Projects from "Ashcroft Technological Academy"

1		**Context** Mice and other small rodents can be a problem in many homes and buildings, and getting rid of them without killing or maiming them in old-fashioned traps remains a problem. **Design Task 1** A manufacturer of mousetraps has commissioned you to produce a device that will trap mice and other small rodents without harming them. Your device should sense the rodent's presence and then prevent them from escaping, without anything touching them directly.
2		**Context** Many sportsmen and women often find it difficult to practice their chosen sport when they are on their own, or do not have access to the environment the sport is played in. **Design Task 2** Design and make a device that will allow someone to practice their chosen sport when they are on their own or do not have access to the environment the sport is played in.
3		**Context** Before manufacturers put their products onto the market, they must carry out extensive tests to check durability and to ensure they work reliably before they are sold. **Design Task 3** Design and make a test rig that could be used to ensure a product will work correctly over an extended period of time.
4		**Context** Picking up and moving objects from one place to another can be done mechanically (such as picking litter from hostile environments) and in many factories, this process has been automated along with other processes such as sorting objects by their size. **Design Task 4** Design and make a product or system that either aids in picking up objects and/or sorts them by their size

5		**Context** Automated shop displays and mechanical toys are an increasingly popular way of drawing attention to products and amusing both adults and children. **Design Task 5** You are to design and make an advertising display or an AUTOMATON. The system you design and make should move or change automatically under certain conditions or at regular intervals.
6		**Context** Some pets often have to be left by their owners for weekends and other short periods of time but still require regular feeding. **Design Task 6** Design and build a prototype device that could feed animals regular meals when their owners are away for a couple of days.
7		**Context** In many public buildings internal doors needs to be locked for security. It becomes difficult for people who work in these buildings if they have to carry keys to unlock doors. **Design Task 7** Design and make a lock system for a door that can be opened and closed without the need for people to carry a key with them.
8		**Context** Vacuuming carpets is a disliked chore for most householders. A company wishes to produce and market a product or system that will move a vacuum cleaner across every piece of the floor area. **Design Task 8** Design and make a device or system that when placed in a room will move across the entire floor area sensing walls and moving around objects where necessary. You do not need to design the vacuum device, only the system that moves around the room.
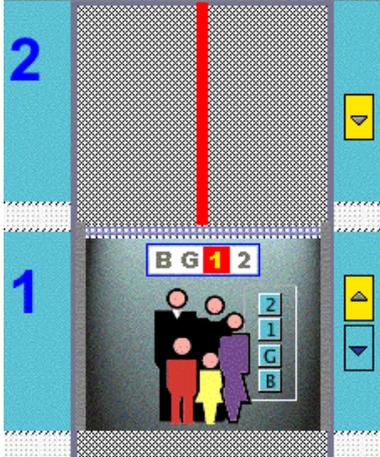
9		**Context** Door locks are often difficult to operate if you are in a wheelchair. **Design Task 9** Design a secure device which would allow a wheelchair user to open a door easily. (This could be in model form).
10		**Context** As part of a Key Stage 3 Systems & Control module, teachers require a model lift system to demonstrate and enable programming. **Design Task 10** Design a model lift system to have a ground floor and a first floor where the lift car can be called from either floor by pressing a button.
11		**Context** In banks and large organisations, loose change is sorted by using expensive coin sorters whereas in schools it can be time consuming sorting coins after charity and fund raising events. **Design Tasks 11** Design and build a device which can sort loose change
12		**Context** Designers have a responsibility to design products that address environmental issues. Designing for sustainability and using recycled second hand products & materials are important issues facing designers. **Design Task 12** Design and make a device that will generate sufficient electrical energy to recharge a small electronic device such as a mobile phone from a renewable energy source.