our program prepares learners to thrive in a rapidly changing world, fostering adaptability, collaboration, and resilience. With an emphasis on experiential learning, our program equips students with the skills necessary for success in an ever-evolving society. Broadly following the principles laid out by **The Digital Education Policy (DEP)** intends to improve infrastructure and content, engage key partners, and develop skills and values in order to create a generation that is competitive and fluent in digital technology.

Curated by alumni from :



The Business School
for the World®



BITS PILANI



Pedagogy

Karisma Mutiara Curriculum recommends 32 sessions in a year which includes:



22-25 Hands-on Projects:
Igniting innovation using design thinking.



4-5 Worksheets:
Reinforcing concepts and introducing formative assessments.



3 Challenge Days:
Promoting empathy, inclusivity, and positive interactions



Demo Day:
Showcasing student achievements and fostering feedback.

Laying the foundation of an innovator with skills like :



Leadership



Collaboration



Creativity



Communication

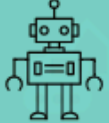





Resilience

Curriculum Learning Outcomes at a glance

DOMAIN	SKILLS	JR EXPLORER	EXPLORER	TINKER	BUILDER
Robotics	Mechanical Design Mathematical Logic Sensors	<ul style="list-style-type: none">-Understands basic robot movements-Understands basic logic controls-Understands robotic system	<ul style="list-style-type: none">-Builds simple machines-Understands logic to control robots-Understands sensor reponse to the world	<ul style="list-style-type: none">- Design complex machines- Apply advanced logic- Integrate multiple sensors	<ul style="list-style-type: none">-Apply robotics to real-world scenarios like automation-Design communicating robots
Internet of Things (IoT)	Circuit Design Sensors Embedded Systems			<ul style="list-style-type: none">- Build simple circuits-Use sensors to create devices-Program embedded systems	<ul style="list-style-type: none">- Design advanced IoT solutions-Understand bluetooth communication-Sensors and embedded systems
Artificial Intelligence (AI)	AI Foundations Data Handling Machine Learning	<ul style="list-style-type: none">-Learn AI basics and data handling	<ul style="list-style-type: none">-Learn AI basics and data handling-Create basic AI models	<ul style="list-style-type: none">-Learn AI basics and data handling-Create basic AI models-Understand Supervised Learning	<ul style="list-style-type: none">-Build AI models with Python-Develop ML algorithms-Understand AI ethics
Computational Thinking	Problem-Solving Algorithm Design	<ul style="list-style-type: none">-Able to break down simple problems-Understands input/output-Understands Sequencing	<ul style="list-style-type: none">-Able to break down problems-Can create basic algorithms-Understands block-based coding	<ul style="list-style-type: none">-Design structured algorithms-Can translate block code to text code-Learn principles of quality	<ul style="list-style-type: none">-Understand data structures-Understand system design-Apply complex programming concepts-Focus on testing and debugging
Design Thinking	Innovation Prototyping	<ul style="list-style-type: none">-Understands innovation-Becomes familiar design cycle	<ul style="list-style-type: none">-Apply design thinking-Create prototypes-Collaborate	<ul style="list-style-type: none">-Complete design thinking cycle-Test with real users	<ul style="list-style-type: none">-Lead design projects-Prototype and test with users

Tailor-Made Lesson Plan

UNIT NAME	LESSON FORMAT	LEARNING OBJECTIVES	LESSON PLAN
 RoboBasics	1 Session 1 Hour	Basics of Robotics & Computers	Computers, Robots and their uses
 Code Commanders	3 Sessions 3 Hours	<ul style="list-style-type: none"> - Coding - Algorithms - Sequencing 	Human Robots Game Sequencing of Sandwich Making
 RoboSystems	2 Sessions 2 Hours	<ul style="list-style-type: none"> - Understanding Robot as a System - Identifying Robot Parts - I/O System - I/O LEDs 	Tweak Modules Introduction Hello Bot Color Play
 Mech Masters	3 Sessions 3 Hours	<ul style="list-style-type: none"> - Building a Robot Design - Center of Gravity - Momentum - Friction 	RC Car Duck Race Exploring No Castor Wheel RC Car



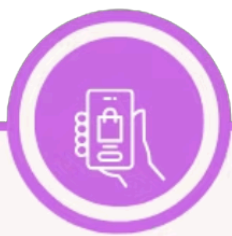
JR Explorer

Fun intro to robotics through play and discovery.



Explorer

Learn basic robotics and coding through simple projects.



Tinker

Build problem-solving skills with beginner robotics.



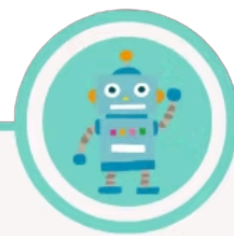
Builder

Create and code robots with hands-on learning.



Innovator

Tackle real-world challenges with robotics, focusing on innovation, design & teamwork



Techmechanix

Master robotics & AI applications through engineering projects, coding & technical design.

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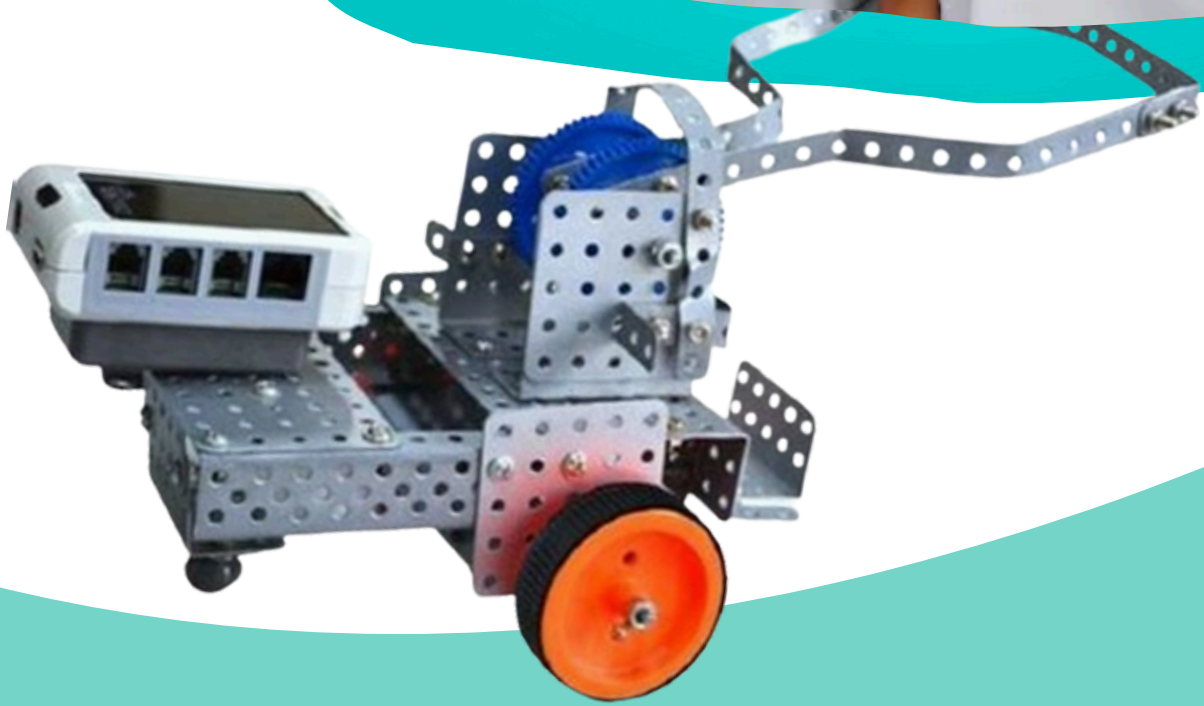
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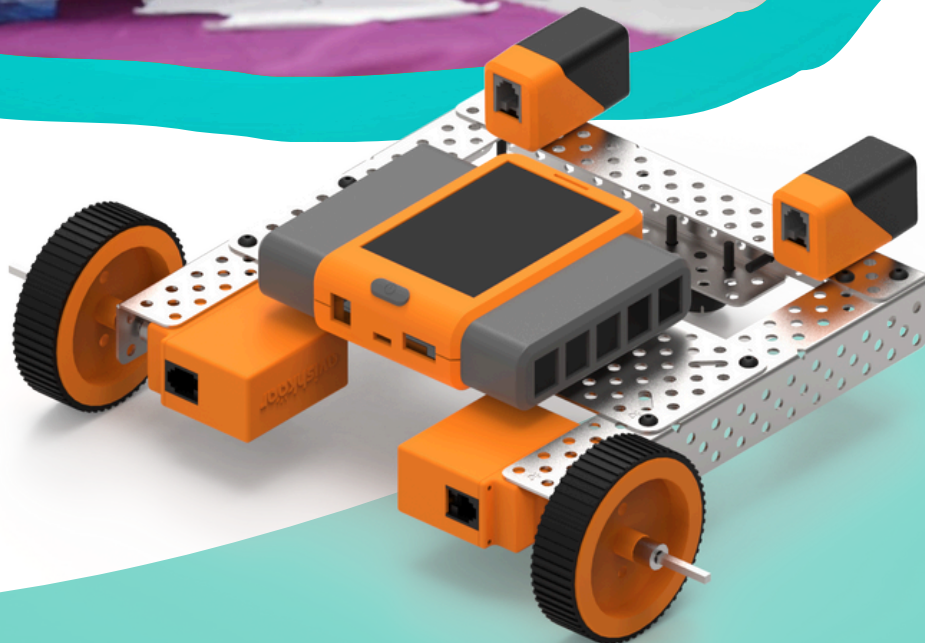
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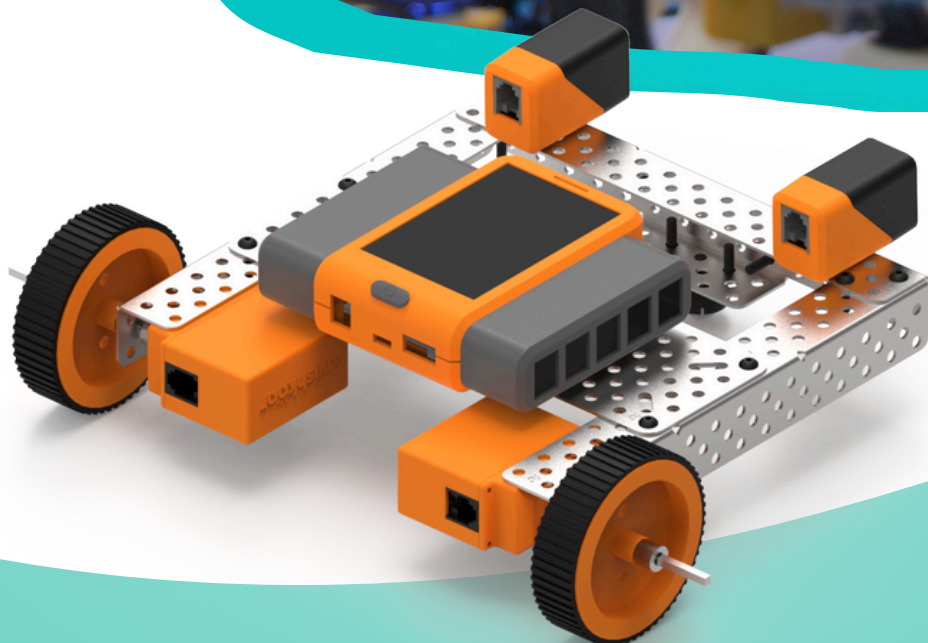
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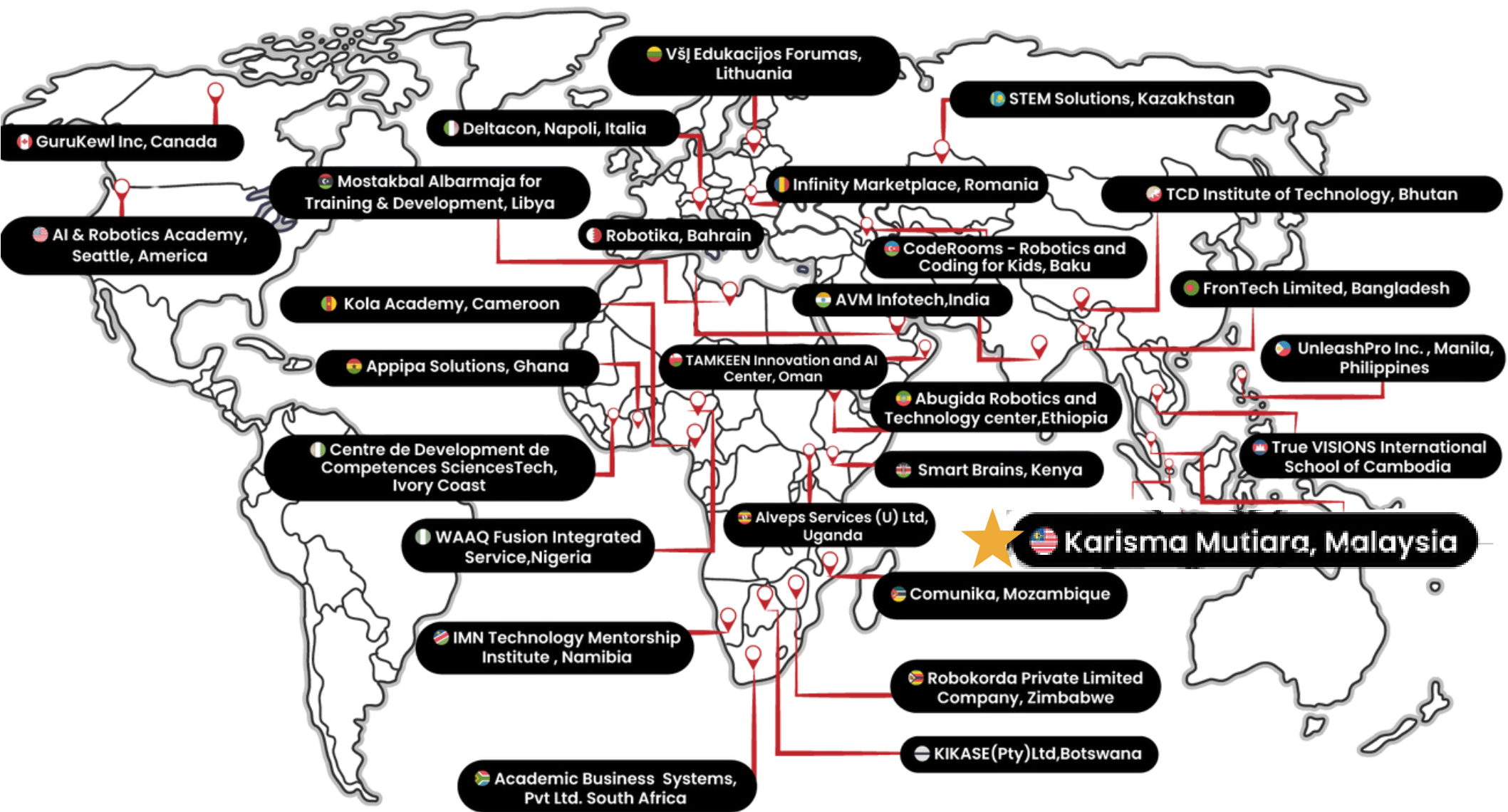


RoboEngineer

Lead, mentor, and inspire young minds through robotics and AI education.



We are The One and Only in Malaysia



Curriculum Alignment with International Standards

This curriculum builds essential skills in technology, innovation, and critical thinking, aligning with international standards.

IB Alignment :



Inquiry-Based Learning: Encourages design thinking and problem-solving.



Interdisciplinary Learning: Integrates STEM for a holistic approach.



Global Context: Focuses on real-world problems and global awareness.



Skill Development: Cultivates critical thinking, collaboration, and adaptability.

CSTA Alignment :



Computational Thinking: Enhances problem-solving through logic and algorithms.



Programming & Algorithms: Emphasizes coding and data analysis.



Data & Networks: Covers AI, networking, and data management.



Ethics: Discusses AI ethics and societal impacts.

Ready to Spark Innovation in Your Team?

Let Karisma Mutiara guide your people through a unique, immersive experience in innovation, robotics, and AI.

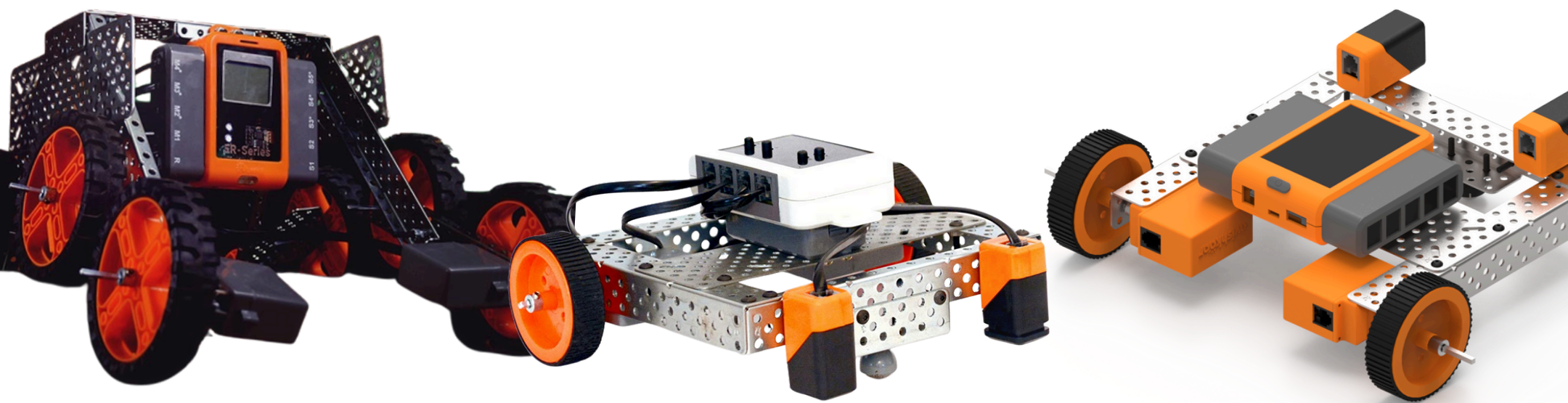
Teambuilding with purpose

Upskilling for the future

Custom training modules tailored to your industry



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Alignment with Malaysian National Syllabus

Aspect	Karisma Mutiara Program	Connection to National Syllabus (KSSR/KSSM)
STEM Integration	Focuses on science, technology, engineering, and math through robotics	Matches MOE’s emphasis on STEM literacy and 21st-century skills
Computational Thinking	Students learn to solve problems through logical steps and coding	Mirrors the Reka Bentuk & Teknologi (RBT) and Asas Sains Komputer (ASK) modules
Digital Literacy	Uses block coding (Blockly/Scratch) and text-based (Python)	Supports Digital Education Blueprint (Pelan Digital Pendidikan) goals
Project-Based Learning	Modular, hands-on robotics tasks linked to real-life situations	Encouraged in KSSM/KSSR to promote creativity and higher-order thinking
Soft Skills Focus	Teamwork, communication, presentation, and innovation are part of the learning	Reflects the 11 Shift Agenda in Malaysia Education Blueprint (MEB)
Language Support	Offers BM, Tamil and English teaching materials to suit various school needs	Helps bridge language gaps in government and vernacular schools



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"Where Learning Becomes a Lifestyle"



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