

PUZZLE GAME - YEAR 8



Design Problem

Some young children find car journeys boring. This can make them restless and they may start to misbehave. Poor behaviour during car journeys can be extremely dangerous as it can distract the drivers concentration. This can result in severe accidents.

Design Brief

Design and make a game that a young person can play with on car journeys. The game should suit the interests of that young person.



User Research

Product designers are given a Design Brief. Their job is to create an idea that will meet the brief. In order to design an idea that meets the Design Brief the designer will complete a Design Brief Analysis. This is where they look carefully at the Design Brief and decide what they need to **research** (find out) before they design the product.

Sometimes the client (the person that sets the brief) will set guidelines that they must follow.

For this project the client expects the Puzzle Game to; be made out of MDF, Pine and clear Acrylic, be 120mm x 120mm and have two ball bearings.

Other research is often needed to find out what the user wants. This could be done by asking them to complete a questionnaire.

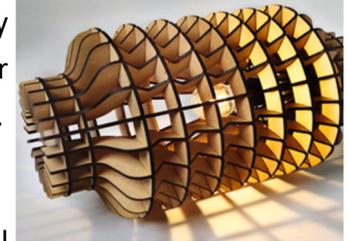
CAD CAM

CAD stands for **Computer Aided Design**. This is where a designer will use computer software to draw a design idea instead of using pencil and paper.

CAD is used by companies to help customers decide how they want their product to look. **Examples** – When buying a new car or kitchen you can see what the finished product is going to look like.

CAM stands for **Computer Aided Manufacture**.

This is where a CAD drawing is sent to a CAM machine which will make the product.



ADVANTAGES OF CAD

Complex drawings can be produced without natural drawing skills.
It gives a **3D** view of the design that can be moved 360 degrees so that you can see the product from all sides.
The design can be saved, reopened and edited without starting again.
Standard components such as screws can be **imported** saving **time** from drawing them each time.
Materials can be added to the drawings to make the product look **realistic**.

DISADVANTAGES OF CAD

- CAD software can be **expensive**.
- CAD software can be difficult to learn and **training costs** are very high.
- Some CAD programs do not respond to certain CAM machines.
- **Traditional skills** are lost.

ADVANTAGES OF CAM

Difficult and **complex** shapes can be made without natural practical skills.
Faster and **safer** manufacturing as machines work take less time than humans. They don't need breaks or suffer from fatigue. The machines are always **accurate** so higher quality products are made.
The operators do not need to be as highly skilled as those using traditional hand tools so can be paid less.

DISADVANTAGES OF CAM

- CAM machines are very **expensive**.
- The high use of machines mean fewer human jobs.
- Each machine has **limitations**.



CNC Codes - The Laser Cutter has been used to engrave your design onto one side of the Puzzle Game. To do this it turned your drawing into a Numerical Code. CAM machines such as the laser cutter are also known as CNC machines. (Computer Numerically Controlled). The computer code tells the laser cutter where it needs to cut. The bed of the laser cutter is one large grid. The Laser Cutter turns your drawing into a CNC code. This CNC code represents numbers on the X and Y ordinates. This code is followed by the laser so that it knows where to cut.

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