

A+++

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

go into the classroom, and you can't stop.

2. In daily life, what are the items produced by reducing friction?

直排輪上的輪子 項目

3. In daily life, which items are produced by increasing friction?

登山鞋的紋跑

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	✓
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1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

**Material(材料):**  
 一個小盒子, 一枝竹筷, 一枝吸管, 四個瓶蓋

**Modeling(造型):**

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
我學到接觸力和超距力	如果輪子有摩擦力到平滑面, 還會有摩擦力嗎?	如果鄭老師喝了綠色飲料會怎樣? ☹️

A++

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

It will move forever.

2. In daily life, what are the items produced by reducing friction?

輪子, 冰。

3. In daily life, which items are produced by increasing friction?

鞋底的紋路。

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of [Top 10 Crashes from London's Red Bull Soapbox Race \(5:40\)](#) and make a car to be a race.

**design diagram**

Material(材料):  
寶特瓶蓋 吸管 竹條 盒子 膠帶

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
摩擦力很輕。	如果郭老師不喝了水管輸送劑會怎樣? 死掉	STEAM課很有趣

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

go into the classroom, and you can't stop.

2. In daily life, what are the items produced by reducing friction?

直排車輪、潤滑油

3. In daily life, which items are produced by increasing friction?

寶特瓶蓋、登山鞋

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes From London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**  
 Material(材料): 1個紙盒、1根竹筷、4個瓶蓋、1根吸管

**Modeling(造型):**

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
How to reducing friction and increasing friction.	I want to know if paper no friction how to write?	I want to know if drink the acidic rain will what?

A

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

It will move forever. ✓

2. In daily life, what are the items produced by reducing friction?

鞋底紋路 ✓

3. In daily life, which items are produced by increasing friction?

輪胎 ✓

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--

1. Friction is influenced by the material of the contact surface of the object.

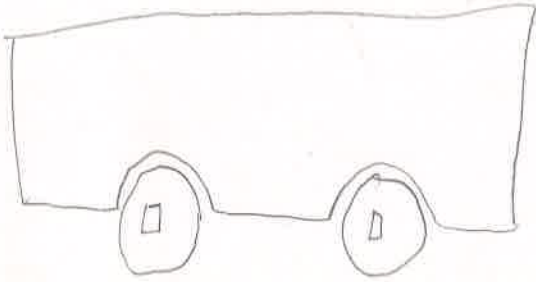
**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料):  
瓶蓋 X4、吸管 X2、竹筷 X2、盒子 X1

Modeling(造型):



✓

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
① 摩擦力 ② 製作車車 ✓	① 怎樣跑更快 ② 如果老師喝水管疏通劑會怎樣 ✓	這課雖學了很多，但我比較想跑步，我喜歡運動。 ✓

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?  
You always move and you can't stand.
2. In daily life, what are the items produced by reducing friction?  
推車上的輪子
3. In daily life, which items are produced by increasing friction?  
登山鞋上的紋路

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	✓
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1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**  
Material(材料): 吸管 x 2 瓶蓋 x 4 盒子 x 1 竹 筷 x 2

**Modeling(造型):**

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
I know the force has contact force and non-contact force.	如果世界沒摩擦力會怎樣?	I want to know why my test can't have one hundred six.

**Force and movement- Friction**

林庭伊

**Warmer**

1. What happens if the classroom floor loses friction?

滑出教室、撞到東西  
項目

2. In daily life, what are the items produced by reducing friction?

在門軸上加潤滑油

3. In daily life, which items are produced by increasing friction?

在瓶蓋表面加上刻紋

Language : Please read the following sentences

friction (摩擦力)	material (材質)	
----------------	---------------	--

材料、物質

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of [Top 10 Crashes from London's Red Bull Soapbox Race \(5:40\)](#) and make a car to be a race.

**design diagram**

Material(材料):  
白紙(美化用)、紙盒、竹筷、吸管

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
我知道接觸力、超距力	我想知道老師會不會一直講笑話。	在這一課很好玩因為可以估車子。

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

滑出教室、撞上物品。

2. In daily life, what are the items produced by reducing friction?

門上塗上潤滑油 (項目) (減少) (摩擦力)

3. In daily life, which items are produced by increasing friction?

瓶蓋上凹凸不平的開瓶處 (增加)

鞋

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料):  
 吸管、瓶蓋、身體(車身)、竹籤

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
我知道彈性有限度, 超過了限度, 會變形。	我想知道如果車子走的路一直是斜坡, 會不會翻車。	我學到超距力和接觸力的意思。

**Force and movement- Friction**

陳嘉衡

**Warmer**

1. What happens if the classroom floor loses friction?

滑出教室、撞到東西

2. In daily life, what are the items produced by reducing friction?

在門軸上加潤滑油

3. In daily life, which items are produced by increasing friction?

在瓶蓋表面加上刻紋

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
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1. Friction is influenced by the material of the contact surface of the object.

材料、物質

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料):  
白紙(美化用)、紙盒、竹筴、吸管

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
超距力、接觸力	更多的分類方法	這次比賽，我在車子上面貼了林可一張、陽出銅的照片，我還跟同學開玩笑說：「林可受傷了，我的車子要輸了。」

輸了。



**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?  
滑出教室撞到東西。
2. In daily life, what are the items produced by reducing friction?  
生鏽的門 加油或用輪子
3. In daily life, which items are produced by increasing friction?  
在工具內側有凹凸的紋路, 以防滑動。

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--


1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**  
Material(材料): 肥皂盒, 竹籤, 瓶蓋x4, 吸管x2

Modeling(造型):



**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
接觸力及超距力	更多有關的實感。	我要用米糖果盒作車的主骨

### Force and movement- Friction

**Warmer**

1. What happens if the classroom floor loses friction?  
滑出教室
2. In daily life, what are the items produced by reducing friction?  
加油在生鏽的門 (項目) 摩擦力
3. In daily life, which items are produced by increasing friction?  
不會滑出教室

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
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1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料):  
 螺絲蓋x4  
 車身x1  
 竹籤x2

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
力的運用	更多有關自然的東西	我覺得力是一種日常知識，但有一些力是很危險的。

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction? 會滑倒, 或飛出教室

2. In daily life, what are the items produced by reducing friction? (題目)

用途上的油

3. In daily life, which items are produced by increasing friction?

鞋子上的凹凸不平的紋路

Language : Please read the following sentences

friction (摩擦力)	material (材質)	✓
----------------	---------------	---

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of [Top 10 Crashes from London's Red Bull Soapbox Race \(5:40\)](#) and make a car to be a race.

**design diagram**

Material(材料): 吸管、竹籤、車身、瓶蓋

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
我學到了可以用小小的材料做出可愛的小車。	我還想知道車子是否可以在海上行走	我學到超距力和的意思

A

### Force and movement- Friction

#### Warmer

1. What happens if the classroom floor loses friction?

You can't stand up, and everybody will be floating and can't stop.

2. In daily life, what are the items produced by reducing friction?

直排輪

3. In daily life, which items are produced by increasing friction?

止滑綑

#### Language : Please read the following sentences

friction (摩擦力)	material (材質)	
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1. Friction is influenced by the material of the contact surface of the object.

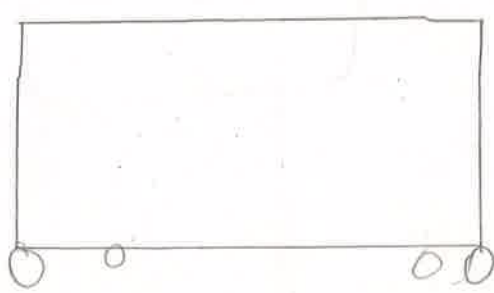
#### Content

Watch a video of [Top 10 Crashes from London's Red Bull Soapbox Race \(5:40\)](#) and make a car to be a race.

design diagram

Material(材料): 瓶蓋、竹籤、小盒子、吸管

Modeling(造型):



#### Thinking

K(What I know)	W(What I want to know)	L(What I have learned)
I don't know anything.	Pig 跑最快可以多快.	超距力和接觸力

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction? 會滑來滑去
2. In daily life, what are the items produced by reducing friction? 潤滑油
3. In daily life, which items are produced by increasing friction? 止滑網

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
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1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of [Top 10 Crashes from London's Red Bull Soapbox Race \(5:40\)](#) and make a car to be a race.

**design diagram**  
 Material(材料): 瓶蓋, 小盒子, 竹籤, 吸管

**Modeling(造型):**

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
<u>I don't know anythings.</u>	<u>力氣最大的是誰</u>	<u>起距力and接觸力</u>

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

You don't stand up.

2. In daily life, what are the items produced by reducing friction?

直排輪有輪子。

3. In daily life, which items are produced by increasing friction?

瓶蓋有粗糙部分

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
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1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

design diagram

Material(材料): 四個瓶蓋、一個肥皂盒、兩根吸管、兩根竹快。

Modeling(造型):



**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
我知道力有方向性。	我想知道跑最慢的生物。	我好喜歡這堂課。

### Force and movement- Friction

#### Warmer

1. What happens if the classroom floor loses friction?  
大家一動就停不下來
2. In daily life, what are the items produced by reducing friction?  
在門軸上塗潤滑油
3. In daily life, which items are produced by increasing friction?  
止滑網

#### Language : Please read the following sentences

friction (摩擦力)	material (材質)	
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1. Friction is influenced by the material of the contact surface of the object.

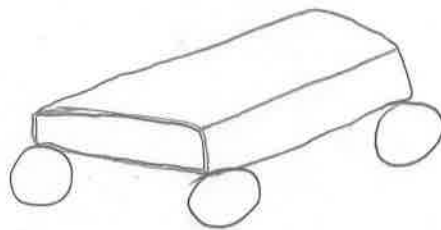
#### Content

Watch a video of [Top 10 Crashes from London's Red Bull Soapbox Race \(5:40\)](#) and make a car to be a race.

#### design diagram

Material(材料):  
瓶蓋、竹籤、小盒子、吸管

#### Modeling(造型):



#### Thinking

K(What I know)	W(What I want to know)	L(What I have learned)
no	大象跑最快可以多快	超巨力 (non-contact force) 磁浮列車

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

① 會失去平衡 ② 無法停下來 ③ 會撞到東西

2. In daily life, what are the items produced by reducing friction?

① 在門軸上加潤滑油 ② 在排輪上加滾輪

3. In daily life, which items are produced by increasing friction?

① 寶特瓶瓦表面加刻紋

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	✓
----------------	---------------	---

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料): 寶瓶、竹籤、吸管

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
我知道了少數的英文和知識	1. 請問如何製作車輪嗎? 因為英文我有解後會聽不懂	我覺得這次車殼很好玩! 希望下次是第一名



**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

- 1. You can't stand.
- 2.

2. In daily life, what are the items produced by reducing friction?

1. The roller skate is a shoes but it has wheels to reducing friction.

3. In daily life, which items are produced by increasing friction?

The bottle has some 紋路, you can take the object easier

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料): 竹籤、保特瓶蓋、盒子、吸管

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
1. The force can make an object move. 2. In the same time, when the distance far, It's faster	如果在地心, 會不會受到地心引力的影響? 好問題!	A force 分類成 contact force and non-contact force

A++

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

You can't stand.

2. In daily life, what are the items produced by reducing friction?

The roller skate is a shoes but it has wheels to reducing friction.

3. In daily life, which items are produced by increasing friction?

The bottle has some texture, you can take the object easier.

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**  
 Material(材料): 肥皂盒, 瓶蓋, 竹籤, 吸管。

**Modeling(造型):**

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
The force can make an object move.	Why the friction is big, object move slower?	In the same time, The long distance, the faster the speed. In the same distance, The long time, the slower the speed.

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?

You can't stand. ✓

2. In daily life, what are the items produced by reducing friction?

The roller skate is a shoes but it has wheels

3. In daily life, which items are produced by increasing friction? ✓

The bottle has some 紋路, you can 更好拿它. to reducing friction.

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
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1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料): 肥皂盒, 瓶蓋, 竹籤, 吸管

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
超過奇性線度, 奇黃就不大能用了 ✓	把汽水倒入整盒滿滿的慢毫, 豈裡會怎麼樣。 噴泉 ✓	我覺得很好玩 ✓

**Force and movement- Friction**

項目 減少 A+

**Warmer**

1. What happens if the classroom floor loses friction?

一進 classroom 就會 stop 下下來

2. In daily life, what are the items produced by reducing friction?

裝滾輪

3. In daily life, which items are produced by increasing friction?

紋路

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料): Pinkey 的 盒子, 瓶蓋, 吸管, 竹籤, 膠帶

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
力分別有接觸力和起	我想知道有沒有專業測試力的機器	我的車子很小, 不過輪子很大喔!

育

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?  
會停不下來
2. In daily life, what are the items produced by reducing friction?  
幫腳踏車齒輪塗油
3. In daily life, which items are produced by increasing friction?  
輪胎的胎紋

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
----------------	---------------	--

1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**

Material(材料):  
紙盒、瓶蓋、吸管、竹簽

Modeling(造型):

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
磁力是超距力。	為什麼二氧化碳會造成雨變酸	這課非常的簡單。

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction? 會滑出教室 ✓
2. In daily life, what are the items produced by reducing friction? 封車腳踏車輪軸 ✓
3. In daily life, which items are produced by increasing friction? 車胎的紋 ✓

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
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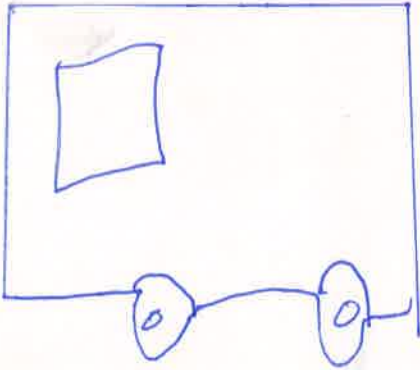
1. Friction is influenced by the material of the contact surface of the object.

**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**  
 Material(材料): 保特瓶蓋、紙盒、吸管

Modeling(造型):



✓

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
<u>磁力的正起力</u>	<u>氧化為什雨</u>	<u>希能到車效</u>
✓	✓	✓

知事

**Force and movement- Friction**

**Warmer**

1. What happens if the classroom floor loses friction?  
Can't stop.
2. In daily life, what are the items produced by reducing friction?  
bike 的 輪子
3. In daily life, which items are produced by increasing friction?  
?

Reach

**Language : Please read the following sentences**

friction (摩擦力)	material (材質)	
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1. Friction is influenced by the material of the contact surface of the object.

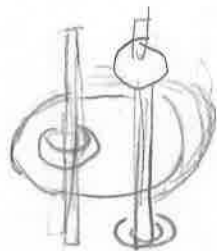
**Content**

Watch a video of Top 10 Crashes from London's Red Bull Soapbox Race (5:40) and make a car to be a race.

**design diagram**


Material(材料): 小盒子, 小輪子, 小竹籤, 吸管, 膠帶

**Modeling(造型):**



丁個是三輪車

**Thinking**

K(What I know)	W(What I want to know)	L(What I have learned)
世界上有摩擦力 	想知有沒有人 有超距力	世上有石磁浮 列車