

## Marine Wear- A project to deliver Unit 4 of the Manufacturing Diploma at level 2

### Designing and Developing Products for Manufacture

#### Background

In Unit 4 you have to carry out an assignment where you research into an existing market and then devise your own development of that market, including drawing up a proposal for a specific product.

A market that is in constant demand across the world is for clothing that is specific to an activity or range of activities. Often these markets can take on a life of their own, adding value to sales because they are not only fit for the purpose they were designed for but they become fashionable in their own right. One of the most successful examples is the phenomenon of denim work wear. Jeans were originally designed for the market of hardwearing work clothing, but soon became a fashion item they were first popular.



were designed for but they become fashionable denim work wear. Jeans were originally designed that continues to evolve some 150 years after

#### Application of the Marine Sector

The sector of marine clothing has many specific identities all of which evoke a high tech demands of yachting wear capable of withstanding the worst big for those using them for their primary purpose as for everyday wear, for never set foot on a boat!



lifestyle, from the casual look of a surfer to the weather. For some types of clothing sales are as example many people who wear deck shoes will

You are to research sector specific clothing to find out what makes 'fit for purpose' clothing have the ability to extend beyond the primary user customer base.

The focus is then to be refined down to investigate what makes leisure marine wear popular within the two customer bases of being bought to be used for marine pursuits and being bought as a fashion item.

#### The Project

To investigate what makes a successful marine leisure clothing product.

- What are the qualities customers look for in rank order of the most important to the least



Sponsored by



**BRITISH  
MARINE**   
LEADING THE INDUSTRY

**BRITISH  
MARINE**   
BOAT SHOWS  
LONDON & SOUTHAMPTON

- Does the dilemma of designing for the fashion market versus fitness for purpose affect design and marketing?
- Based on your research present a proposal for a new product or a development of an existing product that you feel has a market.
- Produce a specific product design specification outlining the opportunity for your product.

### Learning Outcomes to be covered

1. Know how the different stages of research and development add value to products and manufacturing processes
2. Understand the range of factors that affect product design and development
3. Be able to draw up a product proposal

## Manufacturing Diploma Level 2 - Unit 4 Designing and Developing Products for Manufacture - Principal Learning

### Project: - Marine Wear-

#### LO 1- Know how the different stages of research and development add value to products and manufacturing processes

Learning Outcome with examples	Areas of focus	Research Sources
<p><b>Importance of research and development:</b> Consideration of client needs, market requirements and trends, new technologies, innovation, existing products in the market, improving existing products, refining current processes.</p> <p><b>Stages of research and development:</b> client brief – definition of client requirements for a product, key features including function, purpose, performance, markets, aesthetics, cost, timescales, quality standards, scale of production.</p> <p><b>Analysis of brief:</b> What is a required, key feature, product constraints?</p> <p><b>Investigation:</b> Research – primary and secondary.</p> <p><b>Product design specification (PDS):</b></p>	<ul style="list-style-type: none"> <li>• To find out why research and development is important.</li> <li>• List the reasons why a company in this sector would need to carry out R&amp;D.</li> <li>• Identify, with examples the sort of information they would need to find out to ensure there is a market for their proposed product.</li> <li>• How is this information best sought, by survey, can information on specific topics be obtained from a third party or bought?</li> </ul>	<p>Arrange to meet a person from the industry who is engaged in product development and Research and Development. A good place to start is the British Marine (BM) directory of companies involved in marine clothing.</p> <p>See several companies from this sector by visiting the Boat shows.</p>

Sponsored by



**BRITISH  
MARINE**   
LEADING THE INDUSTRY

**BRITISH  
MARINE**   
BOAT SHOWS  
LONDON & SOUTHAMPTON

Technical specification that will enable a range of design ideas to be developed to meet the client needs.

**Generate ideas:**

Alternative concepts, imaginative ideas.

**Synthesis:**

Development of chosen concept or idea.

**Evaluation:** testing and checking against PDS.

**Final product specification:**

Range of details that would allow the solution to be manufactured.

**Added value (1):**

The above stages can add value to either the product or the manufacturing process, for example, effective use of materials, resources, technology, and product life span.

**See worksheet LO1a**

**Sponsored by**



## Manufacturing Diploma Level 2 - Unit 4 Designing and Developing Products for Manufacture - Principal Learning

**Project: - Marine Wear-**

**LO 2- Understand the range of factors that affect product design and development**

Learning Outcome	Areas of focus	Research Sources
<p><b>Range of factors including:</b> Demand pull – driven by market research, technology push – driven by new technologies, new developments in materials and processes.</p> <p><b>Constraints:</b> Physical, time scales, ergonomics, available technologies, investment.</p> <p><b>Social:</b> Values and beliefs of others, local and regional considerations, transport infrastructure.</p> <p><b>Economic:</b> Effect of constraints on costs, fair trade, effect of global market.</p> <p><b>Sustainability:</b> Cost concern for the environment, reuse of packaging, disposability of end of life product.</p>	<ul style="list-style-type: none"> <li>• Explain the key factors that will affect the design and manufacture of the proposed clothing product.</li> <li>• Sizes, required materials available and relative cost analysis for alternatives.</li> <li>• Explain how compromises may have to be made to fit a target selling price or market.</li> <li>• Where can the product be made?</li> <li>• Are there issues regarding transport from manufacturing base to distribution and sales locations</li> <li>• Are there key safety requirements that are either mandatory or desirable to assist with marketing</li> </ul>	<ul style="list-style-type: none"> <li>• A range of suitable materials for manufacturing this sort of clothing.</li> <li>• Anthropometric and ergonomic data.</li> <li>• Methods of making clothing</li> <li>• The global position regarding outsourcing labour to make clothing where labour is less expensive.</li> </ul>

See worksheet LO2a

**Sponsored by**



**BRITISH  
MARINE**   
LEADING THE INDUSTRY

**BRITISH  
MARINE**   
BOAT SHOWS  
LONDON & SOUTHAMPTON

## Manufacturing Diploma Level 2 - Unit 4 Designing and Developing Products for Manufacture - Principal Learning

**Project: - Marine Wear-**

**LO 3 - Be able to draw up a product proposal**

Learning Outcome	Areas of focus	Research Sources
<p><b>Product analysis:</b> Material details and constraints, production standards, constraints and quality details.</p> <p><b>Customer research:</b> Gathering feedback from customers with a view to improving current products or introducing new products.</p> <p><b>Product design details:</b> Producing a simple drawing using CAD, CAD integrated with other computer systems.</p> <p><b>Prototype:</b> Provide a 3D mock-up or miniature version of the product under development, usually for client consideration and feedback, for example, a made-up garment for fashion show,</p>	<ul style="list-style-type: none"> <li>• From your client brief outline produce proposals for a suitable product, showing in detail the design features that meet the brief.</li> <li>• Indicate how your proposal adds value to the product brief, e.g. materials selection that gives added protection, needs less maintenance, is easily cleaned etc.</li> <li>• Develop ideas using sketches and notes with models if appropriate to arrive at a suggested prototype.</li> <li>• Identify manufacturing process that are appropriate to the scale of production and show how your product could be made.</li> <li>• Summarise your final proposal in a specification that could be given to a manufacturer with all the required information to manufacture it.</li> </ul>	<ul style="list-style-type: none"> <li>• Specific material type to be used</li> <li>• Properties of the selected material(s)</li> <li>• Sources of bought in components, such as fastener systems.</li> <li>• Manufacturing methods including advanced systems such as a CNC.</li> <li>• Methods of communicating ideas to a client, ie product modelling, CAD drawing software</li> </ul>

See worksheet LO3a

Sponsored by



**BRITISH  
MARINE**   
LEADING THE INDUSTRY

**BRITISH  
MARINE**   
BOAT SHOWS  
LONDON & SOUTHAMPTON

## Worksheet LO1A -Marine Wear-

### Know how the different stages of research and development add value to products and manufacturing processes

To this carry out unit you have to produce a single assignment with written records including literature, photographs, diagrams, graphs etc, as necessary covering the stages you would go through to carry out effective Research and Development  
Don't forget to list your research sources in a Bibliography

You have to show that you understand the different stages of research and development

Applying it to a real case study **Client Brief** will give you purpose and direction

#### Client Brief

Create a range of clothing suitable for wear by both sexes from teenager to adult.

The clothing is to be suitable for leisure marine use in summer but to have the ability to provide warmth and protection from rain and spray.

The target market is of entry level universal Watersports including:

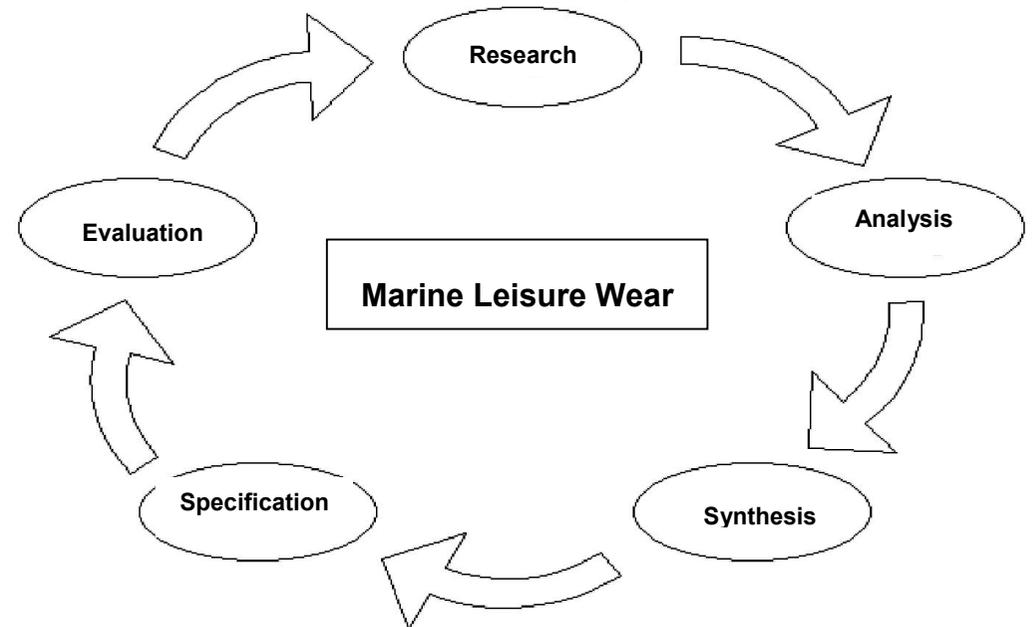
- Canoeing
- Power boating
- Dingy sailing
- Narrow boating

- The clothing must withstand full immersion in water, including salt water.
- Not gain weight when immersed in water by absorption
- Be rapidly drying
- Appeal to a youth market

The clothing must evoke a fun lifestyle and have the ability for its identity to be themed with other articles of clothing such as foot wear, hats, gloves etc

#### You must address the following

- Customer needs
- What is already available in this market sector?
- What sorts of materials are used in marine leisure wear?
- Where are brands based?
- Where is the manufacturing done?
- How is the clothing made
- How important is colour and style?
- Is Marine wear designed with functionality or style first?
- Which are the best known brands in marine leisure wear and what qualities make them 'best known'?



Sponsored by



**BRITISH  
MARINE**   
LEADING THE INDUSTRY

**BRITISH  
MARINE**   
BOAT SHOWS  
LONDON & SOUTHAMPTON

## Worksheet LO2A -Marine Wear-

### Understand the range of factors that affect product design and development

To this carry out this unit you have to produce a single assignment with written records including literature, photographs, diagrams, graphs etc, as necessary explaining the factors that affect the design of your Marine Wear project.

Don't forget to list your research sources in a Bibliography

What affects the design of your product?

List them and explain what they are for the marine clothing market

#### You must address the following

- What sort of person is your potential customer?
- What will appeal to them?
- Latest technology
- Innovative design
- Low cost
- Long life
- Fitness for purpose
- Flexibility in use
- Will they be affected by where it is made, how it is made and what the source of materials is?
- Will people buying this type of product be on a restricted income?
- Is it an essential or desirable product, explain the difference
- Are there be technical or safety issues that affect your proposals

Produce a portfolio that covers the key factors using the above list as starting points

Show examples to illustrate what you feel are the key factors that will dictate your design ideas  
Use information gathered form market research - Client interviews – distributor opinions etc



Sponsored by



**BRITISH  
MARINE**   
LEADING THE INDUSTRY

**BRITISH  
MARINE**   
BOAT SHOWS  
LONDON & SOUTHAMPTON

## Worksheet LO.3a -Marine Wear-

### Be able to draw up a product proposal

Now it is your turn to produce a proposal for the Client Brief

You will need to communicate your ideas using hand drawings and sketches, CAD systems and models, maybe all can be used to fulfil certain parts of your design concepts.

Annotate your ideas to make features, alternatives and operational details clear.

The likely outcome is that you will start with an existing product type as totally new concepts are difficult to achieve, however the market you are in has been developing all the time, and new ideas that develop product types are almost limitless in clothing design.

Start by coming up with some ideas of your own that either are original or take an existing product or product type and add value to it.

This can be through a variety of ways:

- Increasing the appeal to a wider customer base by changing or adding in features
- Changing the manufacturing methods or locations
- Changing the materials used in all or part of the product
- Making use of technology in design and manufacture to improve the product or add new features
- Improving the performance or versatility of the product

A key element of marketing is brand identity; include features that identify your brand either by style, naming or using logos, words embossing etc  
Bear in mind that these features should be able to be incorporated in all forms of marketing and advertising media for your brand.

Your final proposal must contain all the information to let a third party understand the concept, design, materials such that they could manufacture it.

**Sponsored by**



**BRITISH  
MARINE**   
LEADING THE INDUSTRY

**BRITISH  
MARINE**   
BOAT SHOWS  
LONDON & SOUTHAMPTON