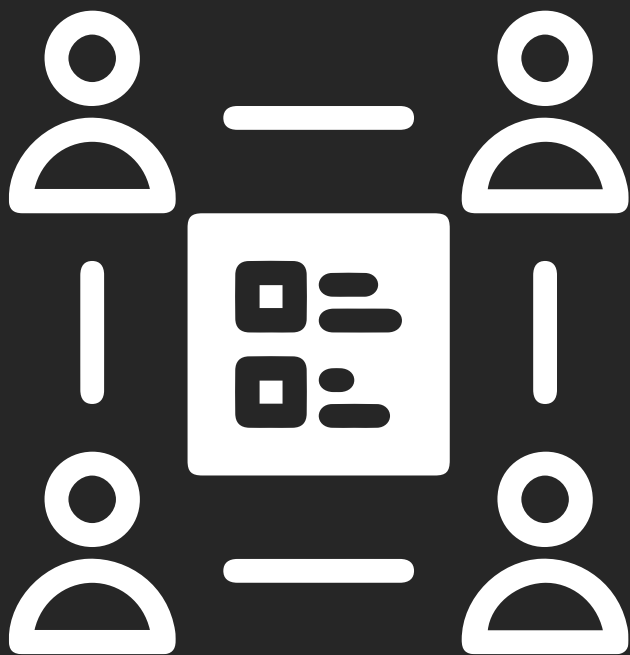




Harmonic Learning STEAM++ Innovation Solution

AUTODESK
Authorized Training Center



HARMONIC Learning Program



ROBOGEEEX
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WHY HARMONIC LEARNING INNOVATION PROGRAM?



The Edtech industry has experienced remarkable and unique developments through the adoption of advanced systems and tools. One notable area of progress is Immersive Learning, which incorporates the requirements of curricula and employs inquiry-based learning methodologies to address the challenges of the 4th Industrial Revolution (4th IR). This includes the readiness of Makerspaces to facilitate the application of emerging skills like design thinking and creativity, enabling students to transform their innovative ideas into tangible industrial prototypes.

These developments encompass various dimensions, including the ability to adhere to sustainable development goals, particularly the [SDG4](#) (Quality in education), the [SDG9](#) (Industry innovation and infrastructure), and the [SDG17](#) (International partnerships).

In addition, there is a growing emphasis on expanding opportunities and fostering entrepreneurship among youth. This is achieved by encouraging their participation in international competitions that promote creativity and innovation, providing resources such as incubators and innovation clubs, and supporting the establishment of startup companies based on the achievements of students within the framework of Harmonic Learning.



Harmonic Pedagogical Framework

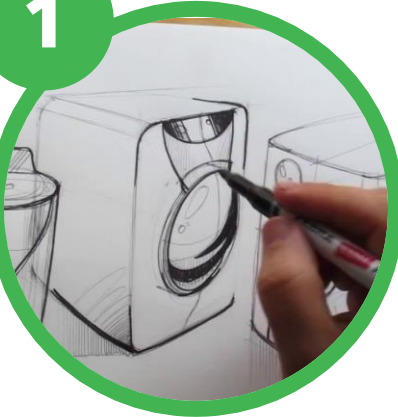
Humanistic
Artistic
Realistic
Measurable
Organic
Naturalistic
Investigative
Conventional

U
N
O
N
A
R
H



HARMONIC LEARNING STEAM++ INNOVATION PROGRAM PROGRESS

1



Actual

(Manual)

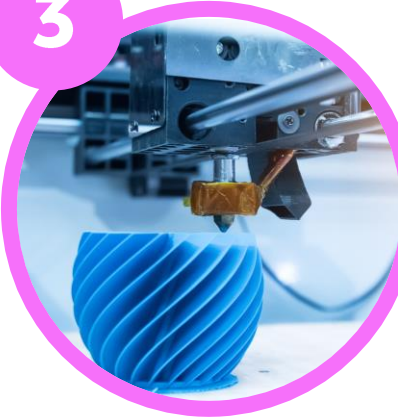
2



Virtual

Immersive Learning
VR (Virtual Reality)
AR (Augmented Reality)

3



Prototyping

3D Desing
3D Printing

4



Tinkering

Robotics &
Artificial Intelligence



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TINKERCAD®



AUTODESK
Fusion 360



Sketch 360
Microsoft Corporation



FormIt



Promethean

5



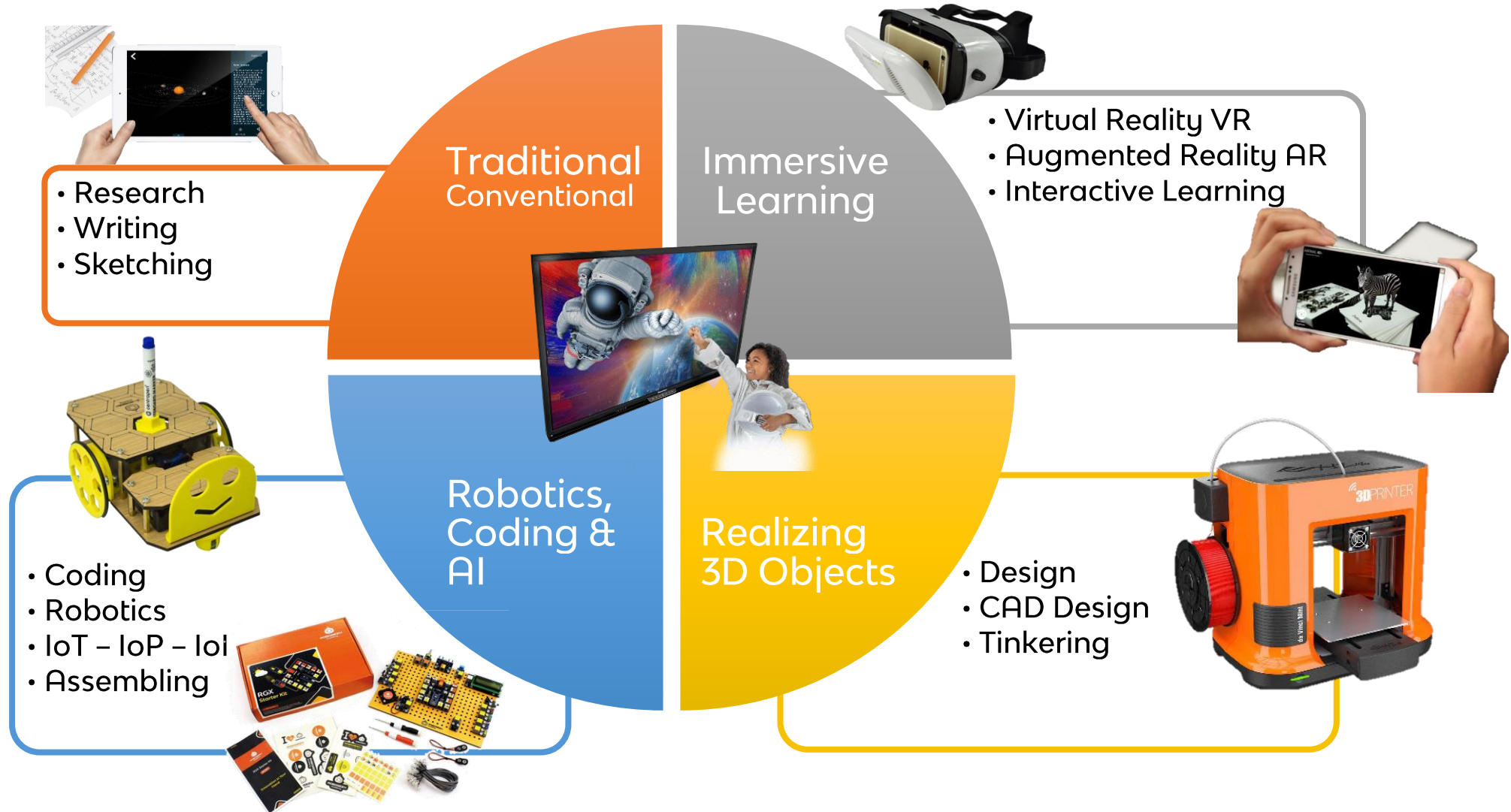
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Applied HARMONIC Learning Components



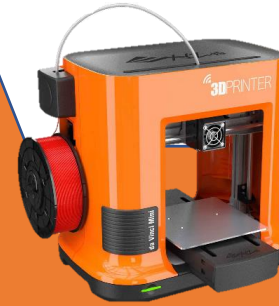
Solutions Progress



Interactive
& Immersive
Learning



CAD Design



3D Printing



Robotics
and Coding



AUTODESK
TINKERCAD



AUTODESK
Fusion 360



Sketch 360
Microsoft Corporation



FormIt

ActivInspire



Promethean



Competencies Tables Covered By Harmonic Learning STEAM++ Innovation Solutions: SDGS, 4IR, Educational Frameworks, Digital Tools & Skills Matrix



Harmonic Learning STEAM ++ Innovation Program goals achieved for sustainable development goals SDG's

No poverty	Zero Hunger	Good health and wellbeing	Quality education	Gender equality	Clean water and sanitation	Affordable and Clean Energy	Decent Work and Economic Growth	Industry, Innovation, and Infrastructure	Reduced inequalities	Sustainable cities and communities	Responsible consumption and production	Climate Action	Life below water	Life On land	Peace, Justice and strong institutions	Partnerships for the goals
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
1 NO POVERTY	2 ZERO HUNGER	3 GOOD HEALTH AND WELL-BEING	4 QUALITY EDUCATION	5 GENDER EQUALITY	6 CLEAN WATER AND SANITATION	7 AFFORDABLE AND CLEAN ENERGY	8 DECENT WORK AND ECONOMIC GROWTH	9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	10 REDUCED INEQUALITIES	11 SUSTAINABLE CITIES AND COMMUNITIES	12 RESPONSIBLE CONSUMPTION AND PRODUCTION	13 CLIMATE ACTION	14 LIFE BELOW WATER	15 LIFE ON LAND	16 PEACE, JUSTICE AND STRONG INSTITUTIONS	17 PARTNERSHIPS FOR THE GOALS

Harmonic Learning STEAM ++ Innovation Program towards applying the 4IR The Fourth industrial Revolution components

 Artificial Intelligence	 Big Data	 Internet Of Things	 Robotics	 Cloud Computing	 Immersive Technology	 Cyber Security	 Systems Integration	 3D Printing
✓	✓	✓	✓	✓	✓	✓	✓	✓

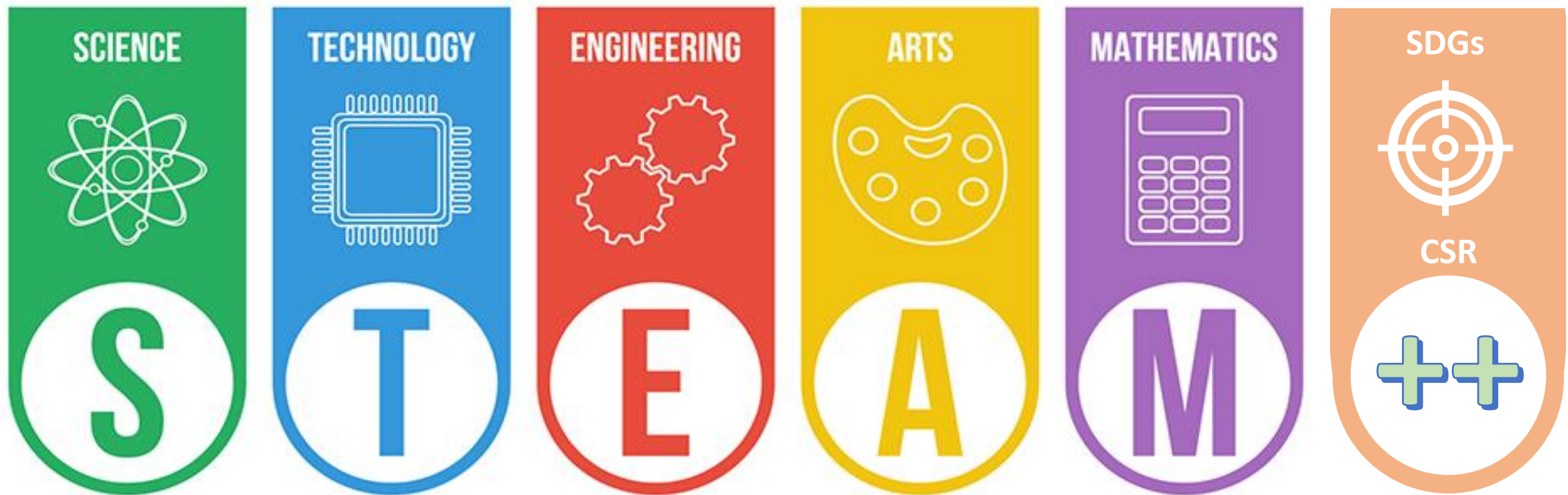
Harmonic Learning STEAM ++ Innovation Program works with Educational Frameworks

		
✓	✓	✓

Harmonic Learning STEAM ++ Innovation Program based on using Instructional design (Creativity tools and CAD design digital skills) Coding and robotics tools

 Microsoft	 ASSEMBLR	 Autodesk TinkerCAD 360 Fusion	 Adobe Express	 ARDUINO		 micro:bit		 Unity	Python	Scratch
✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓





EDUCATION





Innovation Roadmap

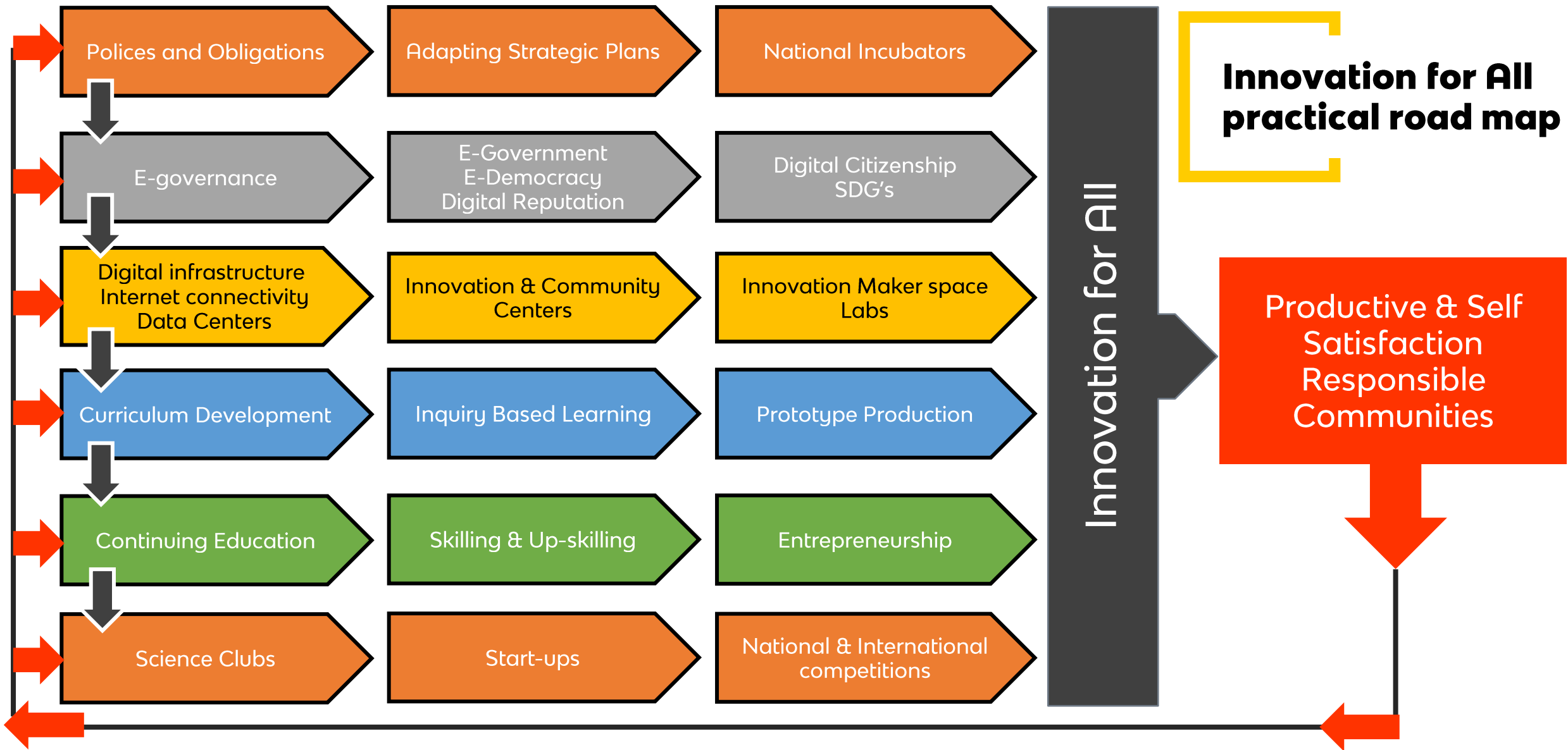


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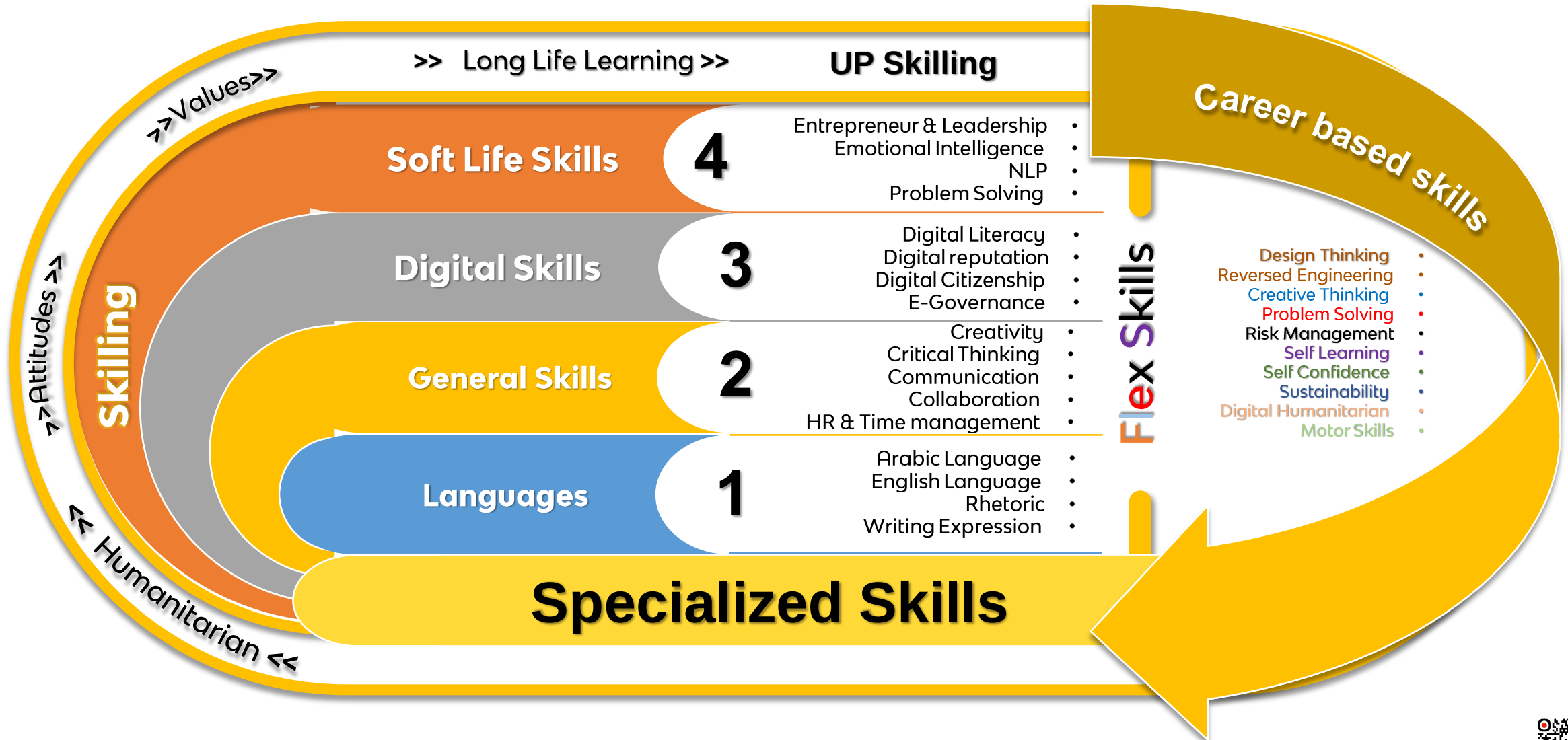


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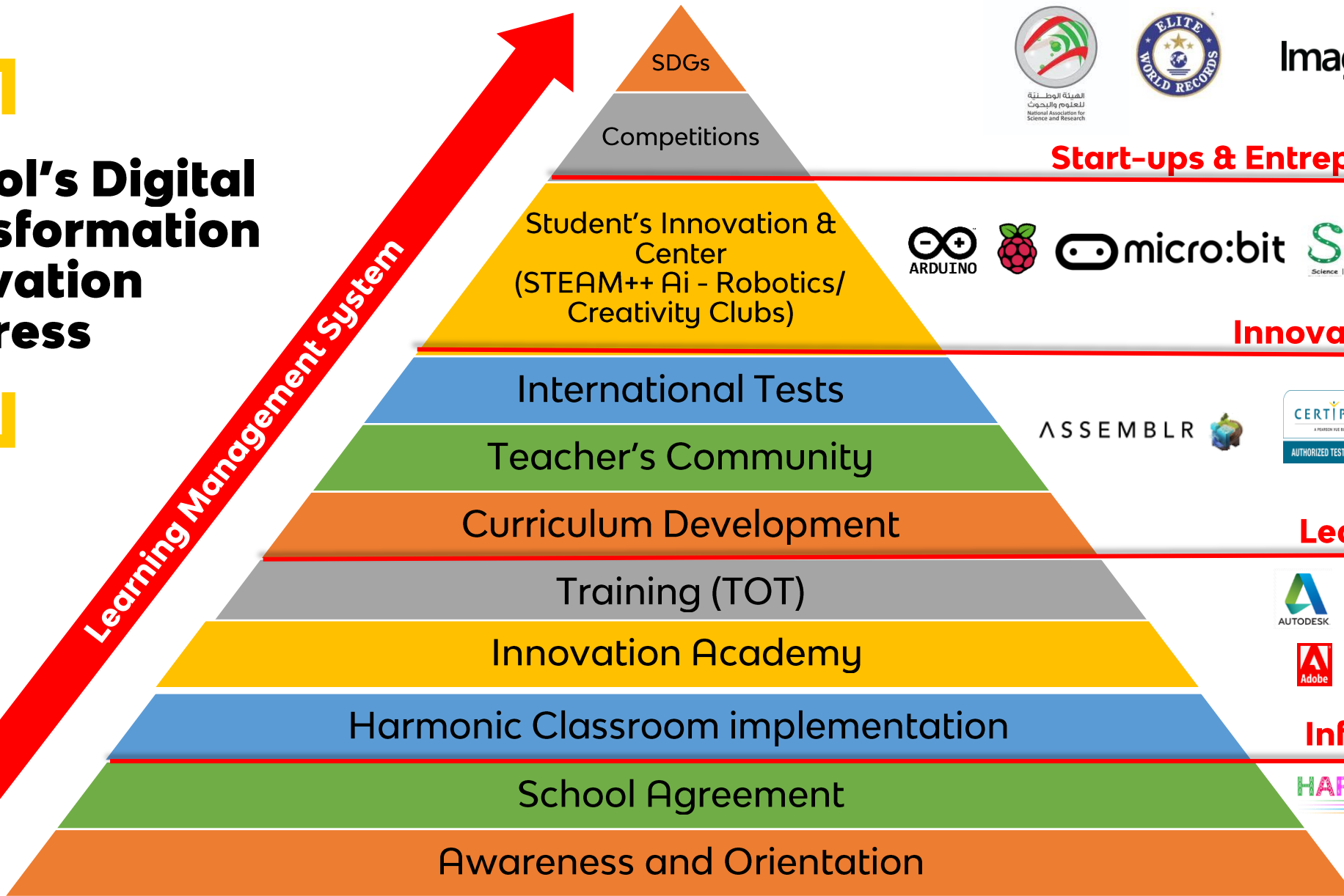


Life skills plan and track towards entrepreneur & innovation



School's Digital Transformation Innovation Progress

Learning Management System



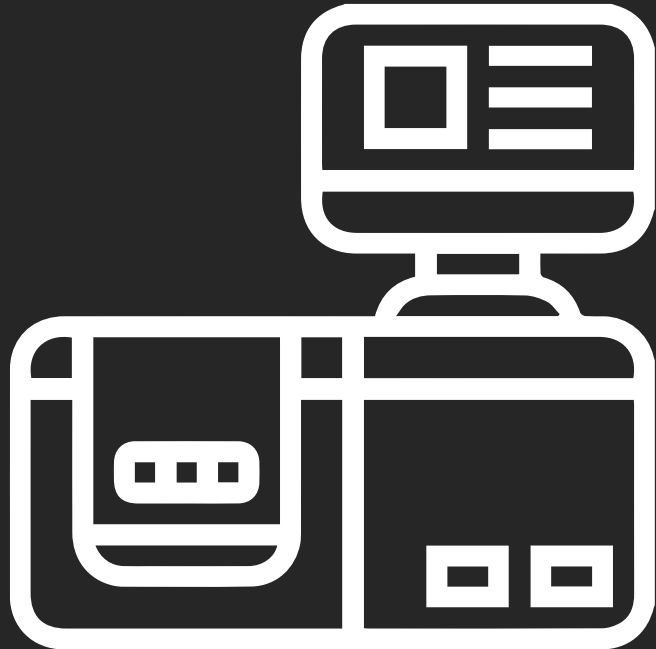
Start-ups & Entrepreneurship

Innovation Center

Learning Path

Infrastructure





HARMONIC Lab Equipment



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I-INNOVATION MAKERSPACE LAB:

1. 4D Interactive Immersive Learning
2. 3D Printer
3. Robotics and Coding kits
4. Interactive Display
5. Interactive Collaboration Desks/Towers
6. Cloud Computing apps FOSS Free Open Online Sources / MOOC Massive Open Online Courses
7. Tablet PCs
8. Learning Resources through EduGment Harmonic app
9. Lab Infrastructure
10. Operating System
11. Applications and Programs
12. IT innovation Academy program
13. Wireless Connect wifi dongle
14. Web Cam and AR scan
15. Train of Trainers TOT



INTERACTIVE COLLABORATION TOWER

Equipment per Collaboration Island

- ✓ 6 x USB Charging Sockets
- ✓ 6 x RG45 Network Plugs
- ✓ 1x WIFI Switch Hub
- ✓ 2 x Power Switch plugs
- ✓ Hexagonal sides
- ✓ Round Desk Surface
- ✓ 1x HDMI (Optional)
- ✓ 1 x USB Data Plug (Optional)



HARMONIC LAB INNOVATION MAKERSPACE EQUIPMENTS

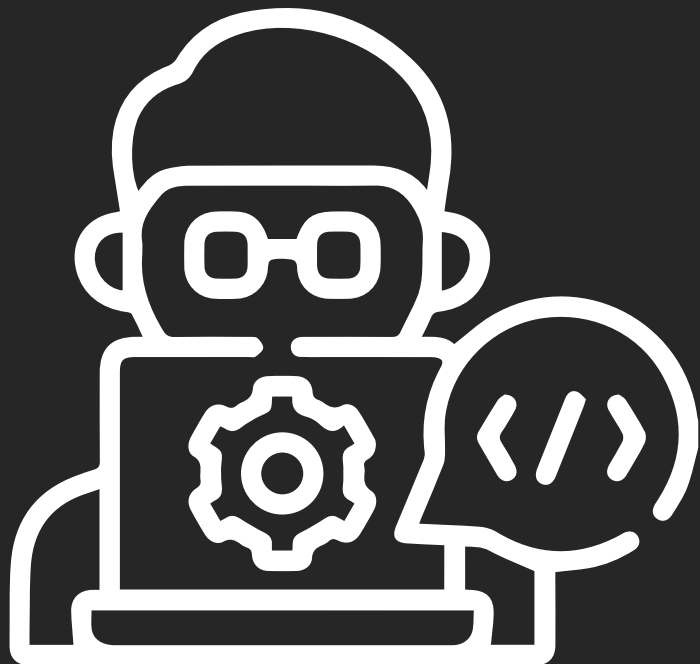
EQUIPMENT	LEVEL OF EQUIPMENT AND QUANTITIES			ENTITIES SOURCE AND SUPPLY		
	BASIC	ADVANCED	PREMIUM	IET	RoboGeex	School
FOR 30 STUDENTS / 5 ISLANDS COLLABORATION DESKS						
1-4D Interactive Immersive Learning	1	2	3			
2-3D Printer	1	2	5			
3-Robotics Coding box	5	10	15			
4- Interactive Panel display 65"	65"	75"	86"			
5-Collaboration tower and 6 desks	5	5	5			
6-Cloud Computing apps	30	30	30			
7- Tablet PCs 10" or Laptops	10	15	30			
8-Learning Resources (Activinspire)	30	30	30			
9-Infrastructure and Cabling	1	1	1			
10- Operating System	30	30	30			



HARMONIC LAB INNOVATION MAKERSPACE EQUIPMENTS

EQUIPMENT	LEVEL OF EQUIPMENT AND QUANTITIES			ENTITIES SOURCE AND SUPPLY		
	BASIC	ADVANCED	PREMIUM	IET	RoboGeex	School
FOR 30 STUDENTS / 5 ISLANDS COLLABORATION DESKS						
11-Applications Programs (office 365)	30	30	30			
12-Microsoft Imagine Academy + licenses	30	30	30			
13- wifi dongle (wirless connection)	1	1	1			
14-Chairs	30	30	30			
15 - Teachers Laptop PC 8 GB, 1T	i3	i5	i7			
16- Electronic kit with tools (Screws..)	5	5	5			
17- Classroom identity design (QRs)	1	1	1			
18- Internet	1	1	1			
19- Webcam	1	1	1			
20- Training (24Hr.)	1	1	1			





Students i-Kits & Curricula

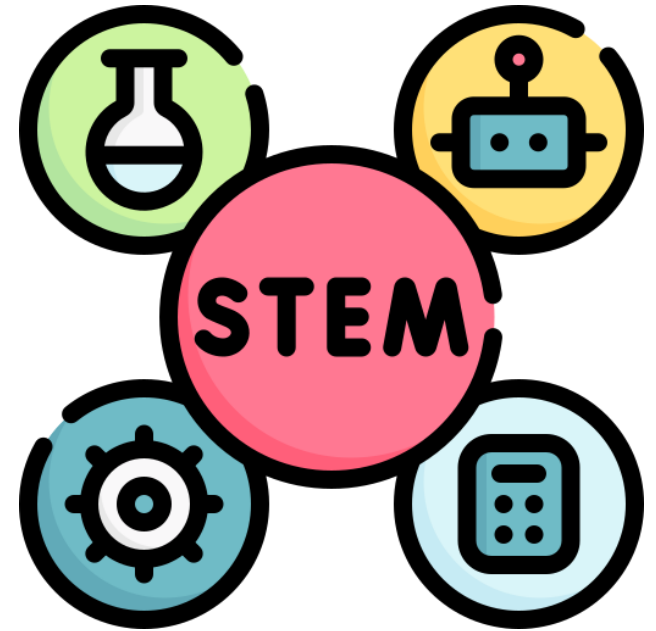


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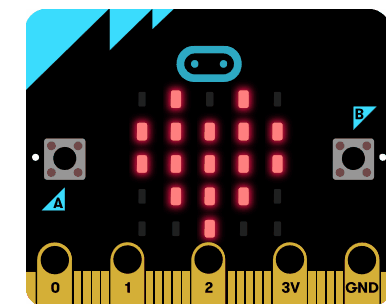


Innovation via STEM++ Program

- ✓ Year-long, immersive STEM program
- ✓ Covers Grades 1 to 12
- ✓ Comprises 30 carefully designed sessions
- ✓ Each session lasts for 45-55 minutes
- ✓ Encourages problem-solving, critical thinking, creativity, and teamwork
- ✓ Incorporates Artificial Intelligence learning
- ✓ Concludes with hands-on student projects
- ✓ Prepares students for 21st-century opportunities and challenges
- ✓ Ensures students stay updated with the latest advancements in technology
- ✓ Promotes innovation and creativity through practical application of learned knowledge.

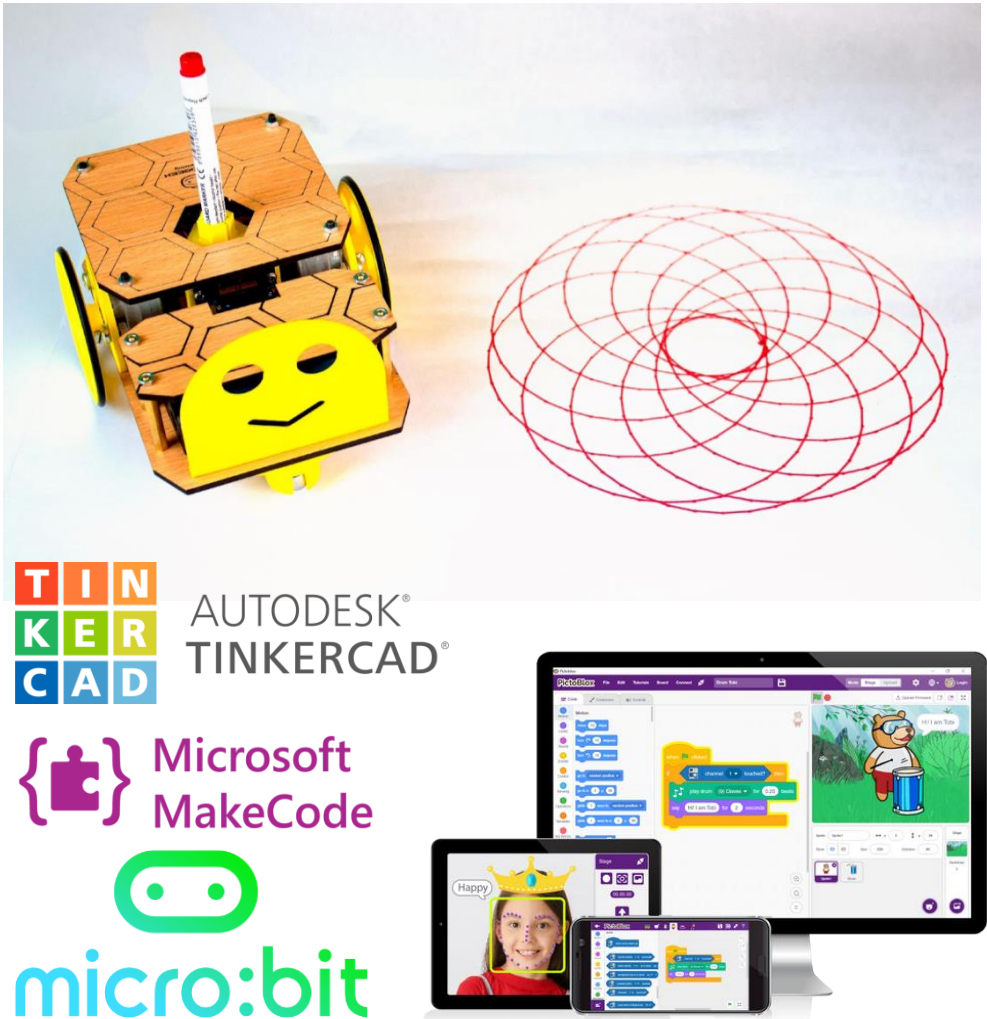


Students i-Kits & Curricula Cycle I (G1-3)

Cycle	Grade	Book	Kit	Kit Content	Image
Students i-Kits & Curricula Cycle I (G1-3)	1	STEAM++ G1 Book	STEAM++ Cycle 1 Student Kit	Computer Skills (2 Lessons) - PC (Computer Basics)	  
	2	STEAM++ G2 Book		Coding (12 Lessons) - Scratch Jr (Visual Puzzle Coding)	
	3	STEAM++ G3 Book		Robotics (16 Lessons) - MakeCode (Microsoft, Visual Block Coding based on python) - Micro:Bit (BBC, Microsoft)	
				Each grade = 30 sessions Each cycle = 90 sessions	 



Students i-Kits & Curricula Cycle II (G4-6)

Cycle	Grade	Book	Kit	Kit Content	Image
	4	STEAM++ G4 Book	STEAM++ Cycle 2 Student Kit	Computer Skills (2 Lessons) - PC (Computer Basics)	
	5	STEAM++ G5 Book		Coding & AI (10 Lessons) - PictoBlox (Visual Block Coding based on Scratch)	
	6	STEAM++ G6 Book		3D Printing (8 Lessons) - TinkerCAD (AutoDesk) - 3D Printer (Creality) Robotics (10 Lessons) - Ziggy Robot (BBC Micro:Bit) - MakeCode (Microsoft, Visual Blocks Coding based on Python) Each grade = 30 sessions Each cycle = 90 sessions	



Students i-Kits & Curricula Cycle III (G7-8)

Cycle	Grade	Book	Kit	Kit Content	Image
	7	STEAM++ G7 Book	STEAM++ Cycle 3 Student Kit	Coding & AI (10 Lessons) - PictoBlox (Scratch, Visual Blocks Coding)	
	8	STEAM++ G8 Book		3D Printing (10 Lessons) - TinkerCAD (AutoDesk) - 3D Printer (Creality)	
	9	STEAM++ G9 Book		Robotics (10 Lessons) - RGX Advanced Kit (Based on Arduino Nano) - Mixly 1.2 (Visual Blocks Coding based on C++) Each grade = 30 sessions Each cycle = 90 sessions	



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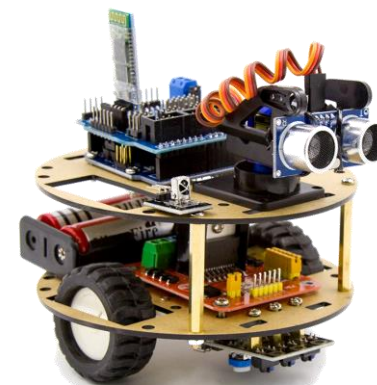


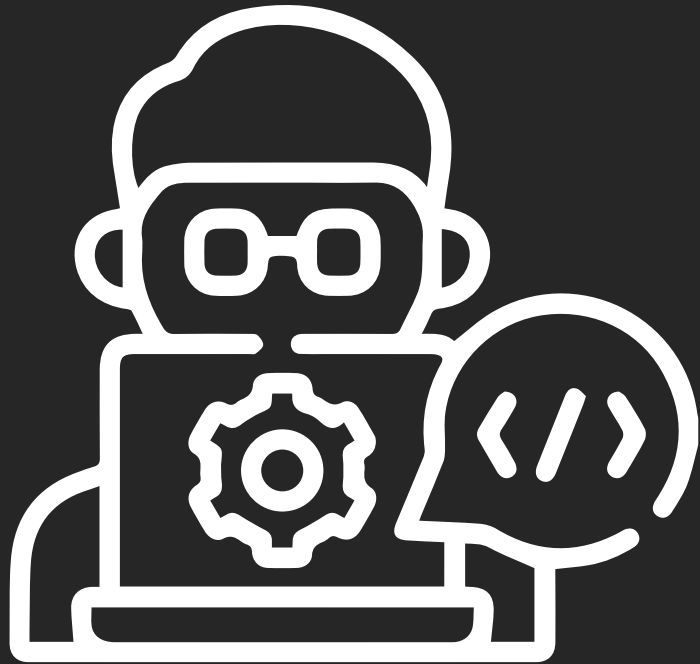
Students i-Kits & Curricula Cycle IV(G10-12)

Cycle	Grade	Book	Kit	Kit Content	Image
	10	STEAM++ G10 Book	STEAM++ Cycle 4 Student Kit	Coding & AI (10 Lessons) - PictoBlox (Syntax coding based on Python)	
	11	STEAM++ G11 Book		3D Printing (10 Lessons) - Fusion 360 (AutoDesk) - 3D Printer (Creality)	
	12	STEAM++ G12 Book		Robotics (10 Lessons) - Arduino Advanced Kit - Mixly 1.2 (Visual block coding based on C++) Each grade = 30 sessions Each cycle = 90 sessions	



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Fusion 360





Students i-Kits & Curricula



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Cycle 1 – STEAM++ Outcome

Activities	Outcomes	Acquired Skills
○ Basic computer operations, typing practice, and introduction to internet safety. ○ Creating simple animations and stories using block-based coding in Scratch Jr. ○ Programming the Micro:Bit to perform tasks such as displaying messages or controlling LEDs.	○ Students will be able to operate a computer independently and understand basic internet safety. ○ Students will understand the basics of programming and create interactive stories and animations. ○ Students will learn how to program physical devices and understand the basics of IoT.	○ Typing, basic computer navigation, internet safety. ○ Basic programming, logical thinking, creativity. ○ Programming, problem-solving, basic electronics.



Cycle 2 – STEAM++ Outcome

Activities	Outcomes	Acquired Skills
○ Advanced computer operations and software usage. ○ Creating interactive projects using block-based coding in PictoBlox, integrating sensors and actuators. ○ Designing simple 3D models and printing them using TinkerCAD. ○ Programming the Ziggy Robot to perform tasks using Mixly 1.2 Based on C++.	○ Students will be proficient in using various software tools and conducting effective internet research. ○ Students will be able to design and implement interactive projects that respond to real-world inputs. ○ Students will understand the basics of 3D modeling and printing. ○ Students will be able to control a robot using programming logic.	○ Software proficiency, research skills, advanced typing. ○ Intermediate programming, project design, sensor integration. ○ 3D modeling, spatial awareness, precision. ○ Robotics, programming, automation.



Cycle 3 – STEAM++ Outcome

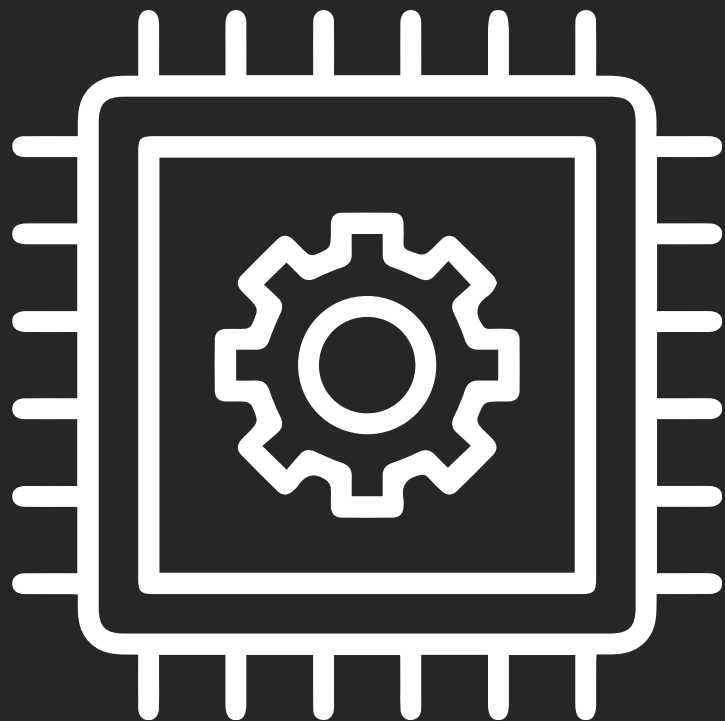
Activities	Outcomes	Acquired Skills
○ Advanced interactive projects in PictoBlox, incorporating Artificial intelligence. ○ Designing and printing complex 3D models using TinkerCAD, understanding design for manufacturing. ○ Creating projects using the RGX Kit and Mixly 1.2, focusing on integrating multiple components.	○ Students will be proficient in designing complex interactive systems involving AI. ○ Students will be able to create intricate designs suitable for practical applications. ○ Students will be skilled in building complex electronic systems.	○ Advanced programming, system integration, project management. ○ Advanced 3D modeling, design thinking, engineering principles. ○ Electronics, programming, complex system design.



Cycle 4 – STEAM++ Outcome

Activities	Outcomes	Acquired Skills
○ Developing sophisticated projects in PictoBlox that include AI and machine learning components. ○ Creating detailed and precise 3D models using Fusion 360, understanding the principles of CAD. ○ Building and programming complex systems with Arduino and Mixly 1.2, incorporating multiple sensors and actuators.	○ Students will understand and implement basic AI and machine learning algorithms. ○ Students will be able to design professional-grade 3D models for engineering and manufacturing. ○ Students will be proficient in developing and programming advanced electronics projects.	○ AI, machine learning, advanced programming. ○ CAD, engineering design, precision modeling. ○ Advanced electronics, programming, system integration.





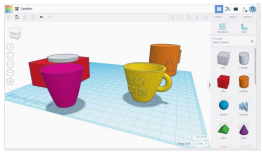
Platforms Details



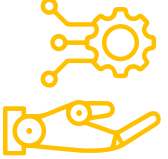
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Cycles i-Kits (Hardware & Software)

Grade 1 - 3	50+ Projects	Software		Scratch Jr	
Grade 4 - 6	20+ Projects	Hardware & Software		Ziggy Robot	
Grade 4 - 6	50+ Projects	Software		TinkerCAD	
Grade 4- 12	100+ Projects	Software		PictoBlox	
Grade 7 - 9	35+ Projects	Hardware & Software		RGX Advanced Kit	
Grade 7 - 12	50+ Projects	Software		Fusion 360	
Grade 10 - 12	50+ Projects	Hardware & Software		Arduino Advanced Kit	

Scratch Jr

Cycle 1 i-Kit 

Scratch Jr is an introductory programming language that enables young children (ages 6 - 8) to create their own interactive stories and games. Children snap together graphical programming blocks to make characters move, jump, dance, and sing, developing essential coding skills.



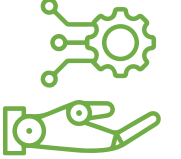
Grade
1 - 3

50+
Projects

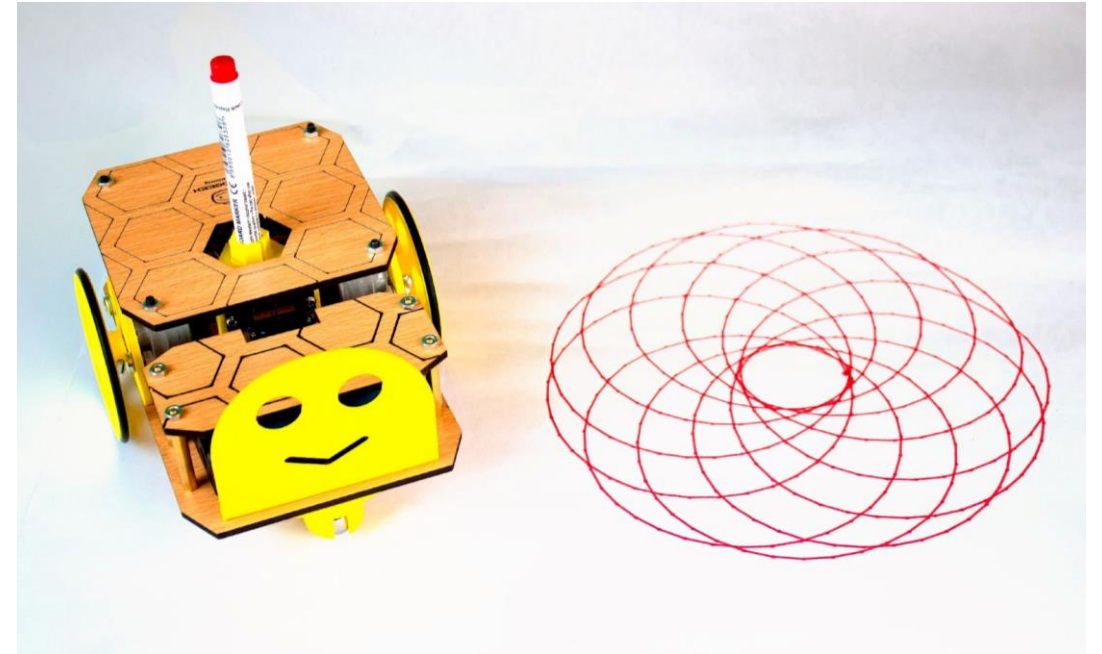
✓ Software



Ziggy Robot

Cycle 2 i-Kit 

Introducing Ziggy, the educational turtle robot that teaches coding and math in a fun and interactive way! With its Arduino Nano controller and versatile drawing capabilities, Ziggy is the perfect tool for kids aged 8-14 to learn math and coding concepts. Its package includes a comic, marker set, assembly guide, and online resources, making it an all-in-one solution for educational fun.



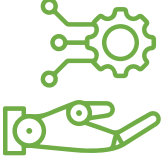
Grade
4 - 6

20+
Projects

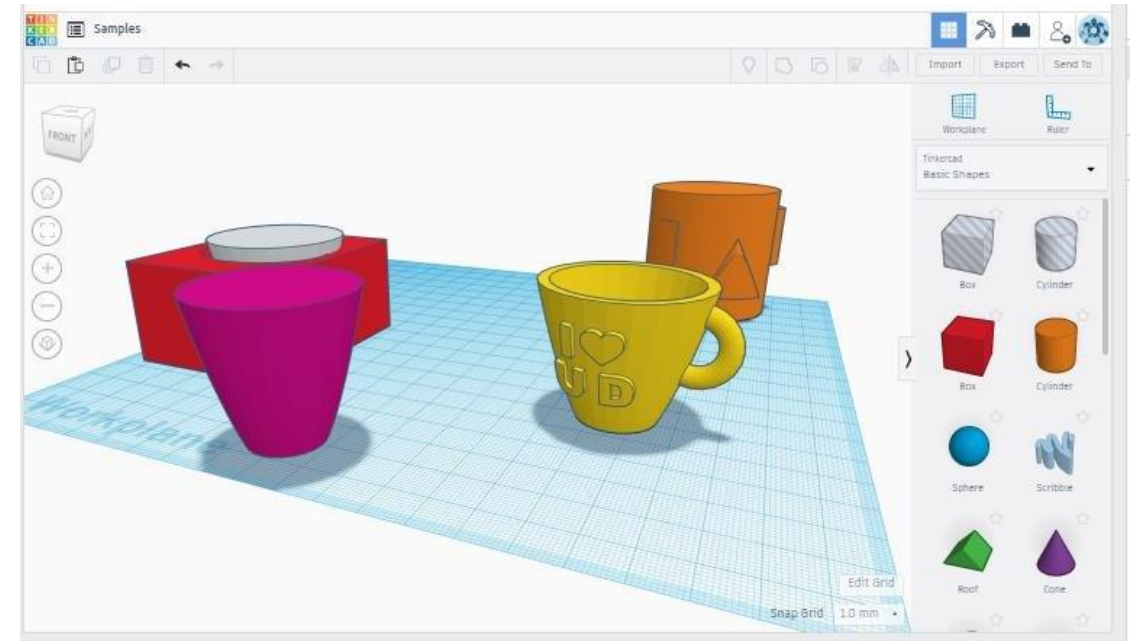
✓ Hardware
✓ Software



Tinkercad

Cycle 2 i-Kit 

Tinkercad is an easy-to-use, web-based 3D design and simulation tool that introduces learners to the world of design, engineering, and creativity. Its intuitive interface allows students to design, construct, and test 3D models, circuits, and even code blocks, fostering an understanding of spatial thinking and basic electronics. Moreover, it provides a platform to prototype and simulate Arduino circuits, an essential part of learning electronics and programming. With its interactive learning environment, Tinkercad encourages creativity, problem-solving, and computational thinking, making it an invaluable resource for any STEM classroom. Overall, Tinkercad equips students with fundamental skills needed for the digital future.



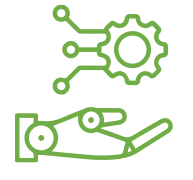
Grade
4 - 6

50+
Projects

✓ Software



PictoBlox

Cycle 2, 3, 4 i-Kit 

PictoBlox is a versatile graphical programming software based on Scratch that introduces students to the fundamentals of coding and computational thinking. It is uniquely designed to make coding fun, interactive, and user-friendly by using visual blocks to create programs. This accessibility makes it an ideal starting point for beginners. But PictoBlox doesn't stop at the basics; it now supports Artificial Intelligence applications, providing learners an opportunity to explore this cutting-edge technology. With its hardware interactions, learners can also program and control robots, deepening their understanding of robotics and IoT. Whether exploring storytelling, animation, robotics, or now AI, PictoBlox provides a dynamic platform for engaging, hands-on learning.



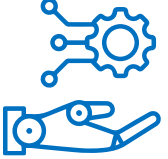
Grade
4 - 12

100+
Projects

✓ Software



RGX Advanced Kit

Cycle 3 i-Kit 

The RGX kit is built based on Arduino Nano which is the most popular and widely used open-source microcontroller.

It is designed with an Easy Plug feature to provide a simple and easy way to start learning and tinkering with electronics and coding even if you don't have prior knowledge in this field.

The kit offers everything you need to build innovative projects in the robotics world, from sensors to actuators and controls. It also guides you to read and control a wide set of modules.

RGX kit also comes with an ultimate guide with 35 different projects to show the way of getting started with your own projects.



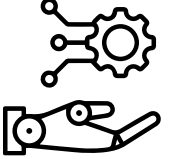
Grade
7 - 9

35+
Projects

✓ Hardware
✓ Software



Arduino Advanced Kit

Cycle 4 i-Kit 

The Arduino Advanced Kit, complemented by a smart car, provides a comprehensive platform for learners to explore and master complex STEM concepts in a practical, engaging manner. The centerpiece, an Arduino microcontroller, is an open-source electronics platform renowned for its ease of use in creating interactive electronic objects.

The smart car, an integral part of the kit, offers a hands-on experience of robotics and automation. It is a multifunctional robot car that's perfect for learning about various robotic functionalities such as line following, obstacle avoidance, remote, and autonomous control techniques.

Learners can delve into the programming aspect using the Arduino's user-friendly coding environment, allowing them to dictate the car's actions and behavior. This kit promotes a deeper understanding of robotics, coding, and automation, sparking creativity and innovation while providing a captivating educational experience. Through assembling and programming the smart car, students engage with STEM in a real, tangible way, equipping them with essential 21st-century skills.



Grade
10 - 12

50+
Projects

✓ Hardware
✓ Software



What School will get over all?

- ✓ 1x STEAM++ Makers Space LAB equipment 15 items, six collaboration islands
- ✓ 10 x STEAM++ Makers Space LAB i-Kit / Lab
- ✓ 6x STEAM++ Makers Space Projects i-Kit /Cycle
- ✓ 200 x STEAM++ Makers Space Student i-Kit /Cycle
- ✓ 600x STEAM++ Makers Space Student Digital book Licenses
- ✓ 20+ Professional technology Applications training skills certificates /teacher & Students
- ✓ 5 International accredited program (Microsoft, Autodesk, Adobe, esri GIS and EdtPartners)
- ✓ 4 l local accreditations (iET, Harmonic Learning, ROBOGEEEX & EdTech Syndicate)



Harmonic Learning STEAM++ Innovation Solution



Thank you for exploring the world of STEAM++ Program, We invite you to join our growing community and experience firsthand the exceptional learning environment we've created.

Scan or Click the QR
To Try & Discover more



Harmonic Learning STEAM++ Innovation Solution