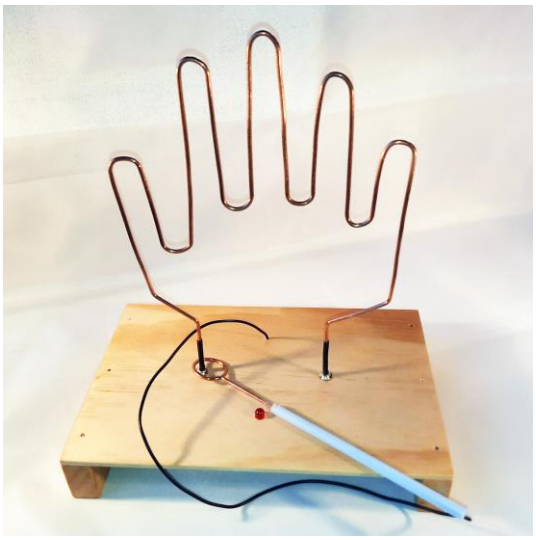
OVERVIEW

STEADY HAND GAME
(Code: STEADYSEC)

DESCRIPTION

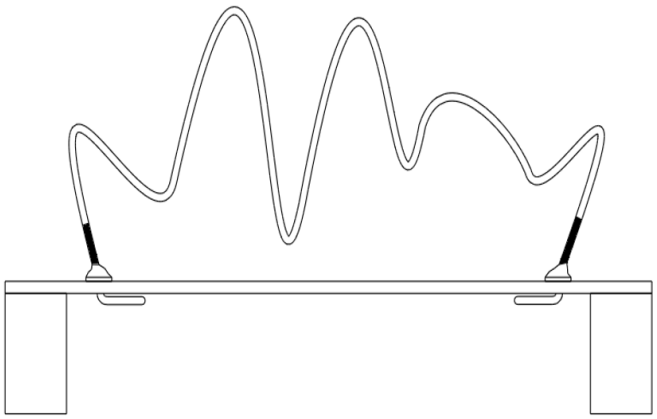
The *STEADY HAND GAME* is a simple game for students to make and assemble that illustrates simple electric circuits.

The aim of the game is for the student to avoid touching the wire with the handheld loop. Touching the wire with the loop will result in the buzzer sounding and the LED lighting up.



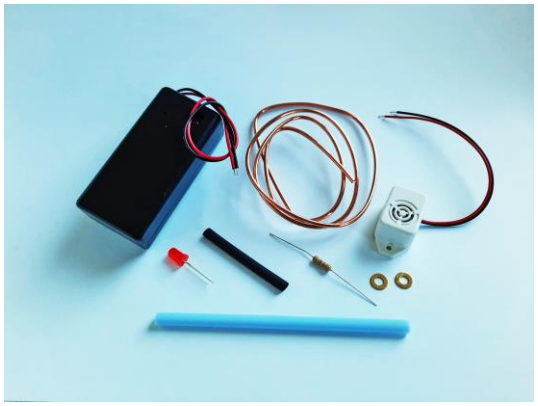
The game makes use of the fact that electricity will only flow around a complete circuit - it will stop flowing the moment the circuit is broken. The idea is to try not to complete a circuit, so that a buzzer does not make a sound or an LED does not light up. The game / competition can be made easier or harder depending on the group playing the game.

LEVEL:	Introductory
HOURS TO CONSTRUCT:	2 - 4 hours
SKILL DEVELOPMENT:	• Planning and Design • Manufacturing • Soldering • Electrical • Electronic • Testing & Fault finding • Circuit diagram symbol identification



WHAT'S IN THE KIT?

- ☐ All the mechanical and electrical components required to make the *STEADY HAND GAME* work including the copper wire, LED, buzzer and switch.
- ☐ A detailed teaching unit with a complete parts list, design suggestions, general construction guidelines and suggestions for testing and competing against classmates.



WHAT ELSE IS NEEDED?

The following items are required in addition to the kit and must be supplied by the designer – some are available from Scorpio Technology, but need to be ordered separately:

ADDITIONAL REQUIREMENTS	ORDERING CODE
1 x 9V battery	BATT9
Hot glue **or** Double-sided adhesive tape	GLUESTK **or** TAPEDS
Multi strand hook-up wire - in red and black	WIREHU10
Material for the base & side supports (plywood, corflute, pine etc)	-
15-20mm nails for fixing the side supports to the base	-
15-20mm dowel or metal rod (for forming the loop in the handle's copper wire)	-
Piece of string – 50mm (to measure length of wire required for design)	-

TOOLS REQUIRED

The following tools are required. Several are available from Scorpio Technology, and can be ordered separately if required:

REQUIRED TOOLS	ORDERING CODE
Assorted hand tools (depending on materials used)	-
Ruler and pen	-
Craft knife	CRKNF
Soldering Iron and Soldering iron stand: – a good quality soldering iron, with a fine tip **or**	SOLDIRN SOLDIRNSTD
Soldering station	SOLDSTN
Solder: – 0.71mm 60/40 solder is recommended	SOLD500
Wire strippers	WIRESTR

Side cutters	SIDECUT **or** SIDECUTM
Pliers or Mini Bolt Cutters	PLIERBN or BOLTCUTM
Drill	-
Drill bit – 2mm (for the copper wire)	-
Drill bit – 5mm (for the LED)	-
Hot glue gun	GLUEGUN
Glue sticks – 11mm	GLUESTK (Pack of 5)

ADDITIONAL RECOMMENDED EQUIPMENT

Heat gun – to shrink the heatshrink tubing on the ends of the wire loop	TH1609
Heat gun (if using hot glue gun) – for softening hot glue for repositioning or removal of components **or** Hairdryer	TH1609 **or** -

ABOUT THE PROJECT

The major features of this project are the planning, design, construction and assembly stages of a steady hand game.

DESIGN PHASE

- ☐ Create your own unique *STEADY HAND GAME* design using the guidelines and information provided. Focus on component relationships, rather than dimensions. This provides scope for students to individualise their *STEADY HAND GAME* design and increase their engagement in the project.

During the **Design phase**, students will need to:

- ☐ Evaluate the suitability of various materials for the tester platform / baseboard, such as PVC, acrylic, plywood or balsa wood
- ☐ Evaluate available technologies that can be used, for example:
  - 3D printer
  - laser cutter (which allows more interesting shapes than usual)
  - milling
- ☐ Take into account a visually tidy and appealing structure
- ☐ Consider the practical aspects of construction and assembly. For example, location of the battery holder (i.e., On/Off switch)

MAKING / CONSTRUCTION

Once the Design process has been completed, the students will be able to start **building their design**. They will:

- ☐ Assemble their handle and loop
- ☐ Bend the wire
- ☐ Make and assemble the *STEADY HAND GAME* platform they have designed
- ☐ Mount the bent wire, battery holder and electronics on to the platform
- ☐ Wire up and solder the handle and circuit
- ☐ Test and adjust the *STEADY HAND GAME*
- ☐ Troubleshoot any problems!

DOES THE TEACHING UNIT INCLUDE ANY THEORY?

The Teaching unit has brief THEORY sections that cover:

- ☐ Key words and components
- ☐ Why the buzzer sounds and the LED lights up

ADDITIONAL INFORMATON IN THE TEACHING UNIT

The Teaching unit provides additional sections:

- ☐ Fault finding
- ☐ Rules of the game for students to compete against each other