



Republic of the Philippines
Department of Education
Region III
SCHOOLS DIVISION OF BULACAN

March 11, 2024

DIVISION MEMORANDUM

No. 126, s. 2024

**DIVISION ROBOCOM 2024: ENGAGING LEARNERS TOWARD SCIENCE,
TECHNOLOGY, ENGINEERING, AND MATHEMATICS
THROUGH ROBOTICS COMPETITIONS**

To: Division Chiefs
All Public Elementary School Heads
All Public Secondary School Heads
All Others Concerned

1. The Schools Division of Bulacan announces the conduct of the Division Robotics Competition For SSES, STE, STEM, and TVL Programming for the School Year 2023-2024 with the theme – Engaging learners toward Science, Technology, Engineering, and Mathematics through Robotics Competitions.
2. The DIVISION ROBOCOM 2024 is on April 11 & 23, 2024 at Casa Cirila's Pavillion and Resort, Barangay Bulihan, Dulo Plaridel, Bulacan. This two-day activity entails QuidBots Showcase for SSES Science teachers, Arduino Uno RC Car Challenge for STE learners, and Project Based Learning through Robotics.
3. In connection with the aim of the 15th International Conference on Robotics in Education (RiE) that is bringing academics, researchers, maker, teachers from all types of schools, teacher trainer, educators, practicing engineers and industry experts from all over the world onto a common platform, the Division Robotics Competition aims to:
 - a. enhance the 21st-century skills of SSES, STE, STEM, TVL Programming learners;
 - b. support STEM education through healthy and friendly robotics competition;
 - c. underscore the hallmark of the STEM curriculum through robotics in education;
 - d. advocate Science, Technology, Engineering and Mathematics consciousness and a culture of research and innovation among the youth; and,
 - e. identify the most creative and innovative teachers and learners from SSES, STE, STEM, and TVL Programming curricular programs.
4. The DIVISION ROBOCOM 2024 showcases the following event categories:
 - a. QuidBots Showcase – Innovative Teaching with Robotics Contest (SSES Teacher Category)
 - b. Arduino Uno RC Car Challenge – Unleash Your Engineering Creativity for STE learners (JHS-STE Learners)
 - c. Robo-PBLs – Integrating Robotics in Project Based Learning for STEM and TVL Programming learners (SHS-STEM & TVL Programming Learners).



Republic of the Philippines
Department of Education
Region III
SCHOOLS DIVISION OF BULACAN

5. The Arduino Uno RC Car Challenge and Robo-PBLs will be held on April 12, 2024 while the QuidBots showcase will be held on April 23, 2024. The awarding of winners per category will be held on April 23, 2024.
6. Robotics teams from select from private schools will showcase their outstanding robotics project on the first day of the competition.
7. The Schools Division MOOE shall cover the provision of meals and venue while expenses to be incurred by the participants shall be charged to school's (MOOE) subject to the usual accounting and auditing rules and regulations.
8. This Memorandum will serve as travel authority of the participants.
9. Attached herewith are the contest mechanics for each category for references.
10. Wide and immediate dissemination on this memorandum is earnestly desired.


NORMA P. ESTEBAN, EdD, CESO V
Schools Division Superintendent



Republic of the Philippines
Department of Education
Region III

SCHOOLS DIVISION OF BULACAN

Enclosure No. 1 of the Division Memorandum No. 126 s. 2024

CONTEST MECHANICS PER EVENT CATEGORY

I. INTEGRATING ROBOTICS IN TEACHING & LEARNING

EVENT CATEGORY	ROBOTICS IN TEACHING & LEARNING															
KEY STAGE	Key Stage Two (2): Grade 5 & 6															
EVENT TITLE	QuidBots Showcase: Innovative Teaching with Robotics Contest															
NO. OF PARTICIPANT/S	1 SSES Teacher per SSES implementer															
TIME ALLOTMENT	30 minutes															
21 ST CENTURY SKILL/S	Creativity, Communication, and Critical Thinking															
DESCRIPTION	Incorporating robotics as an Innovative Teaching using Quidbots as a Tool in demonstration teaching.															
CRITERIA FOR ASSESSMENT	<table border="1"> <thead> <tr> <th>Criteria</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Creativity and Innovation</td> <td>25%</td> </tr> <tr> <td>Educational Impact</td> <td>25%</td> </tr> <tr> <td>Engagement</td> <td>25%</td> </tr> <tr> <td>Clarity and Presentation</td> <td>15%</td> </tr> <tr> <td>Time Management</td> <td>10%</td> </tr> <tr> <td>Total</td> <td>100%</td> </tr> </tbody> </table>		Criteria	Percentage	Creativity and Innovation	25%	Educational Impact	25%	Engagement	25%	Clarity and Presentation	15%	Time Management	10%	Total	100%
	Criteria	Percentage														
	Creativity and Innovation	25%														
	Educational Impact	25%														
	Engagement	25%														
	Clarity and Presentation	15%														
	Time Management	10%														
Total	100%															

EVENT RULES AND MECHANICS

- A. All Special Science Elementary Schools (SSES) Teachers who are recipients of QuidBots Kits.
- B. The Event Administrator, members of the Technical Committee and Board of judges shall be at the venue two (2) hours ahead of the event schedule.
- C. The Technical Committee shall inspect the resource requirements for the exhibition.
- D. Event materials, supplies, tools, equipment, data, and photos needed at the venue shall be made ready by the Event Administrator sixty (60) minutes before the event schedule.
- E. All participants are expected to be at the designated venue thirty (30) minutes before the event starts. Late participants may or may not be allowed to join after careful evaluation and scrutiny of their reasons presented to the Technical Committee.
- F. The Event Administrator shall let participants to draw lots to determine their respective places. Setting up of their kits which shall be done during this time.
- G. Borrowing of kits and teaching materials is strictly prohibited.
- H. Briefing of participants shall be done fifteen (15) minutes before the scheduled event.
- I. The Event Administrator shall signal for the event to start. Once the event has started, other delegates shall no longer be allowed to talk to the participants to concentrate in the event.
- J. Only the Event Administrator, Technical Committee members, Judges, Official Photographer, and participants are allowed to be at the venue. Questions/queries from participants shall not be entertained during the exhibition proper.



Republic of the Philippines
Department of Education
Region III

SCHOOLS DIVISION OF BULACAN

- K. Participants shall go through a brief panel interview after the showcase of teaching strategies.
- L. Participants are advised to bring their own food as they are not allowed to go out of the venue during break time.
- M. Participants should clean the working area immediately after the event.
- N. The top 3 QuidBots Showcase presenters shall be declared as winners.

RESOURCE REQUIREMENTS

Event Supplies, Tools, and Equipment	Teacher-Participant	Contest Organizers	Contest Venue Manager
A. Materials/Supplies	<ul style="list-style-type: none"> ▪ Quidbots Kit ▪ Teaching resources 	<ul style="list-style-type: none"> ▪ Office supplies ▪ Tarpaulin 	
B. Tools/Equipment	<ul style="list-style-type: none"> ▪ Laptop ▪ Lapel ▪ Extension cord 	<ul style="list-style-type: none"> ▪ Laptop ▪ LCD Projector 	<ul style="list-style-type: none"> ▪ Tables ▪ Chairs ▪ LED wide screen ▪ Microphone
C. Others			<ul style="list-style-type: none"> ▪ Power supply ▪ Power outlet

II. INTEGRATING ROBOTICS IN STEM LEARNING

COMPONENT AREA	ROBOTICS IN STEM LEARNING
KEY STAGE	Key Stage Three (3): Grades 7,8, 9 and 10
EVENT TITLE	Arduino Uno RC Car Challenge: Unleash Your Engineering Creativity
NO. OF PARTICIPANT/S	Two (2) participants from the key stage or grade level from one key stage or grade level alone
TIME ALLOTMENT	1 hour and 40 minutes including the building and programming of robot and configuration.
21 ST CENTURY SKILL/S	It is essential for learners to manifest learning innovation skills and abilities where they think critically, reflectively, and creatively, analyze, and solve problems, create, and implement innovations using a variety of techniques or methods, and generate functional knowledge that supports varying degrees of thinking skills and metacognition
CREATIVE INDUSTRIES DOMAIN	Creativity, Logic, and Design Thinking
DESCRIPTION	The Arduino Uno RC Car Contest is to design and build a remote-controlled (RC) car using an Arduino Uno microcontroller board.

EVENT RULES AND MECHANICS

- A. All officially enrolled Science, Technology and Engineering (STE) learners in the Junior High School (JHS) are eligible to join.
- B. The Event Administrator, members of the Technical Committee and Panel of Experts should be at the venue two (2) hours ahead of the event schedule.
- C. Event materials, supplies, tools, and equipment needed for the contest shall be made ready at the venue by the Event Administrator two (2) hours before the event schedule.
- D. Setting up of all materials, tools, equipment, and other supplies shall be made ready before the start of the event.
- E. Borrowing of materials, supplies, tools, and equipment during the event is not allowed.



Republic of the Philippines
Department of Education
Region III

SCHOOLS DIVISION OF BULACAN

- F. All participants should report to the venue one (1) hour prior to the event proper to perform the following preliminaries:
- Set up the Arduino robotics kit, and
 - ensure the completeness of the materials/supplies and tools needed;
- G. Final briefing of participants shall be done fifteen (15) minutes before the scheduled event.
- H. No questions shall be entertained during the activity except clarifications and points of order. These shall be addressed by the Event Administrator in consultation with the panel of experts to be recorded by the Event Secretary.
- I. The Event Administrator shall signal to start the activity proper. Once the event has started, the teacher-coaches and other delegates are strictly prohibited at the contest venue.
- J. Only the Event Administrator, Panel of Experts, technical committee members, official photographer, and participants are allowed at the venue to maintain a distraction-free environment.
- K. The working area should be cleaned by participants after the event.

OBSTACLE CHALLENGE MECHANICS

- A. Each team will be given 1hr and 30 minutes to build and program their car robot.
- B. Each team shall be given 15 minutes to test and try their RC car robot in the obstacle field.
- C. Once the event administrator signals to start, the game will begin already.
- D. For every bump of the car robot to the wall or barrier, there will be a deduction of points to the team's score.
- E. The top 3 teams to garner the highest scores shall be declared as winners.

RESOURCE REQUIREMENT

Event Supplies, Tools, and Equipment	Student-Participants	Contest Organizers	Contest Venue Manager
A. Materials and Supplies	<ul style="list-style-type: none"> ▪ Laptop ▪ Arduino Uno Kit ▪ Sensors (Ultrasonic and Light Sensor) 	<ul style="list-style-type: none"> ▪ Tape ▪ Paper ▪ Ballpen ▪ Folder 	
B. Tools and Equipment		Game or Obstacle Field	<ul style="list-style-type: none"> ▪ Tables ▪ Chairs ▪ LED wide screen ▪ Microphone
C. Others			<ul style="list-style-type: none"> ▪ Power supply ▪ Power outlet

III. INTEGRATING ROBOTICS IN PROJECT BASED LEARNING

COMPONENT AREA	ROBOTICS IN STEM LEARNING
KEY STAGE	Key Stage Three (4): Grades 11 and 12
EVENT TITLE	Robo-PBLs – Integrating Robotics in Project Based Learning for STEM and TVL Programming learners (SHS-STEM & TVL Programming Learners)
NO. OF PARTICIPANT/S	Three (3) participants from the key stage or grade level from one key stage or grade level alone



Republic of the Philippines
Department of Education
Region III

SCHOOLS DIVISION OF BULACAN

TIME ALLOTMENT	2 hours including the presentation of prototype project outcome.	
21 ST CENTURY SKILL/S	Learners need to manifest learning innovation skills and abilities where they think critically, reflectively, and creatively, analyze, and solve problems, create, and implement innovations using a variety of techniques or methods, and generate functional knowledge that supports varying degrees of thinking skills and metacognition	
CREATIVE INDUSTRIES DOMAIN	Critical Thinking, Creativity, Logic, and Design Thinking	
DESCRIPTION	The Arduino Uno integration in PBL is to design and build a prototype robot as a solution to a given problem	
CRITERIA	Criteria	Percentage
	Creativity and Innovation	25%
	Feasibility and Practicality	25%
	Technical Proficiency	25%
	Presentation Quality	25%
	Total	100%

EVENT RULES AND MECHANICS

- A. All officially enrolled Science, Technology and Engineering (STEM) and TVL Programming learners in Senior High School are eligible to join.
- B. The Event Administrator, members of the Technical Committee, and Panel of Experts should be at the venue two (2) hours ahead of the event schedule.
- C. Event materials, supplies, tools, and equipment needed for the contest shall be made ready at the venue by the Event Administrator two (2) hours before the event schedule.
- D. Setting up of all materials, tools, equipment, and other supplies shall be made ready before the start of the event.
- E. Borrowing of materials, supplies, tools, and equipment during the event is not allowed.
- F. All participants should report to the venue one (1) hour before the event proper to perform the following preliminaries:
- G. Final briefing of participants shall be done fifteen (15) minutes before the scheduled event.
- H. No questions shall be entertained during the activity except clarifications and points of order. These shall be addressed by the Event Administrator in consultation with the panel of experts to be recorded by the Event Secretary.
- I. The Event Administrator shall signal to start the activity properly. Once the event has started, the teacher-coaches and other delegates are strictly prohibited at the contest venue.
- J. Only the Event Administrator, Panel of Experts, technical committee members, official photographer, and participants are allowed at the venue to maintain a distraction-free environment.
- K. The working area should be cleaned by participants after the event.

PROTOTYPE BUILDING MECHANICS

- A. Each team will be given 1 hour and 45 minutes to design and develop their prototype output based on the given problem.
- B. Each team shall be given 15 minutes to refine their proposed solution to the problem using their prototype robot.
- C. Supplementary materials such as CAD drawings, 3D models, simulations, and prototype sketches can be used in creating the output.



Republic of the Philippines
 Department of Education
 Region III
SCHOOLS DIVISION OF BULACAN

- D. By drawing lots, participating schools will be called to present their proposed solution using their prototype robot.
 E. Each team will be given 15 minutes to demonstrate their proposed solution.
 F. The most probable and cost-effective proposed solution using a prototype robot shall be declared as the winning team.

RESOURCE REQUIREMENT

Event Supplies, Tools, and Equipment	Student-Participants	Contest Organizers	Contest Venue Manager
A. Materials and Supplies	<ul style="list-style-type: none"> ▪ Laptop 	<ul style="list-style-type: none"> ▪ Tape ▪ Paper ▪ Ballpen ▪ Folder ▪ Bond Paper 	
B. Tools and Equipment			<ul style="list-style-type: none"> ▪ Tables ▪ Chairs ▪ LED wide screen ▪ Microphone
C. Others			<ul style="list-style-type: none"> ▪ Power supply ▪ Power outlet