Physical Computing	Division	Team	Production method
	Junior/Senior	1 to 3 people	On-site production

1. Description

that expresses storytelling on the screen through various types of physical (hardware) and computing (software) in accordance with the presented topic and constructs the physical body accordingly. It is a universally used coding program that focuses on using appropriate algorithms and utilizing coding commands.

2. Robotics

2.1 Type of robot Scratch and Entry

2.2 Robotic composition

2.2.1 Manufacturing : Robots must be manufactured on site. step, Props that are connected to the driving part and do not move can be pre-manufactured.

2.2.2 Robot sensors and drive (output) Number of parts used

sector		Sensor unit (input unit)	Drive part (output part)
Elementary school	L (grades 1 to 3)	1-2	1-2
	H (4th to 6th grade)	1-4	1-4
middle school		3 or more	3 or more
High school		4 or more	4 or more

2.2.3 Sensor unit and driving unit (output unit) type

1) Sensor unit (input unit): Sensor that receives input, such as an infrared sensor or ultrasonic sensor

2) Drive part (output part): Motor , buzzer, etc. (There are no restrictions on use for LED .)

2.3 Power can be supplied from the robot's independent power source or by connecting to a laptop USB .

2.4 Size of the robot Robots can be produced and presented in any size possible within a given space, but you are responsible for any problems that arise during production and presentation due to the size of the robot .

2.5 The robot's operation software moves the robot to display scenes on the screen that match the purpose of the production plan and to further explain them.

2.6 Internet/Wireless Communication Internet and the use of Wi-Fi is prohibited. If you are caught using it, you will be disqualified.

3. Playfield

3.1 Although a separate playfield is not used, it is possible to utilize the space around the table as long as it does not disturb other teams. Table size may vary depending on venue conditions.

3.2 Space utilization can be freely utilized at the discretion of the participant.

4. How to play

4.1 Presentation of the theme Major theme of every year will be announced on the website and subtheme will be announced on the day of the competition and player will be have to choose 1 subtheme to manufacture.

4.2 Robot and laptop inspection

4.2.1 Robotic inspection (face-to-face): All robots must be disassembled.

4.2.2 Laptop Inspection (In-Person): Pre-production of programs is not permitted, and on-site production is the rule .

4.3 Production time : Allow up to 4 hours.

4.3.1 Each team adjusts and utilizes the time for planning, production, and editing within the time. If the limited game time is exceeded, 10% of the total score of the judges is deducted for every 5 minutes, and if it exceeds 30 minutes, the submission of the work is invalidated.

4.3.2 Blueprints to provide hardware and software assistance during the robot production process for each team, circuit diagram, If use of manuals, etc. is detected, it will be considered cheating and will result in a warning or disqualification.

4.4 Presentation The order of presentations is randomly determined by drawing among the judges.

4.5 Description of work

4.5.1 Judges randomly move to the participants' seats when they present and score their presentation skills and movements.

4.5.2 Participants are prohibited from repairing or remodeling the robot during the demonstration, but in cases of unavoidable battery replacement or damage to parts, repairs are permitted with the permission and observation of a judge or facilitator.

4.5.3 Judges may ask questions to participants during the presentation, and if answers are insincere, points will be deducted through consultation between the judges.

4.5.4 If the participants are disloyal in their attitude towards organizing and participating in the competition, points will be deducted through consultation between the judges.

5. Judging method and ranking

5.1 Judging method The order of presentation is randomly determined by lottery. Depending on the number of people, The evaluation can be conducted by dividing into two groups.

5.2 Ranking is calculated by comparing the total scores of this evaluation standard **.**

Division	Detailed standards	Understanding of topic	Scoring table
Creativity (20)	Problem solving skills	O /X	2/4/6/8/10
	Storyboard		2/4/6/8/10
Physical (30)	Use of sensors		2/4/6/8/10
	Input output movement		2/4/6/8/10
	Perfection		2/4/6/8/10
Computing (30)	Problem solving		2/4/6/8/10
	Coding skills (using variables , functions)		4/8/12/16/20
Presentation (20)			4/8/12/16/20

5.3 Tie score processing criteria In the event of a tie, the priority shall be determined in the following order.

1) 1st rank : No deductiuon

2) 2nd rank : Higher coding utilization techniques

3) 3rd rank : Higher Storyboarding score.

4) If there is a tie in the above 3 rankings, the same ranking will be treated as a tie.