



Evaluation of an Existing Product

Design for Manufacture

Greenfaulds High School

National 4/5



Evaluation of an existing product

This unit will explore how a product is successful within a market place and researching which has to be done prior to designing and manufacturing.

This unit will be broken up into 5 sub units and this booklet takes you through each for you to produce your own evaluation either hand written or on the computer.

Outcome 1: selecting factors which are relevant to the product to be evaluated.

Outcome 2: Planning a strategy for evaluation, using appropriate methods.

Outcome 3: Evaluate the product and presenting your results accordingly, justifying your findings and on the methods used.

Outcome 4: Conclusions to be drawn of the results.

Outcome 5: Identify ways in which design and manufacture technologies impact on the environment and society.

By the end of this unit, an A4 typed report should have been completed.

Your assessment for this task will be based on an everyday chair like the one pictured below. You will be asked to evaluate it and write up your findings. This will also be a typed report.



For the practice run you can choose from one of the following:

- ***Games controller***
- ***Hair dryer***
- ***Kettle***
- ***Computer mouse***

Make sure you use this practice run as a help for the assessment one!!

Factors that influence the design of a product.

When designing a product, there are several factors that will influence the design of it.

Below are some of the factors that will influence the design of a product:

- **Function**

This is what the product does. It is broken into two sections of Primary and Secondary. The primary function is the main job of the product. For example the main function of the clock is to tell the time. Secondary functions are any extra functions for example a storage facility.

- **Fitness for purpose**

This links in with function but asks the question of how well does the product do the job it has been designed to do. For example how well does the clock tell the time? Is it clear to see numbers?

- **Aesthetics**

This deals with how the product looks and the styling of it in relation to the fashion trends of the market. It looks at colour, texture, shape, proportion. It also looks into contrasting or harmonious features in each sub factor including materials.

- **Ergonomics**

This looks into the interaction between the product and user. The sizes which are relevant to the design of the product. For example a door needs to be the right height for the average user to walk through comfortably. Main sub factor of ergonomics is anthropometrics - sizes of the human being ranging from the smallest to the tallest.

- **Market**

This takes into consideration many sub factors, but mainly deals with what the consumer (you) wants and needs from a product. It also breaks the market into segments, called market niche, as the product can vary from the lower end of the market to the upper end of the market depending on materials used, aesthetics, function, branding etc.. It can also be determined by such sub factors of technology pushing a newer model onto the market or market push where the consumer pushes a demand for something to be brought back but modernized to the market.

- **Performance**

This looks at many sub factors again affecting that will affect the performance of a product. It could be the materials used which could affect how well it would perform, the overall strength it will have or how long it will last (durability). It can also look at reasons of how easy is it to clean/maintain for the user or even to use.

Below are several everyday objects that everybody uses. Make use of the factors at opposite and brainstorm around the product to highlight which factor has influenced the design of the object and how (link to the parts of the product).



Plan for evaluation

Once you have chosen your factors to evaluate your product with, a plan is then needed to show what method your using and how you will show the results of each method. After this table is produced, a justification should be written, explaining why you have chosen such strategies for the factor.

An example is given to you.

Factors	Strategy	Results
Aesthetics	Questionnaire Comparison of products	Graph Table Written Report
Ergonomics	User trials questionnaire	Table Written Report
Materials	User trials Comparisons of products	Graphs Written Report
Function	questionnaire User trials	Table Graph
Safety	Questionnaire User trials	Written report Graph

Example of justification

Ergonomics

The reason why I have chosen a questionnaire is because it should give good feedback as it is a persons own opinion on the product and how it affects them. I am also going to use a user trial to test the product out by getting a variety of different people to do the same tasks and gather the results to see which group found it better/worse.

In the table below, fill in the blanks according to your product. Then in the space below, justify why you have chosen such strategies

Factor	Strategy	Results

Evaluate a product

As a consumer we evaluate a product without really thinking about it. Answer this: **What is the first thing that attracts you to a product?** How it looks should be the main thing that attracts your attention, then from there we then dig deeper. We then look to see if it is available in our size if it is a piece of clothing or shoes. We then try it on to see if it fits properly (usually go a wee walk about the shop if its shoes to see if its comfortable). We then look at the cost to see if it is affordable. This process we go through in our heads as an individual but a designer needs to get in our heads to find out what we want from a product to make it a success. To do this they will use a number of strategies.

Below are examples of the various strategies that can be used but what you will find is that under a questionnaire there will be questions that will relate to different factors - Imagine filling out 4 separate questionnaires for four separate factors? When it comes to you creating your strategies, think about having more than one factor under each and really only you will know!

- Questionnaires is when the tester will ask so many random people a variety of questions based on the product and the factors that are being evaluated.
- A survey is when a certain market group is asked a series of questions but the response should be less personal.

Types of questions that can be used in a questionnaire/survey:

- Closed questions: Usually yes, no answers
- Open questions: This encourages people to give opinion or point of view
- Rating questions: Helps people express an opinion, usually asked to give ratings from a scale.



- User trials is when you get people to actually test the product to a set of questions you wish them to answer.

—For example:

- Turn on the ipod, how easy was it?



- Select the song “don’t stop believing”, how easy was that?



- How was the sound quality of the song?



White – hard/poor
 Black - ok
 Blue – excellent/easy



- Product comparison is when you compare your product and its functions or aesthetics or other aspects to other products on the market that do the same job.

Can be linked



- Internet research is best for researching into functions and technology advances.
- You need to make sure that you make reference to any internet site you have taken information from.

Results

Once your strategies have been filled out and completed, you need to gather and present your results accordingly. This would be done in a format where every member of the design team would be able to easily access them and begin designing based on what the consumer needs and wants.

For this to be easily understood by each member, each factor should be presented individually with the sections from each strategy clearly shown.

The best way to convey answers is usually on graphs, but you will need to decide what type of **graph** would be best suited to the strategy. However, it doesn't always need to be a graph, it could simply be a **written blurb** explaining what the results conveyed. If you do choose a graph, a written explanation of what it shows is also needed.

An example is given for a factor on the next page and look as to how it was laid out to help you with your own results.

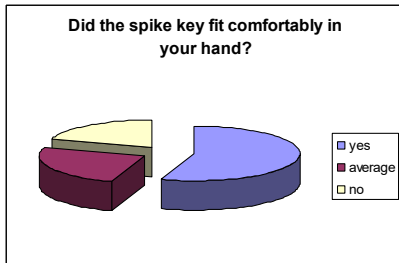
Survey

1) Do you find these spikes comfortable to use whilst running?

Out of the 20 participants asked 19 of them gave answers which proved they found the spikes very comfortable to wear whilst running. The one person who found them not as comfortable stated that they find it hard to find spikes to fit comfortably as they have wider feet than the average person.

2) Do you find that the spike key fits comfortably into your hand?

When asked if the spike key to put in the individual spikes fitted comfortably into most hand sizes I received mixed results. From the 20 people I asked Only 11 people said that they felt the key comfortable in their hand. There were 5 participants that thought the key was ok to use however, it was not the most comfortable thing to hold. The remaining 4 people felt that it was not comfortable at all to use the key and it actually brought some discomfort to their hand whilst using it.



3) On seeing the product for the first time, what was your initial reaction?

The overall results for the initial reaction of this product had a very high rating. When the spikes were revealed to the participants almost all of them went straight to this product first. Here is one or many of the positive opinions I received about this product.

"When I saw these spikes I was immediately drawn them due to their bold colours and modern designs- they stood out among several other pairs of spikes on display."

All of the comments I received were along these lines and all participants noticed the bold colours first which they thought was a good thing as this would also make them stand out on the running track.

User Trial

For the comparison of products I set up a display of several pairs of spikes and asked my participants to compare my product with the others. The outcome of this was that on an ergonomic point of view the NIKE spikes came out on top. The feedback I received was that these spikes were extremely comfortable to run in a fitted the feet perfectly. First impressions of this product also played in favour for these spikes as the participants were attracted to them. The other spikes received some negative comments like they did not fit the feet snugly or they felt discomfort whilst running. So in conclusion the NIKE's came out on top in the comparison of products.

Evaluation

Once all your results have been gathered and presented in a format, your evaluation is your conclusion of what has been collated and how successful or unsuccessful it was.

This should include points about the product that consumers have highlighted and also how relevant your strategy choice was to each of the factors. This should be clear and well laid out so that each member of the design team can clearly understand what the results have shown.

An example is given for you.

Aesthetics

The overall aesthetics of this product proved to be very popular with the participants. The use of the bold colours and modern design made the shoes stand out which was a positive aspect for the consumers as the participants I asked liked the fact that they would stand out on the running track whilst wearing these spikes. Also the NIKE brand attracted participants and therefore consumers to this product as it is a name that they can trust. The colour did prove to minimise the consumers slightly as they do not suit everyone's taste however, they still agreed that these were very appealing.

Environment and Design technologies

Throughout the design process, designers and manufacturers constantly have to think about the impact their product will have on the environment and also on society. They need to think about what materials will be chosen and what process will be used to ensure that it doesn't impact badly on society, the work force and the environment.

You need to think about what effects your products may have on the environment and think about the issues of recycling and sustainability in the design and manufacture.

For example does it or could it be made out of using waste material? Could it re use any old components to save creating new ones? What manufacturing process has been chosen and will this have an effect on employment? Could you minimise new materials when choosing at the beginning? Could there be an availability of less expensive products allowing a greater number of society being able to buy them?

Once your evaluation is complete think about these points and say whether they are possible and how. Think about if you were to take it and re design it, what would you do differently so that it would be environmentally friendly?