



Design Factors

Design Factors

Higher
Design & Manufacture

Learning Intention & Success Criteria

- *I am...*

- ★ *Developing my ability to research design factors*

- *I can*

- ✓ *Analyse a design brief*
- ✓ *Use common research techniques*
- ✓ *Write a product specification*

What are Design Factors?

- *Design Factors are all the things that will influence the design of a product, for example;*
 - *What it does will influence the product.*
 - *How it looks will influence the product*
 - *The user's size and strength will influence the product*
 - *The user's interests will influence the product*
 - *The materials chosen will influence the product*
 - *How long the product will last will influence the product*

The 5 Design Factors

- *There are a huge number of factors that could influence a product's design and change anything from its colour to its weight.*
- *To make it easier to remember the 5 factors are:*
 - *Function*
 - *Aesthetics*
 - *Ergonomics*
 - *Market*
 - *Performance*

Function

- *A product's function is the job its designed to do.*
- *Without a function a product is just an object – it would have no purpose.*
- *Identify the function of the products below...*



Primary & Secondary Function

- *The primary function of a product is the main operation a product performs. For example:*
 - *A clock displays the time.*
 - *A pair of scissors cuts material.*
- *The secondary function of a product is another operation a product can perform. For example:*
 - *A camera in a phone (functional)*
 - *Aesthetically improves the environment (subtle)*

Discussion

- *An electric iron and a travel iron have an identical primary function.*
- *What are the key differences between these products?*
- *Are both products interchangeable?*

The Impact of Function

- *The Pepper Mill's primary function is to dispense pepper.*
 - *To dispense pepper the Mill must be twisted.*
 - *To twist the Mill the user must be able to comfortably hold and twist it.*
 - *The Mill must hold pepper in a hygienic way.*
 - *The Mill will stand on its own for storage.*
 - *The Mill will have a subtle secondary function of providing decoration to a table.*



Aesthetics

- *Aesthetics focusses on the way a product looks.*
- *There are many different factors that influence aesthetics...*
 - *Line/Shape/Form*
 - *Colour*
 - *Size/Proportion*
 - *Contrast/Harmony*
 - *Fashion/Style*
 - *Materials*
 - *Texture*

Aesthetics

- *Aesthetics has a big impact on how people perceive a product.*
- *For example...*
 - *The **form** of the Dyson makes it look well built and technologically advanced.*
 - *The **grey colour** makes it appear machine-like suggesting it will perform efficiently.*
 - *The **yellow contrasts** and draws attention to the key components of the product.*
 - *The **transparent material** surrounding the cyclone draws your focus to the central component.*
 - *The product looks **balanced** and poised suggesting it is easy to manoeuvre.*



Discussion

- *Most shoes and trainers share an identical function – to protect and support your feet.*
- *How is your buying decision influenced by aesthetics?*

Ergonomics

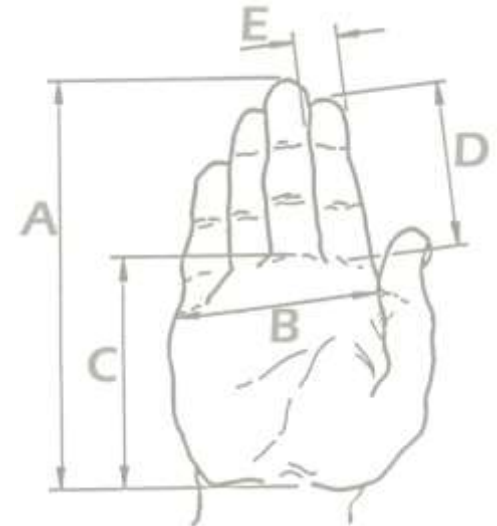
- *Ergonomics is all about the way humans interact with products and their environment.*
- *Ergonomics is about finding ways of making products more useable or user-friendly.*
- *It can be divided into three main areas...*
 - *Anthropometrics*
 - *Physiology*
 - *Psychology*

Why use Ergonomics?

- *Ergonomics can...*
 - *Make products more appealing to use.*
 - *Make products more accessible for users.*
 - *Reduce the fatigue of a user.*
 - *Increase the productivity of a user.*

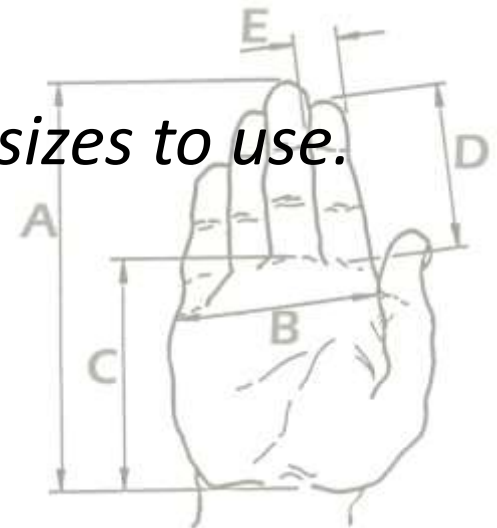
Anthropometrics

- *Anthropometrics deals with the measurement of the human body.*
- *We use anthropometric data to make products suitable for the majority of users.*
- *We use anthropometric data to design for a specific age, gender or percentile group.*



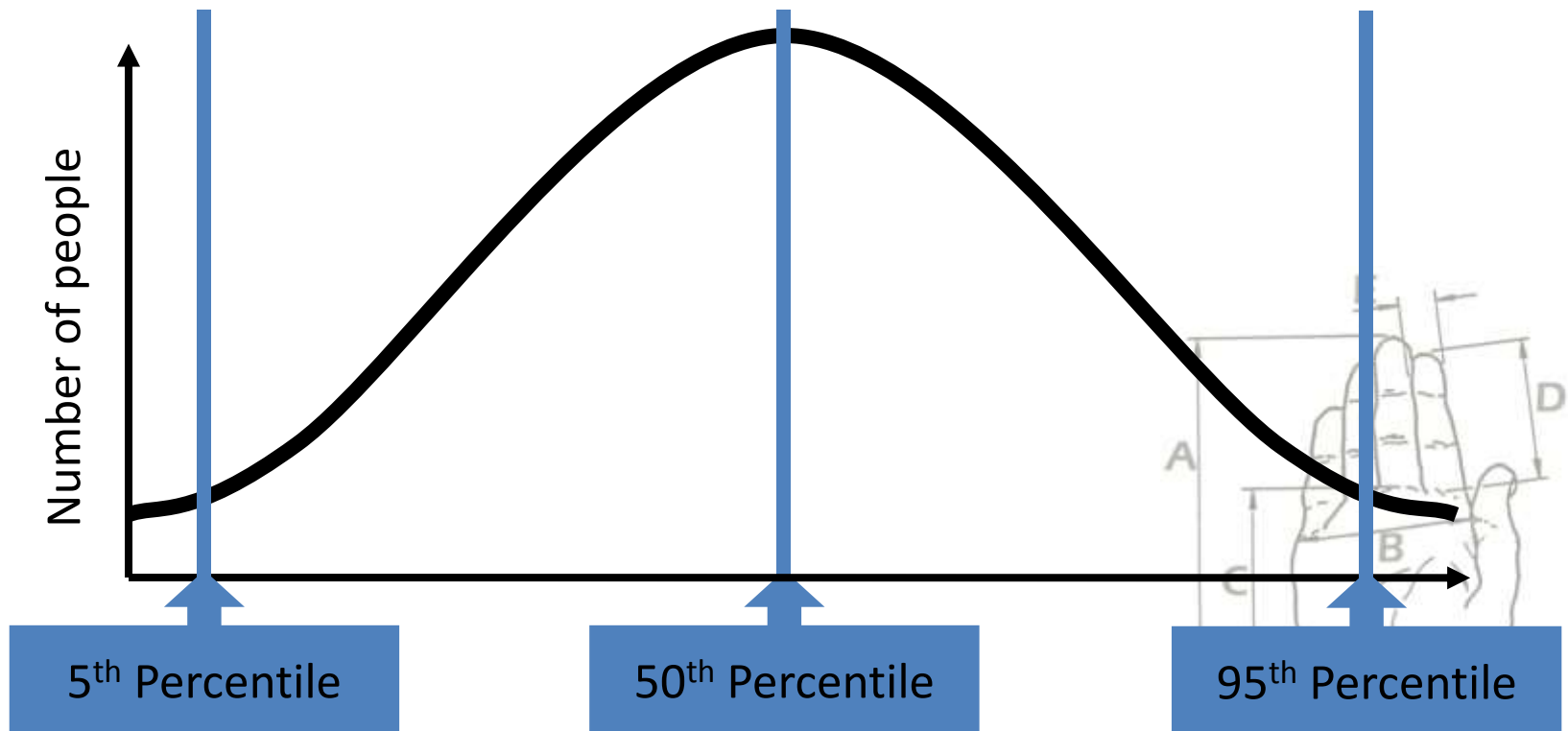
Anthropometrics

- *We use anthropometrics because we want to design products that are suitable for the largest number of users.*
- *We want the smallest people to be able to reach a shelf, but we don't want the tallest people stooping to fit through a door.*
- *We use percentiles to help decide what sizes to use.*



Anthropometrics

- The average human is the 50th percentile, the smallest in the 5th and the tallest in the 95th.*



Physiology

- *Physiology is how we physically interact with a product – lift/push/pull/twist/open/sit*
- *Our physical abilities are effected by age, strength, fitness, dexterity etc.*
- *Products have to be made in a way that allow us to use them without causing physical strain or injury.*

Psychology

- *Psychology is about the human mind and in ergonomics its how products make us feel or what they make us think.*
- *Colours can generate certain feelings or emotions.*
- *Textures can tell us about the quality or safety of the product.*
- *Psychology and aesthetics sometimes overlap.*

Discussion

- *How has ergonomics influenced the design of this bike?*



Performance

- *Performance is about how well a product fulfils its purpose – how it performs and how well it works.*
- *It can be divided into a few main areas...*
 - *Safety*
 - *is a product safe to use*
 - *Durability*
 - *Will the product stand up to frequent use*
 - *Ease of Maintenance*
 - *Can the product easily be kept in working order*
 - *Materials & Manufacturing*
 - *Are the materials suitable? What processes will be used?*

Discussion

- *Now lets discuss why performance is important to this product?*



Market

- *Market is everything to do with who will buy the product, where/when it will be sold, how much it will cost etc.*
- *Target Market is the group of people who the product will be aimed at. The target Market is influenced by:*
 - *Age*
 - *Gender*
 - *Geographical location*
 - *Income*
 - *Interests*
 - *Lifestyle*

Discussion

- *Who would be the target market for this product?*



Pupil Activity

- *Lets use the Design Factors to help carry out a **design analysis**.*
- *Your teacher will demonstrate this first before you have a go on your own.*

During the Commonwealth Games in Glasgow, organisers successfully launched a discount bike hire scheme for all athletes and spectators. In order for the bike hire scheme to continue to be effective, Games organisers require a new bike design which will safely and comfortably transport users around the city. The venues, which include Hampden Park, the Commonwealth Arena and the Hydro, have limited space therefore any solution must be compact and it must also be easily maintained.