Design technology – Topic 2: Resource management and sustainable production

In order to support schools in the teaching of DP design technology, the following support material booklet highlights the major considerations of the United Nations Environmental Programme (UNEP) Manual on Eco-design.

The manual was both edited and authored by Han Brezet and Carolien van Hemel. It was published by UNEP in 1997 under the title Ecodesign: A PROMISING APPROACH to sustainable production and consumption.

UNEP and TUDelft have collaborated to produce a revised version entitled: Design for Sustainability: A step-by-step approach, published in 2009. This resource extends the scope of the Eco-design Manual to include the social perspective required to discuss Triple-bottom line sustainability as part of HL Topic 8: Sustainability.

There are many opportunities to develop understandings across topics and sub-topics using these two resources.

Sub-topic 2.6: Eco-design

The major considerations of the United Nations Environmental Programme Manual on Ecodesign

1. The environmental and economic perspective – people, profit and planet (Discussed in further detail as part of Topic 8.1: Sustainable development)

2. Eco-design and other environmental approaches

The environmental perspective

Students should be aware of environmental problems products can cause and their geographical scale.

Geographical scale	Types of environmental problem
Local	Noise, Smell, Air pollution, Soil and water pollution
Regional	Soil and water over-fertilization and pollution, Drought, Waste disposal, Air pollution
Fluvial	Pollution of rivers, Regional waters and watersheds
Continental	Ozone levels, Acidification, Winter smog, Heavy metals
Global	Climatic change, Sea level rise, Impact on the ozone layer

The economic (business) perspective

Students need to be aware of internal and external drivers for eco-design from an economic perspective:

Internal drivers for eco-design	External drivers for eco-design
Managers' sense of responsibility	Government
The need for increased product quality	Market demand
The need for a better product and company image	Social environment
The need to reduce costs	Competitors
The need for innovative power	Trade organisations
The need to increase personnel motivation	Suppliers

External drivers and social change

- Increasing supply chain pressure (discussed as part of sub-topic 2.1 and 2.2)
- Public opinion (discussed as part of sub-topic 2.5)
- Energy costs
- Waste charges (discussed as part of sub-topic 2.4 and 2.5)
- Take-back legislation (detail required as part of sub-topic 8.2)
- The obligation to provide environment-related information (detail required as part of sub-topic 8.1)
- Norms and standards
- Eco-labelling schemes (detail required as part of HL sub-topic 8.2)
- Subsidies (discussed as part of sub-topic 2.4)
- Environmental competition
- Environmental requirements in consumer tests
- Environmental requirements for design awards
- Increasing cooperation with suppliers

Eco-design and other environmental approaches

Eco-design means that the environment helps to define the direction of design decisions.

Students need to be aware of the following terms in relation to eco-design principles:

- Sustainable development (Awareness of what sustainable development is required, however this is dealt in detail in HL Sub-topic 8.1)
- Cleaner production (Topic 2.4)
- Life cycle analysis (Topic 2.6)

The link between eco-design and traditional design

The traditional design methodology and eco-design are similar, however, eco-design explores further elements that consider the impact that products have, or can have on the environment.

Design for sustainability (D4S) redesign

As detailed in the document Design for Sustainability: A step-by-step approach (page 57-71)