

## SOLIO® - DESIGN TECHNOLOGY

### Student Activity 1

Better Energy Systems recognise that there is tremendous pressure to develop competitively priced products with mass market appeal which satisfy the demands of the modern consumer. They have also recognised that the average consumer has not been educated about the environmental impact of products.

- (i) Choose one material from which Solio® is made. For example: plastic polymer (polystyrene, used in the body of Solio®), copper (used in the circuitry), aluminium (parts of the components), or silicon (used within the solar cells). Research how the material is extracted from the earth and processed into a useable material form. Also find out how it can be recycled and what products can then be made.
- (ii) Present this 'life cycle' of the material and its uses as a leaflet which could be included in the packaging of Solio®. The leaflet should educate consumers about the impact their purchase has made on the environment. The leaflet should also suggest how the consumer can recycle some of his/her existing consumer goods.

### Teacher's notes Activity 1

- (i) The focus of this exercise is to develop students' general knowledge and appreciation of the use of natural resources (materials and energy) in the production of our consumer goods. It is likely that they have familiarity with 'life cycles', but introducing the water cycle as a metaphor may help in the presentation of this task. Students can use textbooks and worksheets on materials as well as the internet as a source of information on recycling and material use.
- (ii) The life cycle could be presented as, for example, a flow diagram (produced on a ICT package), a series of illustrations in a storyboard style, or a flowchart. Students can reduce the number of words they use by including a key or similar, plus descriptions written at the bottom of the leaflet. The teacher should specify the size of the leaflet (one- or two-sided, A4 or A5).

## Student Activity 2

Look at the poster, and visit the Solio® website ([www.solio.com](http://www.solio.com)), to see the appearance of the solar recharger. Consider the look of the object and how it compares to other electronic goods we sometimes carry.

- (i) Design a new appearance for three devices: a mobile phone, a personal music player and Solio®. All the objects should, at a glance, be easily identified as part of the same 'family of three'. They could share the same colour scheme or have similar shapes. Importantly, design the three as an 'essential package' that adventure travellers or people constantly on the move would make use of.
- (ii) Look on the UK Intellectual Property Office website to see how you can apply to register a new design: [www.ipo.gov.uk/design.htm](http://www.ipo.gov.uk/design.htm)

## Teacher's notes Activity 2

Solio's® brand position could be seen as similar to that of the Swiss Army knife. In the category of mobile electronic accessories, Better Energy Systems want Solio® to be front of mind. This exercise offers students the opportunity to develop the brand position through packaging and the design of new products. Suggestions to get students producing ideas, include:

- Think of other products that are part of a range (e.g. kitchen appliances, furniture, tools) — consider what makes them appear part of the same 'family'
- Take the basic shapes, colours and proportions and use them to stimulate new ideas
- Consider any particular requirements for all three devices, e.g. they may have to fit into a bag or on to a travel belt.

To develop their design skills, encourage students to work on one design and evolve it in detail, rather than creating lots of different ideas and choosing one later on.

Students should visit the UK Intellectual Property Office website to understand how designs can be protected.

(They should also research how trade marks can be protected.)

### Student Activity 3

Protecting the intellectual property (IP) of a new product is important. If the new product is to be a successful commercial venture, it is vital that other competitors don't get access to the developing technology or designs. Design a web pop-up for entrepreneurs that alerts them to the dangers of working without protecting their ideas (include reference to the role of the UK Intellectual Property Office).

### Teacher's notes Activity 3

Students should visit the UK Intellectual Property Office website ([www.ipo.gov.uk](http://www.ipo.gov.uk)) in order to capture information and images. The actual design of the pop-up need not actually be produced for the web; it could be developed as a paper visual suitable for briefing a web designer.

If possible, the pop-up could be designed for the school intranet and used to alert Design & Technology/Technology Studies students about the role of the UK Intellectual Property Office when they are designing their own project work.

## Lesson plan Design & Technology/Technology Studies Suggested lesson structure [45 minutes/one hour]

### Lesson objectives

For students to:

- Understand how natural resources (materials and energy) are used in the production of consumer goods
- Understand that product manufacture can have direct and indirect impacts on the environment
- Consider how energy may be preserved at different stages of the design and manufacture process
- Develop the design for a new 'family' of products
- Communicate the importance of protecting the intellectual property of new work.

### Prior learning

Students should have some understanding of mass-produced electronic goods, and an awareness of everyday electrical items.

They should also have some understanding of materials and energy sources [links with Geography/Environmental Studies].

### Resources

A range of electronic products (or pictures of products) on display for students in the room, e.g. personal stereo, iPod, laptop, mobile phone, electronic game.

### Starter

Discussion using the display of electronic products. Students note down characteristics/expectations of each product (working in groups). Questions to think about include:

- For how long will people use this product at any given time?
- Does the device have rechargeable cells or use batteries?
- Is the power consumption high/medium/low?

Activity 1: Discuss recharging products versus replacing batteries.

Discuss the impact of producing batteries and cells, and how they need to be disposed of into the ground after use (making reference to nickel in soil, special measures required for safe disposal, etc.). Discuss the amount of energy and the natural resources used in the production of mass market consumer goods.

### Main

Activity 2: Teacher to introduce activity citing Swiss Army knife as an example of how a product establishes a strong brand position in its category. Present the three objects to be redesigned and discuss suggestions as to how they could be designed differently. Activity 3: Discussion of the importance of protecting intellectual property and how the UK Intellectual Property Office is an organisation that helps protect new products, brands and new designs.

## Plenary

Activity 2: Students to roughly sketch/describe their ideas for the new ‘family of three’: Solio®, mobile phone and personal music player. The sketches/descriptions could be on notes/cards that can be moved around a board or on a table. Students share their new ideas with the class and invite a discussion about what elements they think are innovative about their designs. The notes can then be moved about and new themes and ideas can be spotted. (These themes could be used in other design/technology lessons.)

Students could discuss extra questions, e.g. Is the product really needed or is it just a gimmick? Can the product be reused or recycled?

Activity 3: Whole class discussion of importance of protecting intellectual property.

## Homework and/or extension activity

Activity 2 could be set as an ongoing task or for homework.

Activity 3 could be set for homework.

## Main

Activity 2: Teacher to introduce activity by making reference to the discussions arising from Activity 1. Feed back to the class.

## Plenary

Whole class discussion on importance of maintaining healthy cash flow. Introduction to Activities 3 and 4.

## Homework and/or extension activity

Activity 3 (more suitable for higher abilities)

Activity 4