

**SCIENCE PROJECT:  
SUSTAINABILITY :  
THE WIND DRIVES.**

**YEAR 10 *GIRLS***

# PROJECT OVERVIEW

- This idea revolves around using biogas and wind power to power a smart car
- This idea will be discussed in depth in the following slides.
- We hope we will be able to answer all your questions
- Lets begin...!



# THE WIND DRIVES



BIOGAS

# ADVANTAGES

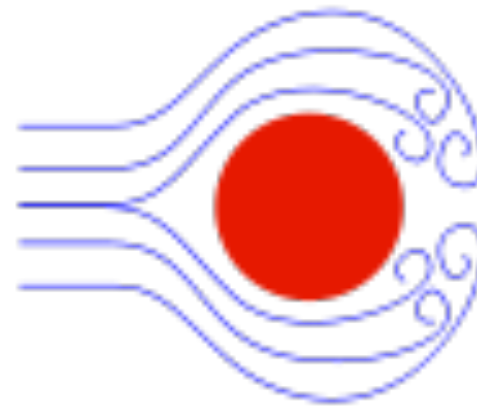
- Less global warming/Dimming- *save-the-planet car!*
- Renewable energy resources (i.e wind and biogas)
- 100% sustainable
- Reduces fuel costs





# DISADVANTAGES

- Can cause drag- won't travel as fast as conventional petrol/electric cars
- Expensive
- More fuel needed for initial start-up
- Unsightly





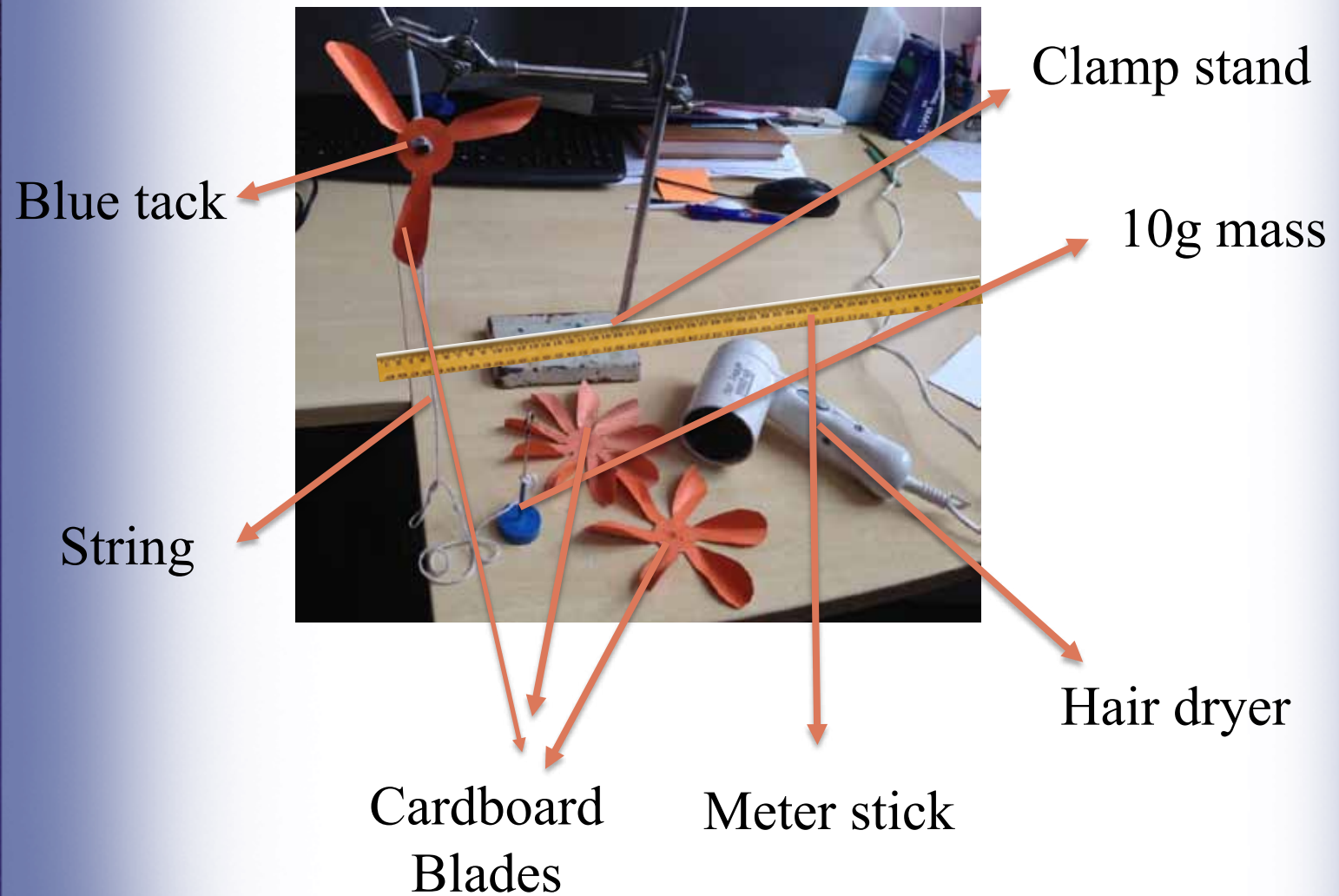
**INVESTIGATION**

**HYPOTHESIS: “the number of blades will affect the time the turbine takes to pull the mass up”**

Independent variable: Number of blades in the turbine

Dependant variable: Time taken to pull the mass up (seconds)

# Apparatus and Set-up





# Control Variables

- The mass
- Length of string
- Distance between blow drier
- Size of blade

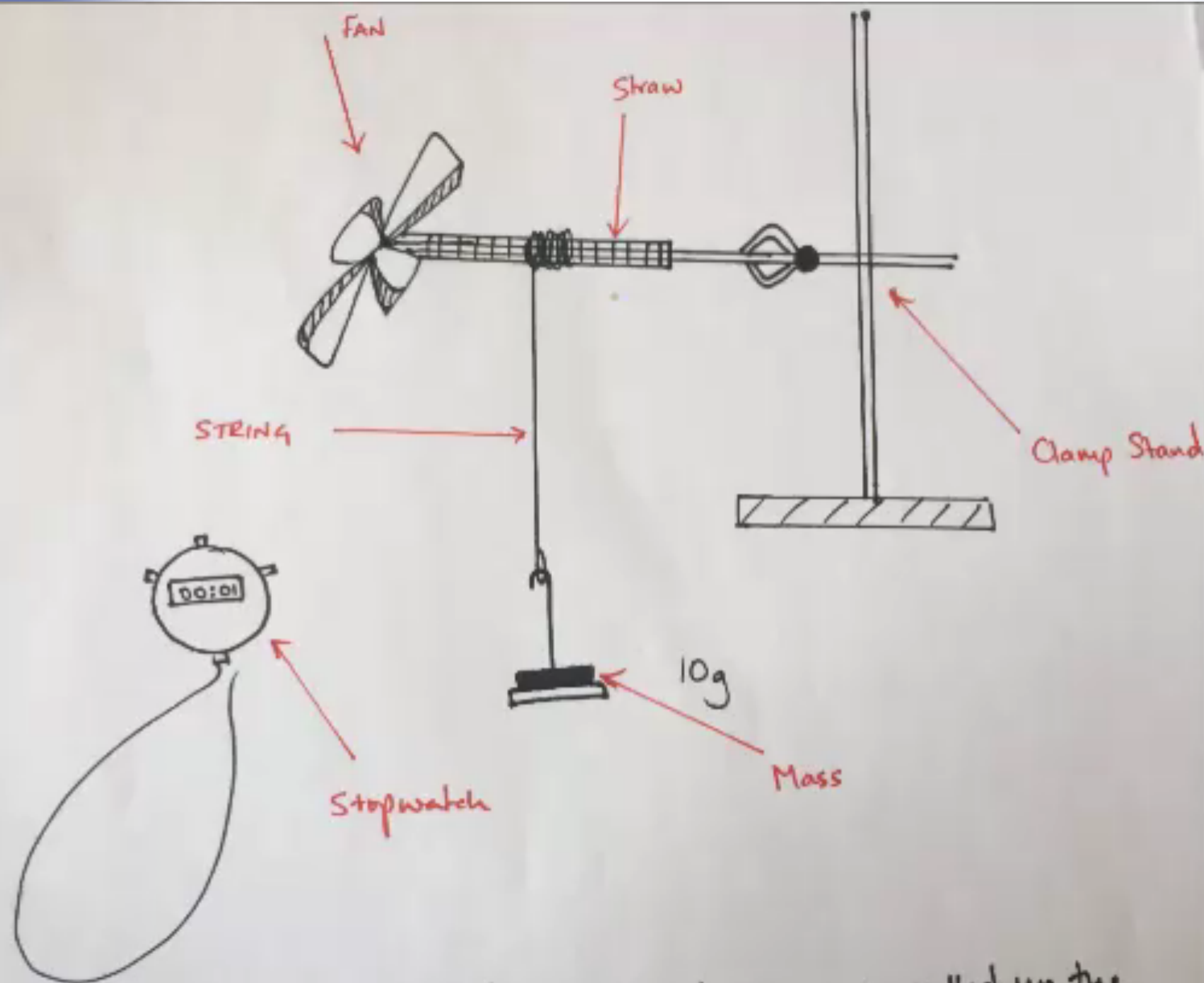
# Risk Assessment

## Hazards:

- Weights and clamp stand may fall on feet

## Control Measures

- Tie string tightly onto stick with tape to prevent weights falling
- Secure weights on string with tape
- Stand back



The quicker the mass is pulled up the greater the power = the quicker the car battery will be charged.

# Results

Number of blades	Time taken to pull the mass (seconds-rounded to the nearest whole number)			Mean
	1 <sup>st</sup> run	2 <sup>nd</sup> run	3 <sup>rd</sup> run	
3	n/a	n/a	n/a	n/a
6	15	13	14	14
9	10	10	13	11



## Interpretation of results:

- Weren't able to obtain results for 3 blades.
- Shortest mean time=11 seconds

## Conclusion:

- Suitable no. of blades= 9
- Increased no. of blades= more power  
=faster

“each blade disturbs the air for the following blade, so ideally you want as few blades as possible to maximise efficiency.”- the Guardian



**QUESTION TIME....**  
**We're more than happy to**  
**answer your questions....!!**

**We hope you've enjoyed  
this presentation and our  
statements have been  
made clear. Thank you!**



# BIBLIOGRAPHY

- [http://www.goelectricdrive.org/images/webParts/extended\\_range\\_ev.jpg](http://www.goelectricdrive.org/images/webParts/extended_range_ev.jpg)
- <p://media.web.britannica.com/eb-media/72/93572-034-26C16785.jpg>
- <http://abcnews.go.com/Technology/Hybrid/story?id=97518>
- <http://www.confusedaboutenergy.co.uk/index.php/funny-stories/90-funny-stories/52-car-windmill>
- [https://www.3bscientific.com/imagelibrary/U30042/U30042\\_01\\_Wooden-Half-Metre-Stick-Pack-of-10.jpg](https://www.3bscientific.com/imagelibrary/U30042/U30042_01_Wooden-Half-Metre-Stick-Pack-of-10.jpg)