CREST AWARDS | SILVER AWARD PROJECT IDEAS

30H typically 30 hours of project work

How steady is your hand?

Before you start your investigation, you should carry out a risk assessment and have it checked by your teacher. For help with this, read through our health and safety information and look out for health and safety warnings in the text.

For this project, you are going to design, make and test a device to measure the steadiness of someone's hand and the factors that affect it. The first thing you have to do is make something to test people's performance. The device you're going to make is an electronic 'wire course'. You've probably seen one before – they're pieces of wire bent into a wiggly shape. You have to navigate a metal hoop around the 'wire course' without touching it, if you do, a buzzer sounds or a light turns on.

Getting started

First things first, you need to design the course. It should have a few bends, but don't make it too hard – if nobody can complete it your experiments will take forever!

Take care when using tools. Make sure tools are only used in a properly supervised workshop or D&T room.

Then there are numerous things to think about:

- What materials will you use, and how will you cut, shape and stick them together?
- How long will the course be and how complex will you make it?
- What diameter hoop will you use - perhaps you could use hoops of differing diameters?
- What electronic components will you need, and how will you make the circuitry? You should think about power supply, input device, processor and output device.
- Will you need to find out about techniques such as soldering?

You will probably benefit from some research into properties of materials. You should also find out about electric circuitry and electronic devices.

Testing performance

When you've made your device, you need to find some willing participants to test. You should design a method for testing their performance - the simplest idea would be to time how long it takes somebody to complete the 'wire course' without sounding the buzzer. You could test boys and girls, people of different ages, people who do a lot of exercise, people who don't do much exercise – the choice is yours! You now need to think about what factors might affect somebody's performance. Again, it's up to you what variables you introduce.

Here are some suggestions:

- Allow the person being tested some time to practise
- Test people at different times of the day
- Tell people they're being watched
- Ask people to compete against each other
- Introduce an 'audience' - in other words, get someone to watch. This could be a group of people, or perhaps an adult dressed in a white coat to give an 'official' look!

The results

You should have compiled quite a lot of data. It's up to you how to present it.

- You might like to compare the initial results, before you introduced any variables, and see which group of people appeared to have the best performance. For example, are older children better than young children?
- You could then look at the results after introducing variables. For example, did competition vary performance more or less than introducing an audience?
- Finally, you could 'cross-reference' your data. For example, did competition affect boys more than it affected girls?