Science Coursework

My aim is to find out what the best design is for a water wheel.

The factors that will affect what happens in my investigation are;

- Surface area of the blades, which are on the wheel
- Size of those blades
- Amount of water used
- Size of the water wheel.
- Weight of the water wheel
- Height that the water is poured from

In order to make is a fair test, I will only change one factor while keeping all the others the same. The factor that I will vary is the amount of water (ml) I pour onto the water wheel. This then will cause the string on the wheel to be wined up quickly.

I think that what will happen is that the greater the amount of water poured on the wheel, the faster the wheel will rotate. I think this because the greater the mass of water, the greater the effect that gravity will have upon the wheel. This will increase the speed of the wheel. The speed will stabilise when the wheel reaches its optimum design speed due to the size, shape and angle of the blades.

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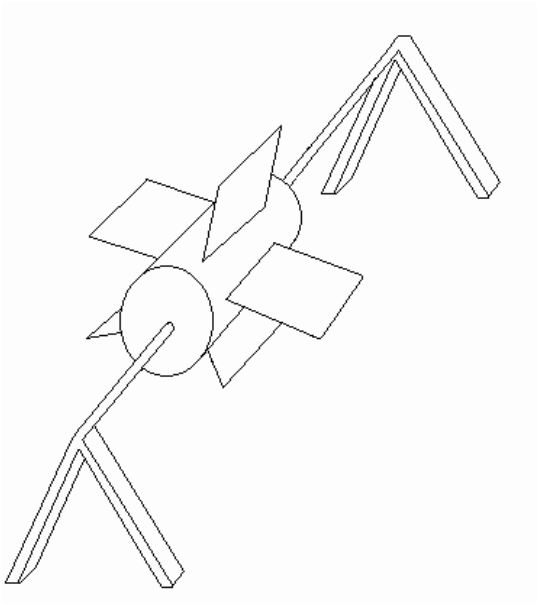
Science set 2



Apparatus: Spindle
2 Supports
String
Mass Hanger
Plastic blades
Pre-made water wheel
Masses
Water (ml)
Water tray

To set up my investigation, I attached the blades to the water wheel, which was attached to 2 supports. On the water wheel, I attached the string where it would be allowed to wind up easily. I then got a bottle and carefully measured out different ml of water.

The things I will measure are the amount of water I pour onto the waterwheel and how much string is wind up. By the length of the string wind up, it will determine how fast the wheel spun.

To make my investigation safe, I made sure that the plastic blades we safely secure in the wheel. When I finished my investigation I made sure that any spilt water was cleaned up in case someone happened to slip on it and injure him or herself.

During my investigation, I found out that the weight of the masses were too heavy to be lift up by the string, which is attached to the end of the wheel. I think this happened because the force of the water wasn't strong enough to cause the wheel to turn with power to wind up the string. However, it was strong enough to wind up a piece of string. This meant that I had to change from using 4g masses to using nothing in ord er to continue with my investigation.

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Amount of water poured onto the wheel	Test 1	Test 2	Test 3	Average
100ml	0cm	7cm	3cm	3.3cm
600ml	21cm	24cm	19cm	21.3cm
1100ml	45cm	49cm	43cm	45.6cm
1600ml	91cm	93cm	74cm	86cm
1850ml	101cm	104cm	102cm	102.3cm

GRAPH NEEDED AND HEADING FOR TABLE

Looking at my results I can see that

In my investigation, I found that the more water poured onto the wheel, the faster it turns; therefore the more string is wind up . I think this because

My prediction matches my results as

I think that the way I went about doing this investigation was carefully done. When I measured out the amount of water, I made sure that the bottle was on a flat level surface. When measuring the length of string, I carefully marked it out on the string with pen. This would reduce the chances or me accidentally moving my finger, causing the measurements to be inaccurate. By doing these things, it makes my results reliable.

As the results, on my table, are close, it proves that the way I ca rried out my investigation was consistent as the differences between the amounts of string wound up wasn't excessive. In order to improve the accuracy of my result, I would have to resort to an electronic means such as a slotted wheel and a photoelectric cell. This means that the string wouldn't stretch or overlap another coil, which could of happened in my investigation.

The only anomaly that I faced was that the masses couldn't be lifted because the force of the water on the wheel wasn't greater enough t o overcome the weights. If the diameter of the wheel was bigger than the torque would have been greater and therefore would have been able to life the weights.

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