

PRODUCT DESIGN FACTORS

The following Product design factors and parameters are referred to throughout Units 1 to 4 and are integral to framing product design. These factors include a range of aspects, or parameters, that influence the design of a product. Some will be included in a design brief and may also be used in product analysis.

In the table below, the factors have been placed into broad categories. However, parameters may overlap or be interconnected depending on the individual situation.

| Product design factors | Parameters |
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| Purpose, function, and context | Includes the reason or need for a product, in the context and environment of its use. This includes its operation, performance, reliability and quality. The primary and secondary functions and features that support its use are considered. |
| Human-centred design (human needs and wants) | Human problems or needs identified to improve wellbeing and quality of life. Cultural and religious considerations, age, economic status, emotional and sensory appeal, universal design, social and physical needs, fashion and trends are considered in response to these needs. Safety, accessibility, comfort, ergonomics and anthropometric data may also need consideration. |
| Innovation and creativity | Innovation requires a creative approach to develop new or improved solutions to unsolved problems or opportunities. This involves invention, improvement, modification, incremental progress, experimentation and pushing the boundaries. Opportunities are identified from research and development, user feedback, new ideas/knowledge, new materials and emerging technologies. |
| Visual, tactile and aesthetic (design principles and elements) | These factors relate to the product's form, appearance and feel. The design principles of balance, emphasis, repetition, movement/rhythm, pattern, proportion, symmetry, space and surface qualities are used to combine and arrange the design elements. The design elements include point, line, shape, form, texture, tone, colour, transparency, translucency and opacity. Natural forms, patterns and structures along with geometry and mathematics can also be employed to create aesthetic appeal. |
| Sustainability (social, economic and environmental systems perspectives) | Sustainability involves the connection and interaction between social, economic and environmental systems. Underpinning aspects include: Life Cycle Analysis and Life Cycle Thinking, emotional attachment, carbon footprints, embodied energy and water use, distribution (product miles) and use of renewable energy and resources. |
| Economics – time and cost | Costing a product takes into account materials, labour and use of plant (equipment and machinery) but must give value to the end-user. Time management and material availability are critical issues to consider. |
| Legal responsibilities | The legal aspects of product design are: intellectual property (IP) particularly Patents and Design Registration; Australian and International (ISO) standards, regulations and legislation (including OH&S). Products must be produced safely and be safe for the user. |
| Materials – characteristics and properties | Materials appropriate to this study are listed on page 15. Materials are selected for use based on their properties (their performance and behaviour both chemically and physically under certain conditions) and characteristics (visible features). These properties and characteristics include strength, durability, thermal resistance, hardness, density, rigidity, flexibility, corrosiveness and compatibility with other materials. |
| Technologies – tools, processes, and manufacturing methods | Conversion techniques (changing raw materials into useable forms) and production processes are reliant on and affected by available tools, equipment, machines, and expertise. Suitable and accurate methods are selected to perform the following: marking/setting out, cutting/shaping/forming, joining/assembling/constructing, decorating/embellishing/finishing. |