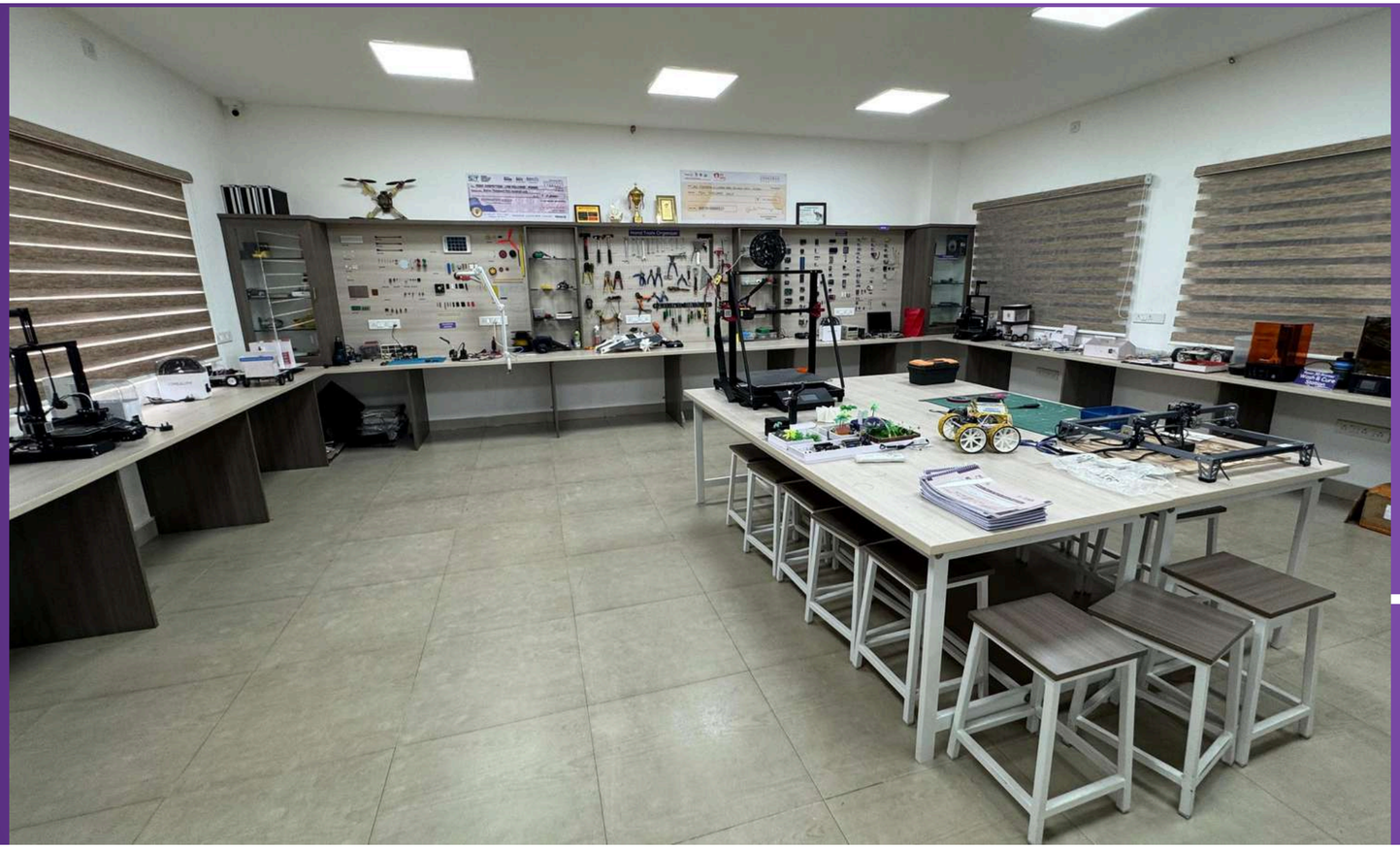
STEM.ORG ACCREDITED EDUCATIONAL PROGRAM

BCTLABS STEM Academy

Inspiring Future Innovators Through STEM



Proposal for Establishing Advanced STEM Labs

Transform Your School with BCTLABS STEM Academy

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Introduction

BCTLABS STEM Academy, established in 2013 in Bangalore, is a brand of BCTLABS, primarily an electronics product manufacturing company. With a strong foundation in innovation and technology.

BCTLABS STEM Academy

we aim to empower students with practical, hands-on learning in Science, Technology, Engineering, and Mathematics (STEM).

Our STEM Labs are designed to bridge the gap between theoretical concepts and real-world applications, fostering innovation, creativity, and problem-solving skills.

About BCTLABS STEM Academy

VISION

To empower young minds with 21st-century skills through hands-on STEM education.

ACCREDITATION

Proudly accredited by STEM.org, a global leader in STEM education certification.

MISSION

Bridging the gap between theoretical knowledge and real-world application.

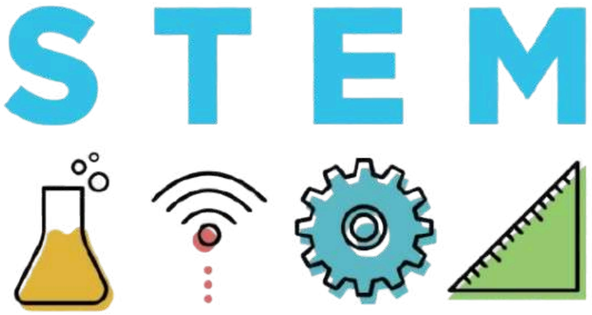
EXPERIENCE

- 11 Years of expertise in STEM training and education.
- Trained thousands of students across India.
- Conducted workshops, expos, and competitions.

Accreditation

BCTLABS STEM Academy is proud to be accredited by STEM.org, the world's leading STEM education credentialing organization. This prestigious recognition ensures that our programs meet global standards for quality, innovation, and hands-on learning, empowering students with future-ready skills. Partnering with us means your school gains credibility, enhances its reputation, and provides students with world-class STEM education.

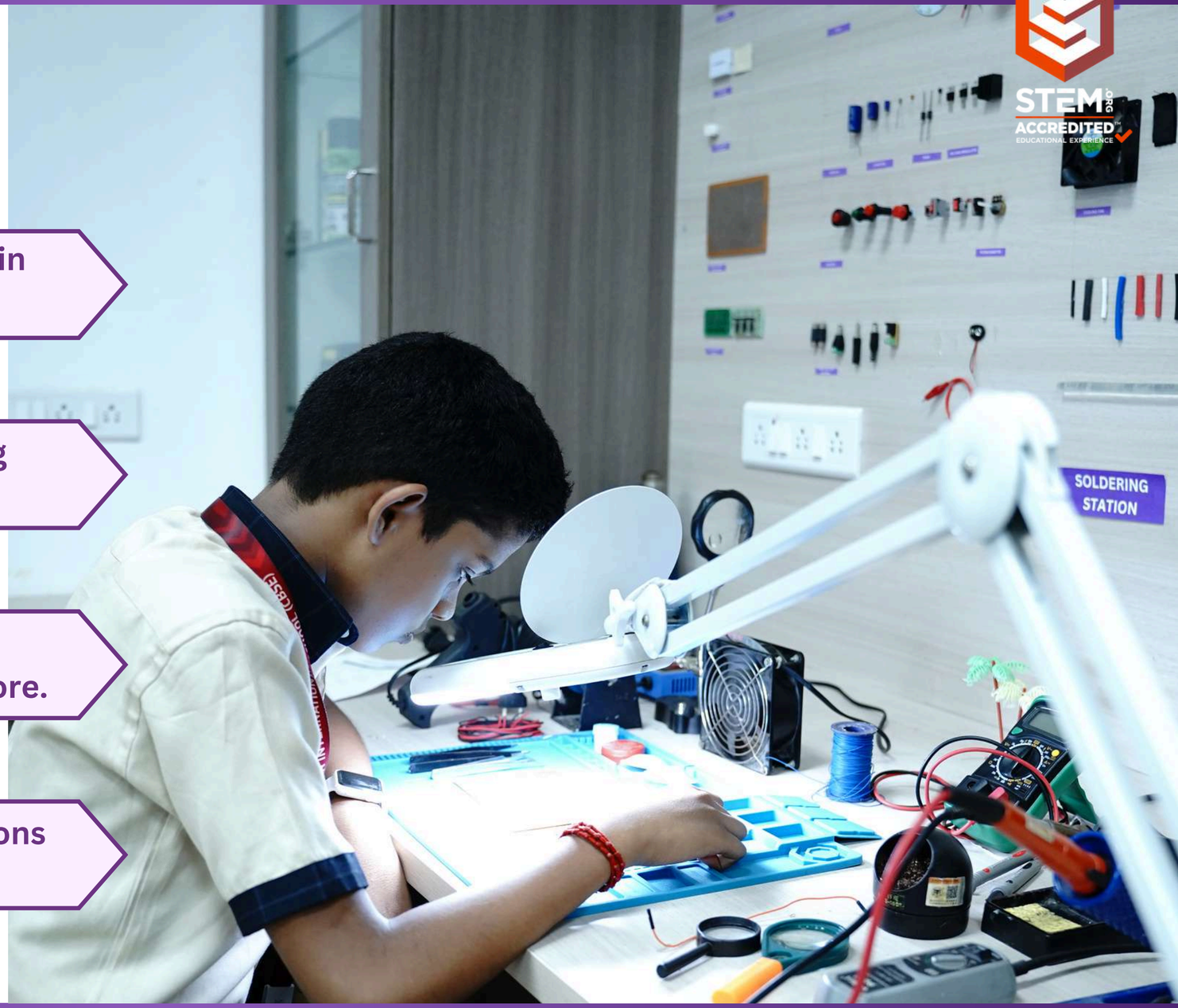
What Is STEM ?



STEM stands for Science, Technology, Engineering, and Mathematics, an interdisciplinary approach to learning that integrates these fields into cohesive, hands-on experiences. It encourages critical thinking, problem-solving, and creativity, preparing students for the challenges of the modern world.

OBJECTIVES

1. To inspire and nurture students' interest in STEM fields.
2. To develop technical and critical-thinking skills through hands-on activities.
3. To provide exposure to advanced technologies like robotics, IoT, AI, and more.
4. To prepare students for global competitions and industry requirements.



Target Audience

Schools and institutions looking to enhance their curriculum with STEM-based education.

Students from Elementary, primary to higher secondary levels.

What We Teach?

- 3D Printing
- Robotics
- Drones
- Artificial intelligence
- Aero Modelling
- Machine Learning
- Coding
- Clubs
- Internet of Things
- Arts
- Designing
- Automation

Develop Students 21st Century Skills with BCTLABS STEM Academy

Features of the STEM Lab

1. Infrastructure Setup
2. STEM Kits & Equipment
3. Curriculum
4. Software & Platforms
5. Support Services

Infrastructure Setup

Modular Workstations and Storage Solutions

Our STEM labs are designed with modular workstations and intelligent storage solutions, ensuring a clutter-free and organized environment that adapts to various learning activities.

Safe and Ergonomic Equipment Layout

We prioritize student safety and comfort by implementing an ergonomic layout for all equipment, promoting efficiency and minimizing risks during hands-on activities.

Infrastructure Setup

STEM Kits & Equipment

LEGO EV3

LEGO WeDo

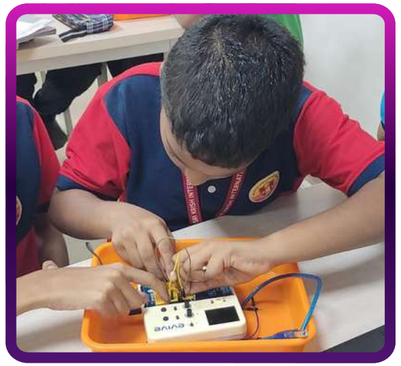
Robotics

Automation

At BCTLABS STEM Academy, we provide students with hands-on experience in cutting-edge technologies, including microcontrollers like Arduino Uno and ESP32, robotics kits such as LEGO WeDo 2.0, LEGO EV3, Quarky, and Evive, as well as advanced tools like FDM and resin 3D printers. Our labs also feature drones, aero modeling kits, sensors, actuators, and IoT and AI development kits, enabling exploration in robotics, automation, Artificial Intelligence (AI), Machine Learning (ML), and more. With this diverse range of tools and technologies, we empower students to innovate, build, and master skills across multiple domains.

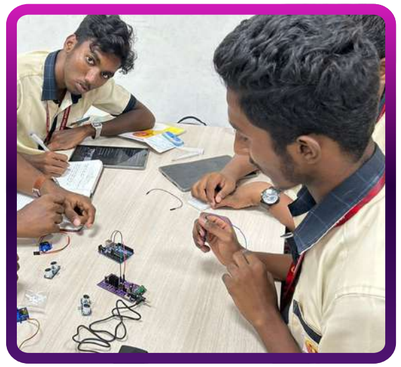
STEM Kits & Equipment

Quarkey



Evive

Drones



Electronics

IoT

3D Printing

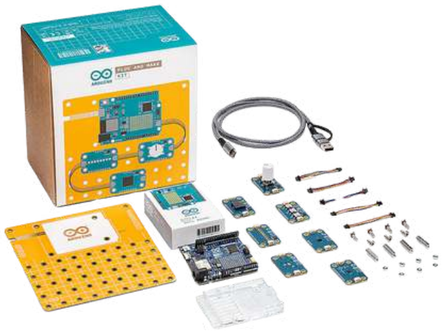
AI

ML

STEM Based Kits

LEGO EV3

Evive



IoT Kits

LEGO WeDo 2.0

Quarkey

Automation Kits

R & D Equipments

FDM 3D Printer

DLP 3D Printer

Laser Cutting and Engraving MAchine

3D Pen

Drones

Aero Modelling

Software and Platforms

At BCTLABS STEM Academy, we equip students with expertise in a wide range of software and platforms essential for modern STEM education. These include programming environments like Scratch, Python, and C++, as well as specialized tools such as LEGO Mindstorms Classroom, LEGO WeDo 2.0, Arduino IDE, and Tinkercad for designing and simulating circuits and robotics. Additionally, we teach slicing software for 3D printing and IoT applications like Blynk, ThingSpeak, and Arduino Cloud, ensuring students gain practical knowledge across diverse technologies and platforms.

Curriculum

At BCTLABS STEM Academy, we design a comprehensive, age-appropriate curriculum using advanced hardware and software, covering robotics, coding, electronics, AI, and IoT. Our curriculum emphasizes project-based learning, enabling students to work on industrial-standard projects while aligning with global standards and international competitions. To enhance the learning experience, BCTLABS STEM Academy provides printed books designed with international benchmarks, ensuring students receive world-class STEM education tailored to their age and skill levels.

Support Services

BCTLABS STEM Academy offers comprehensive teacher training programs led by our trained engineers, who provide hands-on instruction directly at the school. The STEM labs will be maintained and continuously upgraded by our team, ensuring access to the latest technologies. Additionally, our expert trainers will work directly with students, providing ongoing training and support to ensure they receive the best hands-on learning experience. With continuous technical assistance, both teachers and students are empowered to maximize their potential and stay at the forefront of STEM innovation.

Benefits of the STEM Lab

1

Hands-on learning experience for students.

2

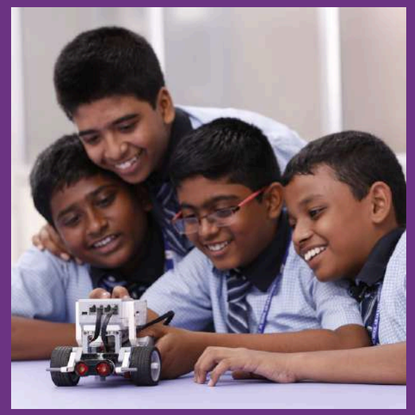
Enhanced understanding of STEM concepts.

3

Increased participation in STEM competitions and expos

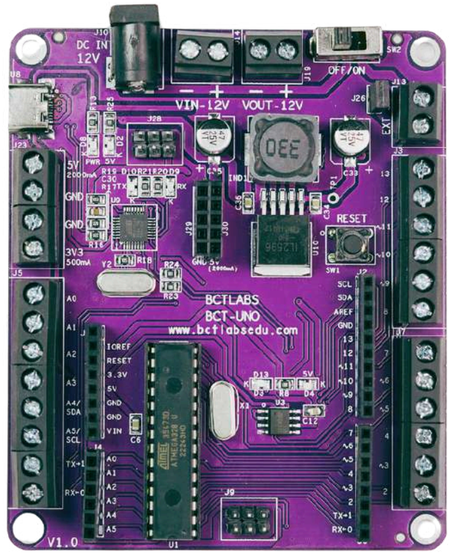
4

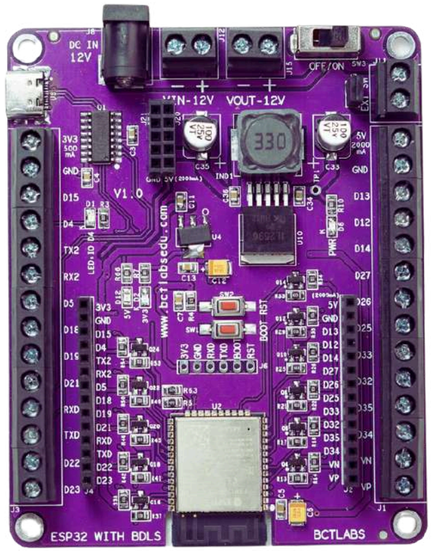
Improved problem-solving, teamwork, and innovation skills

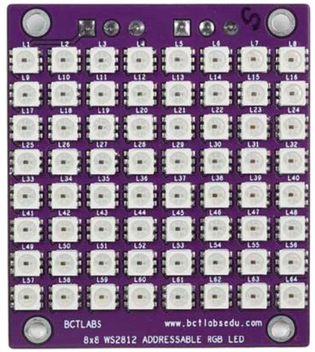


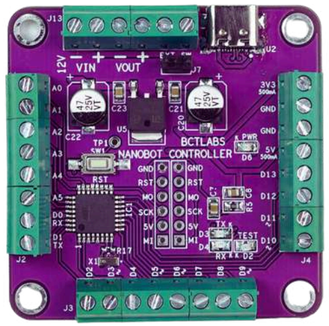
Our Products

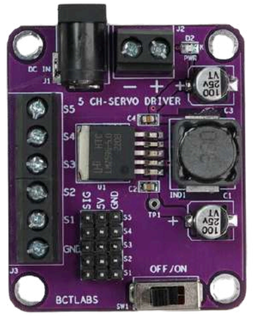
At BCTLABS STEM Academy, we go beyond teaching STEM by adopting cutting-edge technologies and driving innovation through our in-house Research and Development team. Our R&D efforts focus on creating high-quality, industry-standard products that empower STEM learning and innovation. Some of our key products include custom-designed microcontrollers like Arduino Uno-compatible boards, ESP32 modules, robotics kits, IoT and AI development kits, and advanced tools for automation and a variety of sensors and actuators, all designed to meet global standards. By combining education with product development, we ensure our students and partner schools have access to the best resources for hands-on learning and innovation.

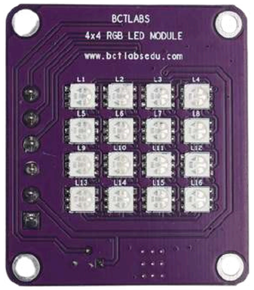












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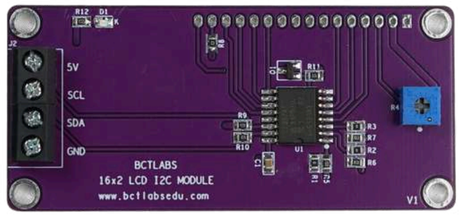
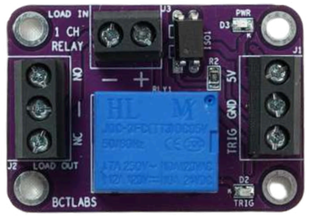
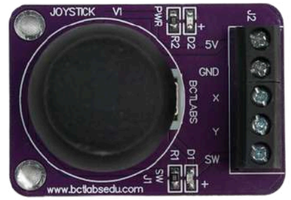






Our MOUs & Collabrations

At BCTLABS STEM Academy, we take pride in our strong industry and academic collaborations that enhance our offerings. We have a Memorandum of Understanding (MoU) with the Siemens Center of Excellence in Manufacturing at NIT Trichy, enabling access to advanced technologies and expertise.

At BCTLABS STEM Academy, we collaborate with renowned organizations like STEMPedia and various other leading companies to bring the latest innovations and resources to our STEM programs. These partnerships strengthen our curriculum, provide unique opportunities for students, and ensure we remain at the forefront of STEM education and development.

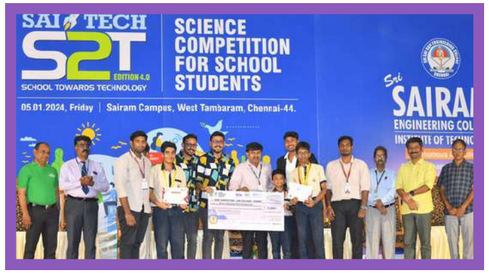
At BCTLABS STEM Academy, we are proud to partner with STEMPedia's Codeavour International Competition. As the regional partner for Chennai since 2020, we provide students with a platform to showcase their skills in AI, coding, and robotics, inspiring innovation and fostering global recognition in STEM.

Our Achievements

At BCTLABS STEM Academy, we not only teach students but also empower them to actively participate in major national and international STEM competitions. Through our comprehensive training and guidance, students have achieved remarkable success, winning prestigious awards and recognition on global platforms. This approach inspires innovation, builds confidence, and prepares students to excel in the competitive world of STEM.

Global Success

Our Achievements



Internships

At BCTLABS STEM Academy, we provide students with unique opportunities to bridge the gap between theoretical knowledge and practical application. As part of our program, students participate in a 2-day industrial internship at the Siemens Center of Excellence in Manufacturing at NIT Trichy. This hands-on experience allows them to explore advanced manufacturing technologies, gain industry insights, and develop real-world skills, ensuring they are well-prepared for future career opportunities in STEM fields.

Siemens Centre of Excellence in Manufacturing

Industrial Visits

At BCTLABS STEM Academy, we believe in providing students with enriching experiences that go beyond the classroom. We organize industrial visits to renowned institutions and facilities, including the U.R. Rao Satellite Center at ISRO, Bengaluru, the Visvesvaraya Industrial and Technological Museum, HAL Heritage Museum, and Jawaharlal Nehru Planetarium in Bengaluru. These visits expose students to cutting-edge advancements in science and technology, inspire innovation, and provide a deeper understanding of real-world applications, fostering a passion for STEM fields.

U. R. Rao Satellite Center, ISRO, Banglore.

Visvesvaraya Industrial and Technological Museum, Banglore.


U. R. Rao Satellite Center, ISRO, Banglore.

Jawaharlal Nehru Planetarium, Banglore.

In Medias

School students bag awards for best papers

Submit projects focusing on real-time agricultural solutions

VIVEK NARAYANAN
VELLORE

Clad in blue school uniform, a group of seven school students were seated in the audience during the valedictory function of graVITas 2018. Everyone mistook them for winners of some painting or oratorical competition. But the students from a school in Arakonnam turned out to be winners of the Best Paper award submitted during the international conference on innovative and emerging technologies for farming - Energy and Environment, Water.

The conference was held as part of graVITas and researchers submitted papers. Of them, seven students from Bharatidasanar Matriculation Higher Secondary School, Arakonnam, won the Best Paper award.

"A total of 143 scholars from India and abroad took part in the conference. This is the first time school students were allowed to participate. The judges felt theirs was the best paper," K. Devendranath Ramkumar, convener of the fest.

Three girl students studying in Class IX – H. Kavya, S.S. Nivetha and R. Amrithavarshini – won the award for their paper on IoT (Internet of Things) -based pest monitor and control in crops. Four boys studying in Class VIII won the award for their paper on IoT-based monitoring and control in agriculture.

"Using IoT we can identify the minute sound made by pest and then sprinkle pesticide on the exact position of the pest instead of the whole plant," said Ms. Nivetha, speaking to *The Hindu*. Similarly, using IoT devices the requirement of the plant can be understood and requisite water can be provided. The students are eager to further their research.

Students of Bharathidasanar School won the best paper award at the graVITas 2018 on Sunday. ■ C. VENKATACHALAPATHY

THE HINDU

SCHOOLS

School students bag awards for best papers

Vivek Narayanan
VELLORE , OCTOBER 15, 2018 01:00 IST
UPDATED: OCTOBER 15, 2018 01:00 IST

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"A company called BCTLabs has set up a lab in our school and we carry out projects in Robotix and other research areas. Due to our teachers' encouragement we took part in the competition. The concept we have mentioned in our paper has been tested in our lab," said Ms. Nivetha, who wishes to become a doctor

விஐடி பல்கலைக்கழகத்துடன் 31 ஆராய்ச்சி திட்டங்களில் ஒப்பந்தம்

● 'கிராவிடாஸ்-2018' நிறைவு விழாவில் டிஆர்டிஓ தலைவர் தகவல்

■ வேலூர்

வேலூர் விஐடி பல்கலைக் கழகத்தில் 'கிராவிடாஸ்-2018' என்ற அறிவு சார் தொழில்நுட்ப திருவிழா கடந்த 12-ம் தேதி தொடங்கியது. இதில், இந்தியா மட்டுமின்றி அமெரிக்கா, ஜப்பான் போன்ற வெளிநாடுகளைச் சேர்ந்த 200-க்கும் மேற்பட்ட கல்வி நிறுவனங்களில் இருந்து 15 ஆயிரத்துக்கும் மேற்பட்ட மாணவ, மாணவிகள் பங்கேற்றனர்.

3 நாட்கள் நடந்த கிராவிடாஸ் 2018 விழாவின் நிறைவு நாள் நிகழ்ச்சி நேற்று நடைபெற்றது. நிகழ்ச்சிக்கு, துணை வேந்தர் ஆனந்த் ஏ.சாமுவேல் தலைமை தாங்கினார். இந்திய பாதுகாப்பு ஆராய்ச்சி மற்றும் மேம்பாட்டு நிறுவனத்தின் தலைமை இயக்குநர் (மூலப்பொருள் மற்றும் மேலாண்மை) ஜக்வான் அஹ்மத் சிறப்பு விருந்தினராக பங்கேற்று பேசும்போது, "குடிநீர், சுற்றுச்சூழல், எரிசக்தி உள்ளிட்ட பிரிவுகளில் நிலவும் பிரச்சினைகள் பொருளாதாரம் சார்ந்ததாக உள்ளது. ஏவுகணை, ராணுவம், வான்வெளி பாதுகாப்பு உள்ளிட்ட பல்வேறு அம்சங்களில் பாதுகாப்பு ஆராய்ச்சி மற்றும் மேம்பாட்டு நிறுவனம் செயல்பட்டு வருகிறது. கடந்த 3 ஆண்டுகளில் 30 வகையான முக்கியத்துவம் வாய்ந்த திட்டங்களை செயல்படுத்தி வருகிறோம். 15 முக்கிய திட்டங்களை பரிசோதித்துள்ளோம்.

பாதுகாப்பு மற்றும் ஆராய்ச்சி நிறுவனம் தனியாக செயல்படவில்லை. ஐஐடி (மும்பை, சென்னை, ஜலந்தர் போன்ற முன்னணி கல்வி நிறுவனங்களுடன் இணைந்து செயலாற்றி வருகிறோம். மேக் இன் இந்தியா திட்டத்திலும் பங்கேற்றுள்ளோம். கடந்த ஓராண்டில் 155 திட்டங்களுக்கு காப்புரிமை பெற விண்ணப்பித்து உள்ளோம். இதில், ஏறக்குறைய 100 திட்டங்களுக்கு காப்புரிமை பெற்றுள்ளோம்.

அப்துல் கலாமின் கனவை நிறைவேற்றும் வகையில், கிராமப்புற ஏழை மக்கள் பயன்பெறும் வகையிலான பணிகளை பொறியியல் மாணவர்கள் தேர்வு செய்ய வேண்டும். விஐடி பல்கலைக்கழகத்துடன் இணைந்து 31 திட்டங்கள் தொடர்பான ஆராய்ச்சிகளுக்கு ஒப்பந்தம் மேற்கொள்ளப்பட்டுள்ளது. மேலும், சில ஒப்பந்தங்கள் மேற்கொள்ள நடவடிக்கை எடுக்கப்பட்டுள்ளது" என்றார்.

பள்ளி மாணவர்களுக்கு சான்றிதழ்

நிகழ்ச்சியில் இந்தியாவுக்கான எத்தியோப்பியா நாட்டின் தூதர் காமே ஆஸ்பா டிங்காமோ கவுரவ விருந்தினராக பங்கேற்று, 'கிராவிடாஸ்-2018' கருத்தரங்கில் சிறந்த ஆராய்ச்சி இதழை வெளியிட்ட அரக்கோணம் பாரதிதாசனார் மெட்ரிக் மேல்நிலைப் பள்ளி மாணவர்களுக்கு சான்றிதழ் மற்றும் நினைவுப் பரிசு வழங்கினார்.

நிகழ்ச்சியில், பேடிஎம் நிறுவனத்தின் துணைத் தலைவர் சவுரப் ஜெயின், கிராவிடாஸ் நிகழ்ச்சியில் வெற்றிபெற்ற மாணவர் குழுவினருக்கு பரிசுகளை வழங்கினார்.

▲ வேலூர் விஐடி பல்கலைக்கழகத்தில் நடைபெற்ற கிராவிடாஸ்-2018 நிகழ்ச்சியில் பேசுகிறார் பாதுகாப்பு ஆராய்ச்சி மற்றும் மேம்பாட்டு நிறுவனத்தின் தலைமை இயக்குநர் ஜக்வான் அஹ்மத்.

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