



# Creative Science Toy Making & Busking Programmes

CSTM & CSB @BGPS  
Briefing cum Mini-Workshop

5 April 2023  
(3.30 p.m. to 4.30 p.m.)



**EMPOWER**@BGPS

**Empowered Learners,**  
Persons of Strength & Character



Tan Yan Xin, 5RES



Lim Hui Ting, 5RES



Ansh Kejriwal, 4RES

## Our Presenters



Ms Elissa Chew  
Creative Science Toy Making IC



Mrs Ng Yen Nee  
Creative Science Busking IC

# Sharing segments

Science School-Based  
Programmes Objectives  
(CSTM & CSB@BGPS)

Timelines for CSTM &  
CSB @BGPS

Creative Science Toy  
Making, CSTM@BGPS

Creative Science  
Busking, CSB@BGPS

Sony Creative Toy &  
Science Buskers  
Competitions  
(Science Centre  
Singapore)

Hands-on session:  
Creative Science Toy  
Making



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Persons of Strength & Character



# Students can

SCIENCE  
  
IT'S LIKE  
⚡MAGIC⚡  
BUT REAL

Build on their interests and curiosity

Learn and apply scientific concepts, knowledge and skills beyond a classroom setting

Showcase their talents and creativity

Participate in external competitions

# Timeline for School-Based Science Programmes



Creative Science  
Busking @BGPS

**Term 2 Week 9**

Virtual workshop for  
registered teams

**Now**

Sign up &  
mentoring begins

**22 – 25 May**

Showcase for registered  
teams during  
FUNtastic Week

**June holiday**  
Improve

**Term 3 Week 2**

Audition at Science  
Centre Singapore

# Timeline for School-Based Science Programmes



**Creative Science Toy  
Making @BGPS**

**8 May**

Submit prototype toy  
to FT (P1 & P2)/Science  
Teachers (P3 to P5)

**Now  
Start**

**22 – 25 May**

Showcase for selected  
prototype toys during  
Science FUNtastic Week

**June holiday**

Improve selected toys

**7 July**

Submission of selected  
toys to Science Centre  
Singapore



# Science Buskers

The logo features the word "Science" in a large, red, bubbly font with a white outline, and "Buskers" in a white, rounded font with a blue outline. A blue tag with the word "SINGAPORE" in white capital letters is attached to the top of the "Science" word. The background is dark blue with various scientific and artistic elements: a lightbulb in the top left, a red and green abstract shape with white dots, a green and blue circular shape on the right, a red arrow pointing left on a dashed line, and a circular globe-like graphic in the bottom left.

By Science Centre Singapore

# What is Science Busking?

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- Science Busking is an effective way of **communicating science**.
- Science Busking takes **live demonstrations** and interpretations to people.
- Science Busking is very live, **interactive**, and can be very rewarding!

Participants will present and do a "**show-and-tell**" **on any science topic**. Busking and judging will be based on **judges' criteria** and **public voting**.





# Science Buskers (Science Centre Singapore)

## Who can participate?

- Anyone aged 7 years old and above
- **Individual** or a **team of up to 3 members**

## Categories

- Primary / Secondary/ Tertiary & Open\*

## What to prepare?

- Up to 5 minutes of **LIVE busking** + 5 minutes of Q&A

## Competition website

- <https://www.science.edu.sg/whats-on/competitions/singapore-science-buskers>

# Judging Criteria

Score	Judging Criteria
35%	<u><b>Science Communication</b></u> <ul style="list-style-type: none"><li>• Explanations of demonstrations shown must be <b>scientifically accurate</b>, and use scientifically <b>precise</b> and correct language <b>without overwhelming</b> the audience with jargon.</li><li>• Ability to explain science concepts in <b>everyday language</b> without compromising on the science accuracy</li></ul>
35%	<u><b>Showmanship</b></u> <ul style="list-style-type: none"><li>• Ability to <b>engage, interest and excite</b> the audience</li><li>• Ability to express the '<b>wow</b>' factor in the busking</li><li>• Ability to make the audience <b>feel inspired</b> and walk away with the feeling that they have learnt something</li></ul>
30%	<u><b>Setup, Costume, Overall look and feel</b></u> <ul style="list-style-type: none"><li>• <b>Creative</b> and <b>innovative</b> ways of showcasing demonstrations</li><li>• Blending of the look &amp; feel with the science concepts presented</li><li>• Creative <b>booth design</b> concepts</li></ul>

# FAQs

- Can pre-recorded videos be shown during the auditions?

Answer: No, all forms of pre-recorded videos will not be allowed to be shown to the judges during the auditions. Singapore Science Buskers auditions will be mainly focused on the participants' live performance and interaction with the judges.

- Can we cover multiple topics or only one?

Answer: You can cover multiple topics, but please keep your busking within 5 minutes.



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# FAQs

- Are teams allowed to use portable microphones for their auditions?

Answer: No, teams are not allowed to use portable microphones. Judges will be close to them to hear their performances.

- Is the usage of fire in any form allowed?

Answer: No, anything that deals with the usage of fire should be avoided. No open flames (including candles, Bunsen burner) or flammable gases are allowed. You are allowed to use an induction cooker to heat things.





# ! Safety Guidelines !

No Liquid Nitrogen



Gloves are a **MUST**

Please put on gloves when handling dry ice and chemicals.



No Open Flame or Flammable Gases

Fire is a potential danger for everyone



Use of tools or gadgets akin to assault weapons is prohibited



ONLY over-the-counter chemicals/materials are allowed

Please DO NOT use dangerous/hazardous materials and chemicals



Max **3%** Hydrogen Peroxide allowed

A maximum concentration of 3% for Hydrogen Peroxide is allowed. It is dangerous for students to handle more than that







# Some Tips for Science Busking

You need to put in much time and effort to search for / come up with a Science demo that (preferably):

- is interesting
- uses readily-available materials found in the house / Sci Lab that can be repeated easily (such as cocoa powder)
- has process and/or results that can be clearly observed
- has a high chance of succeeding every time



# Some Tips for Science Busking

Make the scientific terms simple for all to understand as Science busking is for everyone of all ages to learn.

If the experiment doesn't work sometimes, don't give up.

Create your own stage personality and style.



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# Mentoring and Practice



Magical Scientists ☆ 📁 ☁

File Edit View Insert Format Tools Extensions Help

100% Title Lobster 26 B I U A

HOW COCOA POWDER TURNS FROM WET  
TO DRY IN AN INSTANT!

ALL: GOOD MORNING EVERYONE

SY: OUR TEAM CODE IS P-062

ALL: AND WE ARE THE MAGICAL SCIENTISTS!

JL: I AM JULIENNE

SY: I AM SWEE YIN

JK: I AM JESLYN

ALL: AND WE ARE FROM

# Facebook

SCAN ME



Follow **Singapore Science Buskers** on Facebook!

<https://www.facebook.com/sciencebuskers>

Filled with **important updates** like workshops, audition dates and photos of our events!





# Sony Creative Science Award 2023



# Objectives of SCSA

X-cited



- 
- . X-multiplier, x-factor, multi-disciplinary, x-traordinary
  - . Cultivate hands-on abilities
  - . Inspire creativity from a young age
  - . Transform science concepts or ideas into fascinating toys
  - . Encourage entrepreneurial skills
  - . Discover joy of learning through creation of toys!



# Sony Creative Science Award 2023 (Science Centre Singapore)



## Categories

Junior WhizKid  
(Primary 1 to 2)

WhizKid  
(Primary 3 to 5)

# SONY Creative Toy Competition (Science Centre Singapore)

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## Theme for Junior WhizKid: P1-P2

To use the theme, **Rock Roll Wobble** as a functional component in their creation and not a decorative component.



# Sony Creative Science Award 2023 (Science Centre Singapore)



## (No Theme) WhizKid: P3-P5

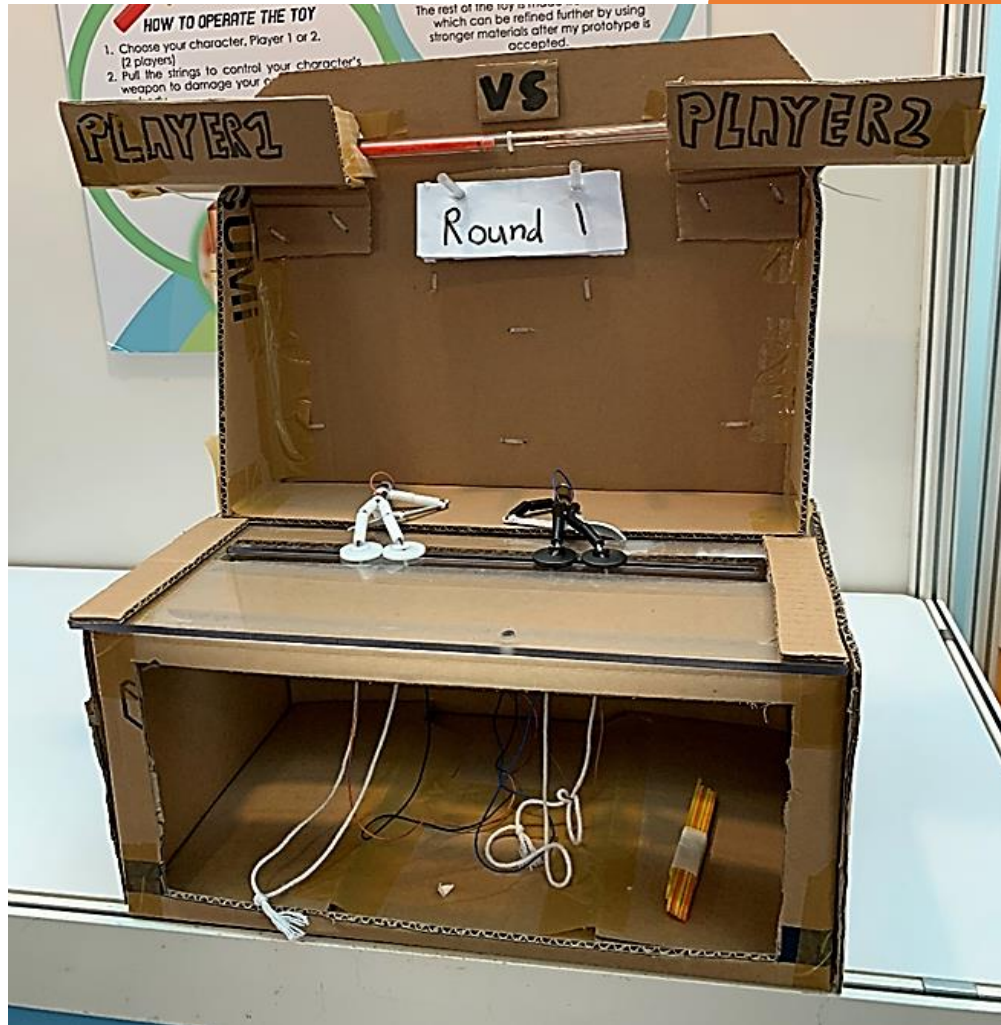
To create a toy that demonstrates **scientific concepts** creatively.



Student tapped on the concept of magnets to create a magnetic field to make a magnetic shooter.

# Past Winners of the WhizKid Category

## Stickman Fight from BGPS



### ***SCIENCE CONCEPTS***

The weapon of the character is connected to a source of power — batteries. Upon touching the opponent's body or head, it forms a closed circuit. Electrical current flows through the weapon in the circuit connected to the opponent's body and the motor. The motor then turns, pulling a string attached to the 'health bar', decreasing it.



# Past Winners of the WhizKid Category

## Lenz Chess from BGPS






# LENZ CHESS

By Leanna Yong, P6 - RSL

### Inspiration & Description

This is inspired by my 8th birthday when I had a themed birthday party. Lenz Law game where people would see which magnet is the slowest for the magnet to take to fall. I love to play board games, so it was fun to create for the game.




### Science Concepts

- Magnets**  
Like poles repel and unlike poles attract.
- Lenz Law**  
Magnets will slow down in a tube made out of a diamagnetic material like copper. When a magnet goes down the copper tube, it slows down because the electricity makes a current that creates a magnetic force that opposes the magnet. Hence, it slows down the falling magnet.




### How It Was Made

Use poles using a mitre saw. Use the copper/acrylic tube. Use drilling the holes for the poles in the board to protect the magnets. Use to push up the magnets so that Lenz law can be demonstrated.



### How to Play!

**How to win:**  
Move across from the starting to the opposite side of the board, the first one wins!

**Setup**  
The youngest player starts as the attacker while the other player will be the defender. The defender will put the magnets on the wooden sticks on the board strategically. Set the magnet on top of the starting piece.

**Game Play**  
**Step 1: Attacker**  
The attacker will take the copper tube and lower it to the point where the magnet is. Using Lenz law, the attacker can tilt the copper tube horizontally if needed and choose any side to put the magnet down in any adjacent square. If the magnet attracts to the magnet on the wooden stick, you LOSE! If it repels, you are still in the game.

**Step 2: Defender**  
The defender can flip two of the magnets on the wooden sticks that are adjacent to the magnet, changing the poles of the magnet. The colours of the magnet can show the change of poles, blue for the North Pole and red for the South Pole.

**Step 3: Repeat Step 1 & 2**  
Play until the attacker wins or loses. Then, switch roles and try again.



落

哲学设计的游  
采用滑轮系统  
作,通过两个  
轮盘来移动磁  
球,要将里面  
的玻璃球送到最  
高的洞口,解救任  
务才算完成。  
(叶振雄摄)

理公署部长兼财  
政二部长英兰妮在  
不应只限于课堂  
的比赛让学生在生  
活的科学知识。  
“Lenz Play Chess”  
的冠军。她介绍：“每  
当比赛时，对手就会在下一步  
放上磁铁的方向。如果你  
浮在半空，那么你就可以  
前，但如果磁铁被吸住，  
动弹就输了”。她与父亲还  
其他规则让游戏更加有趣，  
是使用较短的铜管来增加游戏  
难度。

杨嘉优的灵感来自八岁时以  
科学为主题的生日派对，当时有  
一个楞次定律 (Lenz's Law) 游戏  
让她印象深刻，再加上她与家人  
都喜欢玩棋类游戏。

这项比赛由索尼及新加坡科  
学馆联办，并获得教育部支持。

# Sony Creative Science Award 2023

## (Science Centre Singapore)



### Judging Criteria

Junior WhizKid (P1-P2)	WhizKid (P3-P5)
Fulfilment Requirement (Theme: Rock Roll Wobble)	-
Scientific Concept	
Creativity and Originality	
Sturdiness and Design	
Size of toy (max size of 60cm x 60cm x 60cm)	



# More details about SCSA

- SLS package assigned

- Facebook

<https://www.facebook.com/SonyCreativeScienceAward/>

- SCSA website

<https://www.science.edu.sg/for-schools/competitions/sony-creative-science-award>



Sony Creative Science  
Award (SCSA)

Organisation



Contact Us







**Hands-on segment**

**Creative Science Toy Making**



Get your  
materials  
ready now!

- A bottle cap
- A small ball of plasticine/  
clay/ blu tack
- A piece of paper
- A pair of scissors
- Glue
- Markers



# Science behind the toy...

## Roly Poly Toy that rolls

The toy is designed so that its mass causes it to return to an upright position if it is knocked over.

## Scientific Principle

When the roly-poly is released, the force of gravity acts on the center of gravity and produces a torque that makes the toy roll from the point of support. When it reaches the upright position, its inertia makes it roll too far. It rolls back and forth and finally comes to rest standing upright.



# Let's Try Making A Toy!

To create a Roly Poly Toy  
that can "Rock-Roll-Wobble".



Once you have completed the  
challenge, scan the QR code  
and submit a picture / video of  
your toy on Padlet.

<https://padlet.com/elissa03/CSTM>

<https://www.youtube.com/shorts/ttrgKfmUfKg>





# End of Sharing



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