



# STEM Invention & Innovation Competition 2017

## Smart Furniture

A smart furniture is a furniture with an innovative design that can transform to serve multiple purpose. It can be moved around easily and does not take up much space.

## **FLL STEM Invention & Innovation Competition 2017**

### **1.0 INTRODUCTION**

STEM invention & innovation competition is a programme that is organized Sasbadi Holdings Berhad.

### **2.0 OBJECTIVE**

- 2.1 To improve students' practical skills and encourage creativity and innovation among students.
- 2.2 To provide a platform for students to contribute ideas and innovations to demonstrate their ability to create and discover something new.
- 2.3 To uncover the students' talent in research and development, invention and innovation.
- 2.4 To promote interest in Science, Technology, Engineering and Mathematics (STEM) Education among school children.
- 2.5 To develop and enhance students' intellectual capacity with respect to rational, critical and creative thinking.

### **3.0 Theme**

- 3.1 The theme is Smart Furniture.
- 3.2 A smart furniture is an innovative furniture that is capable of functioning in different ways without consuming a lot of space and is easy to move around for reallocation.
- 3.3 Your task is to invent a furniture that is portable and can transform to serve multiple purposes while also saving space.

### **4.0 Conditions of Participation**

- 4.1 This competition is open to students from age 9 to 14 in year 2017.
- 4.2 A team should comprise 2 or 3 students and 1 teacher.

### **5.0 Competition Rules & Regulations**

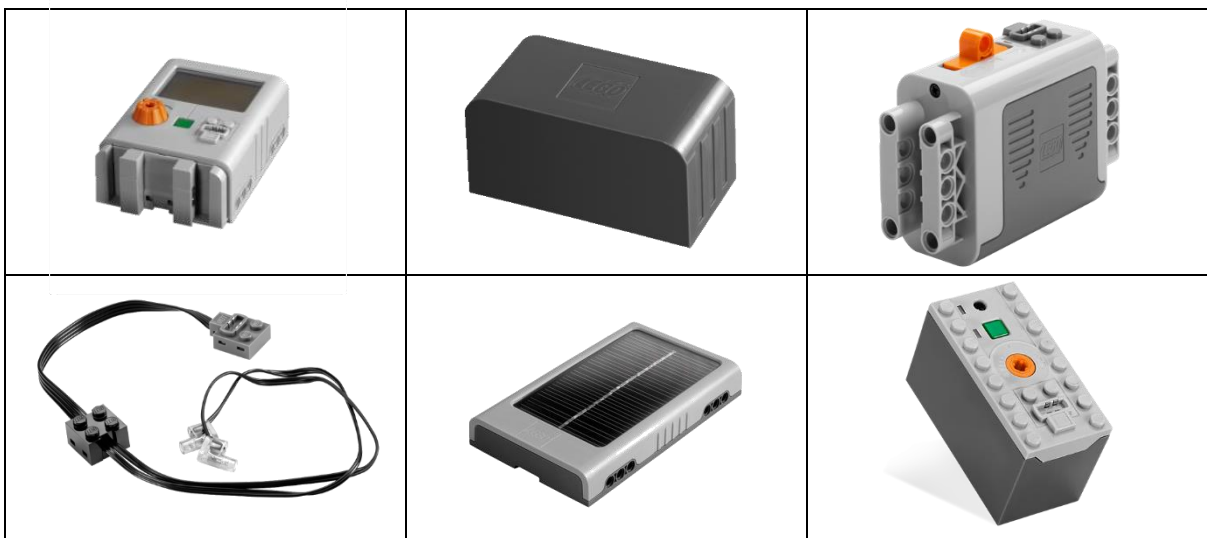
- 5.1 Project must be in accordance with the theme of the competition.
- 5.2 The idea of the project must be original and not plagiarised.
- 5.3 Materials used for the project must be only from LEGO® 9686 Simple & Powered Machine Set, LEGO® 9688 Renewable Energy and LEGO® 9641 Pneumatics and others non-electric/non-electronic LEGO® element. The colour may differ from the original.

5.4 For motors, each one must **exactly match** a type shown below in Figure 1.1.



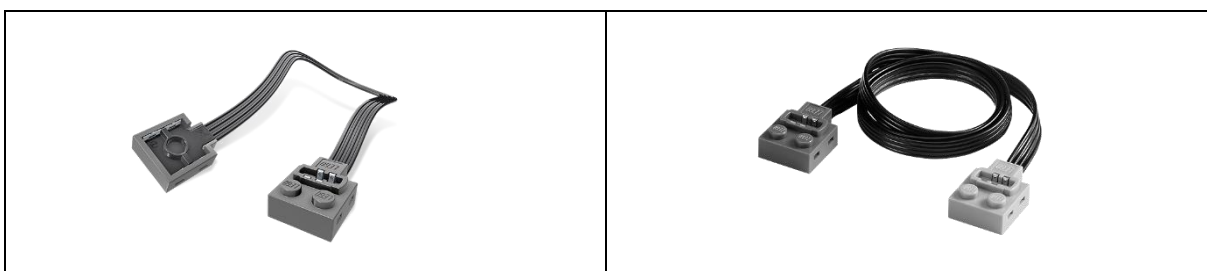
**Figure 1.1**

5.5 Other allowable LEGO® electric / electronic components are shown in Figure 1.2.



**Figure 1.2**

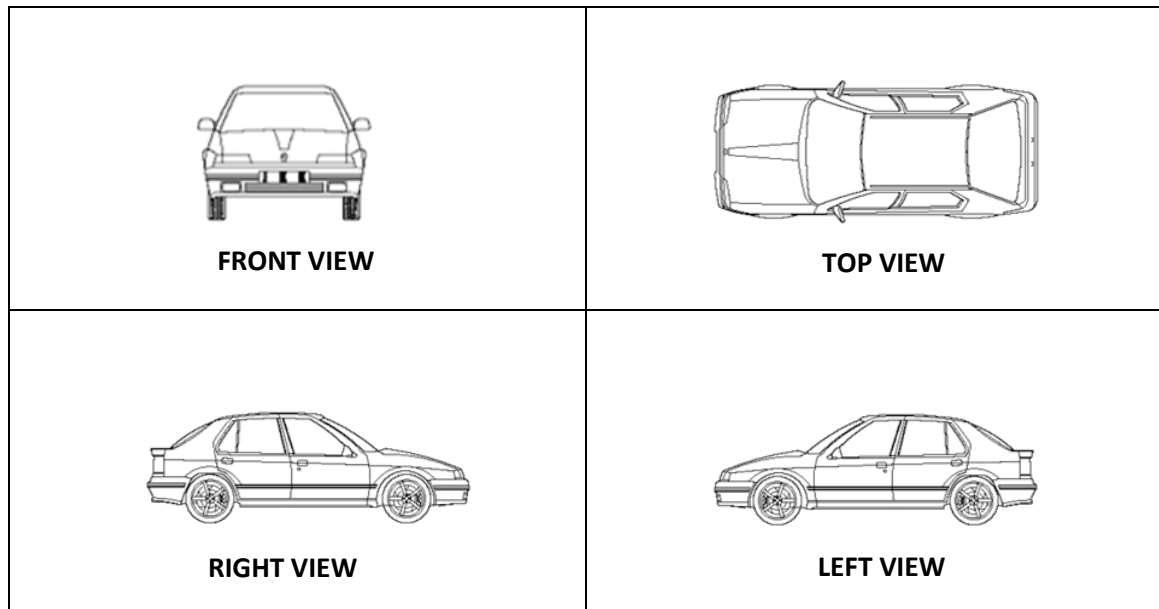
5.6 Allowable LEGO® extension wires are as in Figure 1.3.



**Figure 1.3**

- 5.7 Supporting tools for presentation are allowed with any other materials. For example, if you are inventing a watering can, you may use other materials for the flowers and flower pot but the watering can itself must be from the sets mentioned above.
- 5.8 Adaptation of existing products is acceptable if the improvement is totally new.
- 5.9 **The idea of the project must be original and has never been commercialised, displayed or forwarded to manufacturing sector.**

- 5.10 Team must submit a proposal and video (**maximum 2 minutes**) demonstrating the project through [fll.sasbadi.com](http://fll.sasbadi.com)
- 5.11 The video must show the overall view of the project from four different angles (**FRONT, TOP, LEFT and RIGHT**) refer Figure 1.4, and must demonstrate all the functions.



**Figure 1.4**

## **6.0 Judging Process.**

### **6.1 First stage: Filter by Organiser**

All proposals and videos will be verified/ inspected by the organiser to ensure that the registration meets the conditions of participation and the procedures of registration.

### **6.2 Second stage: Judging based on proposal and video.**

- I. All proposals and videos received will be evaluated by the panel of judges. The panel will evaluate and select projects that meet the evaluation elements to compete in the finals.
- II. Assessment will be made based on the following criteria:
  - a. Level of originality, creativity and innovation.
  - b. Level of usability.
  - c. Level of engineering concept.
  - d. Usage of renewable energy.
  - e. Structural stability.
  - f. Usage of pneumatic.
  - g. Aesthetic appeal.
- III. Successful entries to the finals will be announced in [fll.sasbadi.com](http://fll.sasbadi.com).

### 6.3 Final stage: Evaluation based on presentation and demonstration

- I. All finalists will make an exhibition and demonstration of their project on the competition day.
- II. There will be a judging session. Projects will be evaluated by the panel of judges based on presentation and demonstration of the projects.
- III. During presentation and demonstration of project:
  - a. Participants will be provided with a table and chairs to exhibit and demonstrate their project.
  - b. Participants are given 5 minutes to present and demonstrate their projects to the judges.
- IV. Evaluation will be made based on the following criteria: (Refer **Table 1** below)

### 7.0 Prizes

Winners will receive:

1.	Champion	Trophy, medals & certificates
2.	1 <sup>st</sup> Runner-up	Trophy, medals & certificates
3.	2 <sup>nd</sup> Runner-up	Trophy, medals & certificates
4.	4 <sup>th</sup> – 10 <sup>th</sup>	Certificates of excellence

### 8.0 Application Procedures

Registration must comply with the following procedures:

- I. All registration must be made through **fll.sasbadi.com**
- II. All items contained in the online registration form must be filled in.
- III. All items contained in online proposal form must be filled in.
- IV. Videos must be uploaded to **Youtube (unlisted)**. Paste the URL in the space provided in the online proposal form.
- V. You are required to register a **Gmail** account in order to access the online form.
- VI. The organiser reserves the right to reject any entries that are incomplete or late.

## 9.0 Judging Criteria

<b>Judging Criteria</b>		
<b>Category</b>	<b>Descriptions</b>	<b>Possible Score</b>
<b>Originality</b>	The invention being new in character, design or application.	0-5
<b>Project</b>	<b>Creativity &amp; Quality of Solution</b> - The project is unique and shows creative thinking. The project is well-thought out and has a realistic solution / design / concept.	0-5
	<b>Functionality</b> - The capacity of invention of serving the proposed purpose well.	0-10
	<b>Usability</b> - The invention indicates that it is convenient to use, practical and user-friendly.	0-5
<b>Engineering Design</b>	<b>Engineering Concepts</b> - The project shows evidence that sound engineering concepts were used in the project.	0-10
	<b>Structural Stability</b> - The project is sturdy and can be operated repeatedly without needing repairs.	0-5
	<b>Aesthetic</b> - The project is appealing to the eyes. It appears that the team went out of their way to make the project look as professional as possible.	0-5
<b>Presentation</b>	<b>Successful Presentation</b> - The project worked as expected and could continue to do so with a certain degree of repeatability.	0-5
	<b>Communication and Reasoning Skills</b> - The students were able to explain what their project was about, how it works and WHY they decided to build it.	0-5
<b>Environmentally friendly</b>	Usage of renewable energy.	0-5
<b>Commercial Potential</b>	The prospect of sales and profit is on a large enough scale to make the risk generated from the invention worth undertaking.	0-5
<b>Total Score: 65</b>		

**Table 1**