Higher Design and Manufacture

Furniture Design Unit – pupil guide

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1	Preliminary research	■														
2	Produce a Brief	■														
3	Analyse the Brief		■													
4	Research		■	■	■											
5	Specification			■												
6	Initial Ideas			■	■											
7	Development				■	■	■									
8	Proposal					■	■									
9	Plan for Manufacture						■	■								
10	Produce Prototypes							■	■	■	■	■	■	■	■	■

Gantt chart (Design Process / Weeks)

1. Undertake preliminary research

- The aim is to identify a design opportunity within the commercial furniture design industry.
- Research existing furniture manufacturer's products to identify possible new products, additions to existing ranges, or older ranges that require updating. Research possible target markets, locations and environments.

2. Produce a brief using your own research

- Use laminated examples to help write the brief with regards to content and layout.

3. Analyse the brief

- Use the following design factors: Function, Performance, Market, Aesthetics, Environment and Ergonomics
- Justify the selection of design factors (say why) - which may require further research.
- Highlight what you intend to research.

4. Research the intended areas

- Select, use and justify a range of techniques to research the selected design factors.
- Use the following: Questionnaires, Product tests, User trips, Observations, Search engines, Data books.
- Present your research using appropriate formats. E.g. graphs, charts, tables.
- Analyse the research materials to identify key information, i.e. explain how each piece of evidence gathered will impact on the development of the design.

5. Produce a valid specification using your research

- Cover each design factor: Function, Performance, Market, Aesthetics, Environment and Ergonomics

6. Initial Ideas

- Use a minimum of two idea generation techniques to generate ideas, seek alternatives and encourage a divergent approach. Choose from the following techniques: morphological analysis, thought showers, technology transfer, analogy, lateral thinking, etc.
- Select and use graphic techniques effectively to represent ideas and proposals from the following range: Annotated sketches, orthographic drawings, isometric, obliques, one point and two point perspective, exploded views, dimensioned views, illustration techniques CAD, and use of scale.

- Used 2D and 3D preliminary sketches to present a range of initial ideas.
- Use illustration techniques to communicate form, texture and materials using a minimum of two media.
- Use colour to enhance the presentation of their own design work indicating forms, textures and materials where necessary.

7. Development

- Develop design proposals through a range of skills which can apply to: explore, refine, be creative, generate pathways, test viability of ideas, and apply knowledge. You should achieve this by using knowledge and understanding of: materials, construction, assembly, aesthetics, anthropometrics environment, production, strength and structure.
- As you are developing your proposal you should consider appropriate design issues relating to the design brief. In particular you should explore a range of materials appropriate to the brief and specification, and analyse their impact on the product's performance – e.g. functional, aesthetics and environmental.
- You should refine your design ideas to produce a proposal suitable for batch production, considering materials, construction and assembly techniques.
- You should undertake suitable activities (likely to be done by producing models to test) to evaluate decisions made through your own design work, leading to informed decisions and justification relating to function, aesthetics, ergonomics and the environment.
- You should also produce models at appropriate stages of the product's development, to explore and evaluate/test the function, aesthetics and construction and / or assembly of the design.
- Record issues that were identified from testing and evaluating the models.
- By undertaken these suitable activities to test aspects of the design, you should have made informed decisions and justified the selection of materials, construction and assembly.
- Models should be selected from the following list: scale models, mock-ups, fully crafted prototypes, test models, computer generated models, part product models, simulations, rapid prototyping.
- Models should be made from: paper, card, corrugated card, MDF, wire, pipe cleaners, foam, clay, modelling compound, balsa wood, expanded foam, sheet plastic, construction kits, smart materials.

8. Proposal

- The design proposal will include a justification of decisions taken at different stages of the design process. Decisions taken will clearly relate to the research gathered.

9. Plan For Manufacture

- Produce orthographic views of the product, using appropriate scale, detail and conventions. The working drawing should assist you in developing and evaluating critical sizes, construction and assembly.
- Clearly outline how the design proposal is to be manufactured (for batch production).
- Select and justify material, construction and assembly methods suitable for batch manufacture, considering volume of production, economics and the environment.

10. Produce Prototype(s) in workshop

- Keep a photographic log of the stages of manufacture.

11. Evaluation of prototype