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| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Year 13 Theory PLC |  | | | | | R | A | G |
| **SCALE OF PRODUCTION** | **To be able to identify and explain:** | | | | |  | | |
| Manufacturing systems | How you would use one of these to manufacture your product | One-off production | | | |  |  |  |
| Batch production | | | |  |  |  |
| High volume production | | | |  |  |  |
| Modular/cell production | | | |  |  |  |
| Just-in-time manufacture | | | |  |  |  |
| Standardised parts | Example | | | |  |  |  |
| How to use in your design | | | |  |  |  |
| Bought in components | Example | | | |  |  |  |
| How to use in your design | | | |  |  |  |
| Implications  (positive and negative) | Economic | | | |  |  |  |
| Social | | | |  |  |  |
| Environmental | | | |  |  |  |
| Include supporting sketches where appropriate | | | | |  |  |  |
| **COMMERCIAL ISSUES** | **To be able to identify and explain:** | | | | |  | | |
| Commercial practice | Role of marketing when bringing a product onto the market | Assessing consumer needs | | | Methods of data collection |  |  |  |
| Cost implications |  |  |  |
| Product development | | | Methods of research and testing |  |  |  |
| Cost implications |  |  |  |
| Pricing | | | Methods of pricing |  |  |  |
| Promotion | | | Consumer |  |  |  |
| Methods |  |  |  |
| Cost implications |  |  |  |
| Distribution | | | Methods |  |  |  |
| Cost implications |  |  |  |
| Advertising your product | Reaching target audience – TV, Radio, Social Media | | | |  |  |  |
| Regulations | | | |  |  |  |
| Cost implications | | | |  |  |  |
| Design rights and patents that you would use to protect your product | Intellectual property | | | |  |  |  |
| Design rights | | | |  |  |  |
| Patents | | | |  |  |  |
| **PRODUCTION TECHNOLOGIES** | **To be able to identify and explain:** | | | | |  | | |
| The use of digital technology in designing and manufacturing processes | How CAD/CAM could be used in the production of your design | CAD | | Definition | |  |  |  |
| how you would use it | |  |  |  |
| CAM | | Definition | |  |  |  |
| how you would use it | |  |  |  |
| How you would use CAD/CAM in the development stages of your product | Testing | | | |  |  |  |
| Modelling | | | |  |  |  |
| Rapid prototyping | | | |  |  |  |
| How you would use digital technology for: | Stock control | | | |  |  |  |
| Monitoring | | | |  |  |  |
| Purchasing logistics | | | |  |  |  |
| How you would use CAM for: | High volume production | | | |  |  |  |
| Distribution | | | |  |  |  |
| The implications of using digital technologies in industry (positive and negative) | Economic | | | |  |  |  |
| Social | | | |  |  |  |
| Environmental | | | |  |  |  |
| **SUSTAINABILITY/ENVIRONMENTAL ISSUES** | **To be able to identify and explain:** | | | | |  |  |  |
| The impact of design and manufacturing on the environment | Modifications to your product to make it more sustainable | | | | |  |  |  |
| Life cycle analysis of your product | Extraction of raw material | | | |  |  |  |
| Material processing | | | |  |  |  |
| Manufacture | | | |  |  |  |
| Distribution | | | |  |  |  |
| Use | | | |  |  |  |
| Disposal | | | |  |  |  |
| Cost implications of environmental improvements | | | | |  |  |  |
| **CULTRAL ISSUES** | **To be able to identify and explain:** | | | | |  | | |
| Addressing cultural issues surrounding a product | Modifications you could make to your product to address a cultural issue | | | | |  |  |  |
| Consideration of materials relating to cultural differences | | | | |  |  |  |
| Consideration of manufacturing techniques relating to cultural differences | | | | |  |  |  |
| Consideration of the impact of your product | | | | |  |  |  |
| **MORAL ISSUES** | **To be able to identify and explain:** | | | | |  | | |
| Moral and ethical issues surrounding a product | Modifications to improve the ethics of your product | | | | |  |  |  |
| Materials | | | | |  |  |  |
| Manufacture | | | | |  |  |  |
| Economic implications of these ethical improvements | | | | |  |  |  |
| **AESTHETICS/FASHION** | **To be able to identify and explain:** | | | | |  | | |
| Aesthetics and function, shape, form, colour, taste and trends | Modifications to improve its appeal to a wider audience: | | Identifying a group to appeal to | | |  |  |  |
| How you would change your product | | |  |  |  |
| Sketches to support modifications | | |  |  |  |
| Commercial viability | | Product life span | | |  |  |  |
| Planned obsoleting | | |  |  |  |
| Market push/technology pull | | |  |  |  |
| Levels of production | | Method of production | | |  |  |  |
| Why? | | |  |  |  |
| **MARKETING** | **To be able to identify and explain:** | | | | |  | | |
| Promotion and selling of a product | How you would gather information, engage and target your market | | Surveys/questionnaires | | |  |  |  |
| Focus groups | | |  |  |  |
| Testing | | |  |  |  |
| Social media | | |  |  |  |
| advertising | | |  |  |  |
| Unique selling points of your product | | | | |  |  |  |
| Modification for batch production | | What would change? | | |  |  |  |
| Economic viability | | |  |  |  |
| **INCLUSIVE DESIGN** | **To be able to identify and explain:** | | | | |  | | |
| Making products available to all ages and abilities | Modifications you would make to improve your product’s inclusivity | | Identify an improvement based on an age/ability bracket | | |  |  |  |
| Suggest modifications to improve ease of use of your product for that bracket | | |  |  |  |
| Sketch improvements | | |  |  |  |
| How your product is made to improve inclusivity | | Materials | | |  |  |  |
| Manufacturing techniques | | |  |  |  |
| Cost implications relating to the modifications | | | | |  |  |  |
| **ERGONOMICS** | **To be able to identify and explain:** | | | | |  | | |
| How a product is designed to fit the human body using anthropometric data | Modifications you would make to improve your product’s ergonomic design | | | | |  |  |  |
| Materials that could be used | | | | |  |  |  |
| Economic implications of improvements | | | | |  |  |  |
| **HUMAN FACTORS** | **To be able to identify and explain:** | | | | |  | | |
| How a human interacts with a product during use | Details of human factors that affect your design | | Sight | | |  |  |  |
| Touch | | |  |  |  |
| Sound | | |  |  |  |
| Smell | | |  |  |  |
| Taste | | |  |  |  |
| Any modifications you would make to improve your product’s human interface | | | | |  |  |  |
| Cost implications of these modifications | | | | |  |  |  |
| **SAFETY AND LEGISLATION** | **To be able to identify and explain:** | | | | |  | | |
| Health and Safety of designers, makers and consumers | Modifications needed to make your product safer to use (CONSUMER) | | Current risk/hazard | | |  |  |  |
| Prevention improvements | | |  |  |  |
| Sketches to illustrate | | |  |  |  |
| Materials required for improvements | | | | |  |  |  |
| Manufacturing techniques required for improvements | | | | |  |  |  |
| How you would protect your design | | BSI British Standards | | |  |  |  |
| Intellectual property | | |  |  |  |
| Patenting | | |  |  |  |
| Copyright | | |  |  |  |