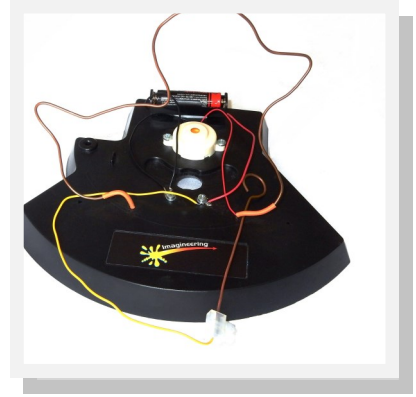


# STEADY HAND GAME TEACHER/TUTOR NOTES & WORKSHEET



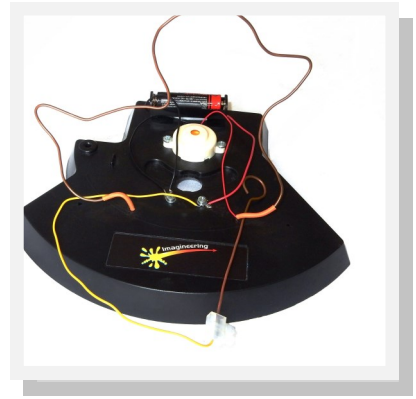
The project will take probably one or two sessions.

## BACKGROUND

This project is designed to teach children about electrical circuits. It is a popular project particularly before the School Fete where the children can use it as a “side show”.

- The flow of electricity is analogous to the flow of water in a piped circuit - the battery being the pump and the wires being the pipes. The electrical current, measured in “amps”, is represented by the quantity of water per second and the “volts” by the water pressure.
- High voltages can give us a nasty shock but voltages less than about 10 are perfectly safe. High voltages cause the electricity to jump through air as a spark - the longer the spark the higher the voltage - it takes 30,000 volts to jump 1 centimetre. How many volts for a lightning strike?
- Electricity passes through “conductors” easily but “insulators prevent its flow. Some materials allow the electricity to pass through them with difficulty and have electrical resistance. The children can be asked to give examples of conductors and insulators –tap water is a conductor and so one should never have a bare electrical wire in the presence of water such as a bathroom.
- When electricity passes through a resistance it heats up –examples are radiators and electric light bulbs.
- The electricity from a battery is “direct” current whereas the electricity from the mains is “alternating” current; that is current changing direction fifty times a second. Alternating current has the advantage that it is easy to change the voltage through a transformer - the high voltage of electric pylons at 30,000 volts can be changed to the 240 volts we use at home through a transformer at a “substation”.
- The direct current flows from the “positive” terminal to the “negative” of a battery. The buzzer in this project only works if the electricity flows through them in one direction so try reversing the battery terminals if it does not work first time.

# STEADY HAND GAME



## Session 1:

### Whiteboard

- Electricity - conductors and insulators.
- Electric current - analogy to water flow through a pipe.
- Pressure of water equivalent to force of electricity measured in volts.
- Quantity of water is equivalent to electrical current measured in amps.
- When the contact loop touches, the circuit is made the current flows causing the buzzer to sound.

### Practical

- Assemble the game.
- Worksheet.

## Session 2

### Whiteboard

- Revision of previous session
- Circuit testing - Continuity meter or equivalent.

### Practical

- Complete the game.
- Worksheet continued.

## NOTES

- Electrical pressure is measured in VOLTS
- Examples of conductors Silver, Copper, Steel, Tap water

### Websites

Simple circuits : [www.rkm.com.au/ANIMATIONS/animation-electrical-circuit.html](http://www.rkm.com.au/ANIMATIONS/animation-electrical-circuit.html)

[www.can-do.com/uci/lessons99/electricity.html](http://www.can-do.com/uci/lessons99/electricity.html)

[http://www.bbc.co.uk/bitesize/ks2/science/physical\\_processes/electrical\\_circuits/read/1/](http://www.bbc.co.uk/bitesize/ks2/science/physical_processes/electrical_circuits/read/1/)

# STEADY HAND GAME



## WORKSHEET

1. What are the units of electric pressure?

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2. Give three examples of electrical conductors.

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3. Draw a circuit for the hand steady game.

4. How can you make the hand steady game into a burglar alarm ?

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5. Write a story about a burglar being caught by an alarm that you have invented.

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