



ROBOTMEA INNOVATION DAY - LAHORE CHAPTER

Transforming The Educational Landscape

Organized by:

Robotmea Middle East Africa & Pakistan

Time dimension Middle East

Crescent Educational Trust

Robotron Corp, South Korea

Neopia Corp, South Korea



Innovative Education for Shaping Wisdom-Driven Societies

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For Latest Updates:

Website: website: [Robotmea Website](#)

Registration:  [Link](#)

Line Following Track (School): 3rd- April- 2024. Find links on website.

Speed Racing Car (School): 3rd- April- 2024. Find links on website.

Quiz Buzz (For Students Preparation): 3rd- April- 2024. Find links on website.

Competitions Rule Book

Introduction:

The Robotmea Innovation Day – Lahore Chapter is a trailblazing event of Robotmea International with the joint collaboration of Crescent Educational Trust to be held on January 19, 2024 in Lahore at Crescent Higher Secondary School, boy's campus, Shadman. The day aims to bridge industry academia gap by bridging education and emerging technologies together and to provide students with the opportunities to showcase their skills and knowledge in the field of technology innovation to foster entrepreneurship in Islamic Republic of Pakistan.

The Robotmea Innovation Day – Lahore chapter will feature key note sessions, Edtech talks, and astounding panel discussions on industry academia gap, industrial expectations from academic institutes and the use of AI in almost every field in the current day and age. The Keynote sessions will be led by national and International Information, Communication and Edtech experts who will share their knowledge and experience with attendees.

The biggest attraction of this Robotmea Innovation Day – Lahore Chapter is the "Innovation Challenge" an extra-ordinary opportunity for the students from grade 06 to 12 to showcase their skills in the emerging fields of technology using their existing knowledge for giving solutions pertaining to child cancer as a disease. In this competition, we embrace the power of robotics AI & IoT as a tool for innovation and learning, particularly in the fight against cancer. Rapid advancements in emerging technologies are paving the way for new, hopeful treatments for cancer patients. Our focus is to harness these technological strides in a way that resonates with young, bright minds.

The Robotmea Innovation Day – Lahore Chapter will include national level thrilling and exciting Robotics competitions for students from Grade 03 to Grade 08. This competition will allow students to demonstrate their skills in the emerging technologies such as robotics, Internet of things (IOT), and Artificial Intelligence (AI) to help and transform the nation towards wisdom driven economies. The winners of each category in any of the module will get a cash prize & awards.

The Robotmea Innovation Day – Lahore Chapter is a unique opportunity for students, teachers, school leaders and industry patrons to learn nextgen educational methods and to gain limitless exposure on latest technological innovation and inventions.

This extravaganza will provide the access to people, networking platform, full of exposure and much more to grow personally and professionally.

1-Innovation Challenge 2k24:

Competition Introduction:

Welcome to a unique and educational journey where technology meets healthcare awareness. This competition is designed to enlighten students with one of the most critical health challenges of today's time - Cancer. Understanding cancer is vital, as it involves a process where cells in the body lose control over their growth and interaction, leading to serious health impacts. The Groups shall be divided in two different categories **category A from grade 06 to grade 08** to the most prevalent forms of cancer include Leukemia, brain and CNS tumors, and lymphomas. These diseases can significantly weaken the body, affecting both physical strength and the immune system.

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Participants will be introduced to the Robotmea kit, a cornerstone of this competition. This kit is designed for high-interest STEAM programs and emphasizes the use of programmed controllers, sensors, and the construction and operation of robots. It's an engaging way for students to learn about programming logic, structure, and design in a hands-on manner.

To assist educators, we provide a comprehensive Teacher's Guide. This guide is your roadmap to enhancing students' understanding of various aspects of robotics, including mechanical systems, motor and sensor operations, programming structure, and feedback systems. The guide includes six detailed lessons, progressing from simple to complex programming challenges. These lessons are crafted to be as informative as they are engaging, complete with objectives, materials lists, and programming examples.

Each lesson [comes](#) with Student Instruction Sheets and Student Response Sheets. These resources are designed to guide students through the lessons, allowing them to work independently or with minimal supervision.

Competition Process:

School: Each school will register 3 students with one teacher.

Teacher: Selecting the teachers who understand software programming with robotic exposure.

Student Group: Students from grade 06 – grade 08

Basic Bio-tech: Explain biosciences and technology concepts among students in groups within the same class.

Understanding Cancer: Overview of Cancer types primarily focuses on child cancer symptoms and diseases.

Focus Level: Prepare statistics of cancer types with symptoms, remedies, and safety measures.

Problem & Solution: Understand the cause of cancers within depth analysis, brainstorming with students & teachers on the types of child and then projects related to it.

Discussion: Each group to work and find their proposed solution with project.

Practical work: Study and analyze the challenge and then bring solution by using Robotics and AI.

Presenting the concept: Project prepared and tested and ready for presenting it in front of jury.

Plan Summary:

This Innovation challenge on Cancer as a disease has been designed to blend emerging technologies in education with vital health awareness, targeting both students and teachers. The program's cornerstone is the Robotmea kit, supplemented with sensors, a student manual, a comprehensive teacher guide, detailed rubrics, and a scope of work for both students and teachers. The training aspect of the program involves trainers providing instruction to teachers and students, which can be conducted either online or through in-person visits, based on each team's confirmation. Each participating school is

required to purchase a Robotmea kit and register for the competition before the deadline i.e **March 15, 2024**

The program includes two main teacher training sessions. The first session is conducted after the kit purchase and focuses on using the kit, implementing lessons, and understanding the program objectives. The second training session, (Dates to be mutually decided), aims to further refine teachers' skills and address any challenges they might face. Additionally, regular online support sessions are planned, providing a platform for teachers to discuss any challenges and receive continuous support. This program offers a unique opportunity for schools to combine hands-on robotics education with crucial health education, thereby enhancing technical skills and promoting a deeper understanding of cancer and the potential role of technology in healthcare.

Competition Planner:

Sr.no.	Innovation Challenge	Planner
1	Teams to be Registered Before	April 3 rd , 2024
2	Kits to be delivered	With in 5 days after registration.
3	1st Training Session	Upon Delivery of the kits online session.
4	Retraining Sessions	Online upon demand
5	Mentorship Sessions	In Robotmea office
6	Final Training Session	TBD Mutually
7	Project report submission	15/04/2024
8	Project demo & Presentation	19/04/2024
9	Project showcase	19/04/2024

Pole of Evaluation Criteria:

This Innovation Challenge is designed to challenge students to showcase their knowledge and skills in STEAM concepts. The projects will be evaluated based on their research, originality, quality, creativity, and the student's understanding of STEAM concepts. The judges/jury will be experts in the field of emerging technologies and will evaluate the projects based on a set of pre-defined criteria as mentioned below:

Judging Criteria:

Category	Criteria	Points
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1. Project (Total Points: 50)	1. Creativity - The project is original, worthwhile and shows creative thinking / innovative and imaginative design / interesting and divergent interpretation and implementation.	10
	2. Quality of Solution - The project is well-thought out and is a good solution to the problem. The solution supports the theme assisting humankind to solve tasks in space.	15
	3. Research & Report - It is clear that research was done . The report is a good summary of the project : the problems - solutions - process - findings - team - task.	15
	4. Entertainment Value - The project has a certain "WOW" factor - looks fun, captures the attention of passers by - makes you want to see it again or learn more about it.	10
2. Programming (Total Points: 45)	1. Automation - The project uses appropriate inputs from sensors to run specific routines and clearly demonstrates automation in the completing of the tasks.	15
	2. Good Logic - The programming options used make sense, work reliably, are relevant in terms of their use, complexity and design.	15
	3. Complexity - The project uses multiple languages, sensors or controllers and incorporates more advanced / complex algorithms, structure and design.	15
3. Engineering Design (Total Points: 45)	1. Technical Understanding - Team members are able to produce clear, precise, and convincing explanations about each step of the mechanical and programming process.	15
	2. Engineering Concepts - The project shows evidence and good use of engineering concepts and team members are able to explain the concepts and need for use.	10
	3. Mechanical Efficiency - Parts and energy have been used efficiently - evidence of proper use of mechanical concepts / principles (gears/pulleys/levers/wheels & axles)	10
	4. Structural Stability - The project (robots and structures) are strong, sturdy and the demonstration can be run repeatedly - parts don't detach - little need for repairs.	5
	5. Aesthetics - The mechanical elements have aesthetic appeal, there is evidence that the team went out of their way to make the project look as professional as possible.	5

4. Presentation (Total Points 40)	1. Successful Demonstration - A demo of the capabilities was completed, there is a sense that it could reliably be repeated and that preparation and practice have taken place.	15
	2. Communication & Reasoning Skills - The team were able to present their project idea in an interesting way - how it works - why they chose it - why it has relevance.	10
	3. Quick Thinking - The team are able to easily answer questions about their project. They were also able to deal with any problems that arose during the presentation.	5
	4. Posters and Decorations - The materials used to communicate the project to others are clear, concise, relevant, neatly prepared and engaging.	5
	5. Project Video - Only marks for videos provided on time. The video is a good pitch for the project - presenting the problem, the solution and the team.	5
5. Teamwork (Total Points: 20)	1. Unified Learning Outcome - There is evidence that team members have internalized knowledge and understanding of the subject matter pertaining to their project.	10
	2. Inclusiveness - The team are able to demonstrate that all members played an important role in the development, construction and presentation of their project.	5
	3. Team Spirit - The team display positive energy, good cohesiveness, value one another and are enthusiastic and excited about sharing their project with others.	5
Maximum Points		200

2-Robotic Competitions:

Module 1: Project Exhibition Competition for School

Eligibility: This competition is open exclusively to students in Grade (3-5) and Grades (6-8).

Project Guidelines: Projects should be based on emerging technologies and should demonstrate the student's understanding of STEAM (Science, Technology, Engineering, Arts, Mathematics) concepts. The projects should be original and not copied from any other source. The project must be displayed with a poster board that highlights the key features and design of the project. Robotmea Kits should be used to assemble the projects. Participants can use other allied tools alongside kit parts i.e., sensors, controllers, motors, thermopole sheets, or any other tool as per the requirement.

Presentation Guidelines: Students must prepare a presentation to showcase their project to the judges. The presentation should be no longer than 3-5 minutes and should cover the key features of the project, its design, and the student's understanding of STEAM concepts & extractions ability. The presentation can be delivered in a bilingual style (Urdu and English).

Criteria 1:

The student's knowledge will be assessed on the following rubrics and based on observational methodology and question answering session, judges will place the students in one of the following positions. Judges have all the rights to add worksheets in the judging criteria to ensure the quality assessment:

		The Cognitive Process Dimension					
The Knowledge Dimension		Remember	Understand	Apply	Analyze	Evaluate	Create
	Factual Knowledge	List	Summarize	Classify	Order	Rank	Combine
	Conceptual Knowledge	Describe	Interpret	Experiment	Explain	Assess	Plan
	Procedural Knowledge	Tabulate	Predict	Calculate	Differentiate	Conclude	Compose
	Meta-Cognitive Knowledge	Appropriate Use	Execute	Construct	Achieve	Action	Actualize

Ethics and Plagiarism: Plagiarism in any form will not be tolerated. Students found guilty of plagiarism will be disqualified from the competition. All projects must adhere to ethical standards.

Conduct: Participants are expected to behave in a respectful and professional manner throughout the competition. Any disruptive or inappropriate behavior will result in disqualification.

Disclosure: Participants must disclose any assistance or collaboration received during the project development.

Photography and Videography: Photography and videography may be taken during the competition and may be used for promotional purposes.

Module 2: Line Follower Robot Competition for School

Eligibility: This competition is open exclusively to students in Grade (3-5) and Grades (6-8).

The Line Follower Robot Competition is an exciting event that challenges participants to design and build a robot that can follow a pre-determined track. The competition consists of two rounds.

Round 1: Track Completion

In the first round of the LFR competition, the primary objective for each team is to successfully complete a predetermined track with their line-following robot. This track, designed with a series of turns and obstacles, challenges the teams to demonstrate their robot's accuracy, sensor integration, and programming efficiency.

Round 2: Speed Round

The second round ups the ante with a focus on speed. In this round, the same track is used, but the challenge is to complete it in the minimum possible time. This round tests not just the precision of the robots but also their speed and the teams' ability to optimize their programming for quick navigation without compromising accuracy.

Rules:

1. Robotmea Kits, LEGO MINDSTORMS kits, NXT 2.0, NXT 2.1, Ev3, or similar kits are allowed in the competition.
2. Pre-Assembled kits are not allowed. (i.e. Pololu kits, PID Pre-Designed Kits)
3. All robots must be autonomous and would be able to navigate the course without any human intervention.
4. Robots must be able to follow a black line on a white background. The line will be 1 inch wide = 2.6 cm.
5. The maximum size of the robot is limited to 25 cm x 25 cm x 25 cm.
6. The robot should not damage the course/track.
7. The robot should not emit any harmful or disruptive substances or signals.
8. The Robot should not have any external means of control, such as a remote control.
9. The robot must be powered by a batteries.
10. Teams are allowed to have up to 3 members.
11. Each team is allowed to bring one line follower robot to the competition.
12. Teams are required to provide their own tools and equipment for maintaining and repairing their robot during the competition.

Track for Competition

Tracks will be revealed on April 3rd, 2024

Module 3: Soccer-bot Competition for School

Eligibility: This competition is open exclusively to students in Grade (3-5) & Grade (6-8).

The Soccer Bot competition is an engaging and challenging event for students, forming a part of this summit. This competition focuses on the construction and application of robotic models using the Robotmea Primary Level Kit. It is structured in two distinct rounds: a building round and a knockout competition round.

Round 1: Building Round

Rules for Round 1:

1. **Time Allocation:** Each team will be given 60 minutes to construct their soccer bot.
2. **Required Kit:** Teams must use the Robotmea Primary & Secondary Level Kit for building their soccer bot.
3. **No External Assistance:** Teachers or mentors are not allowed in the lab during the 60-minute building period.
4. **Completion of Model:** The primary goal in this round is to complete the construction of the soccer bot within the given time.
5. **Evaluation:** After the completion of the building period, a panel of evaluators will assess the models. The evaluation will focus on the completeness, technical competency, and adherence to the competition guidelines.
6. **Qualification for Next Round:** Teams that successfully complete their model as per the evaluators' standards will qualify for the second round.

Round 2: Knockout Round

Rules for Round 2:

1. **Soccer Bot Match-Up:** Qualified teams will compete against each other in a knockout format.
2. **Gameplay:** Each match will involve the soccer bots attempting to score goals in a mini soccer field setup.
3. **Match Duration:** The duration of each match will be announced prior to the start of the round.
4. **Scoring System:** The Team who scores first goal will be the winner. (Judges have all the rights to extend goals in the semifinals and finals).

5. **Robot Operation:** Teams must operate their soccer bots remotely, demonstrating control and strategic gameplay.
6. **Fair Play:** Teams must adhere to the spirit of competition and fair play. Any form of cheating or unsportsmanlike conduct will result in disqualification.
7. **Damage and Repairs:** In case of damage, teams will be given a brief period for repairs between matches.
8. **Judge's Decision:** The decisions made by the judges regarding scores and rule interpretations are final.

SOCCER BOT ARENA



Module 4: Quiz-Buzz Competition for Innovative Thinkers

Topic: Emerging Technologies

Eligibility: Students of Grades (3-5) and Grades (6-8) are eligible to participate and win this exciting Quiz Competition.

The Quiz Buzz competition on emerging technologies, tailored for young and aspiring innovative thinkers, is an exciting and intellectually stimulating segment of the competition designed for students in Grades 3 to 5 and grades 6 to 8, this competition tests their knowledge and quick thinking in a dynamic and interactive format.

Competition Overview:

Upon registration, each team will receive a comprehensive student manual, which serves as a guide and preparatory material for the competition. On the day of the event, teams will participate in a buzzer-based quiz contest. The team that presses the buzzer first gets the opportunity to answer the question. The competition incorporates

both positive and negative marking to ensure a balanced and competitive environment, and it consists of multiple knockout rounds.

Rules of the Quiz Buzz Competition:

1. **Team Composition:** Each team must consist of 2 students.
2. **Student Manual:** Teams will be provided with a manual at the time of registration for preparation.
3. **Buzzer System:** A buzzer system will be used during the competition. The first team to press their buzzer gets the chance to answer.
4. **Answering Format:** After buzzing, the team must provide their answer within a specified time limit.
5. **Scoring System:** Correct answers will receive positive marks, while incorrect answers will result in negative marks.
6. **Knockout Rounds:** The competition will be conducted in multiple rounds, with teams being eliminated based on their scores in each round.
7. **Question Format:** Questions will cover a range of topics relevant to the emerging technologies curriculum and general knowledge in science.
8. **Fair Play:** Teams must adhere to the principles of fair play and sportsmanship throughout the competition.
9. **Judges' Decision:** The decisions made by the judges are final and binding in all aspects of the competition.
10. **Timeliness:** Teams must be present at their designated times for each round of the competition.

The Quiz Buzz competition is designed to not only test the knowledge of young students but also to enhance their quick thinking and teamwork skills in a fun and engaging way. Moreover, they will also get the knowledge on emerging technologies with its application in this ever changing world.

Module 5: Speed Racing Competition

Eligibility: Students of Grades (3-5) are eligible to participate in this category

Overview: RC (Remote Control) Race is an exciting competition where students from different schools can compete using remote-controlled cars. Participants need to design and build their own RC cars, which they will race against each other on a designated track.

Rules of the Speed Racing:

- Each team would be comprised of 3 members.

- The robot must be designed and built by the team.
- The robot must be able to move forward, backward, turn left, and turn right. The robot should not exceed the size of 30cm x 30cm x 30cm.
- The robot must be powered by batteries and it remains onboard and cannot be changed during the race.
- The racecourse will consist of a track with obstacles. The track will be marked with lanes and robot will follow it. The obstacles will be placed along the track, and the robots will navigate it without knocking them down.
- The time taken by each robot to complete the race will be recorded. The robot with the fastest time will be declared as the winner.
- Penalties will be given if a robot knocks down an obstacle or leaves its lane. The penalties will be added to the robot's time.
- The safety of participants, spectators, and equipment is paramount. The organizers reserve the right to disqualify any team whose robot poses a safety risk.
- The participants should behave nicely & and show sportsman spirit during the competition. Any misconduct in behavior will result in disqualification.
- The judges' decision will be considered as final. Any complaint against the judge will only be addressed by the chief organizer of the conference.

*******GOOD LUCK ALL PARTICIPANTS*******