

Criterion E: evaluate

IMPORTANCE OF EVALUATION

The design cycle consists of five fundamental stages: investigate, design, plan, create and evaluate. These stages are equally important, and the design cycle would not be complete if any of them is missing. After I finished creating my product I began reflecting on the work I have done throughout this project. I also began evaluating the process, the product, and my personal performance in the five stages of the design cycle.

Our class began working on this project almost 5 weeks ago. Each one of us has implemented the five stages of the design cycle. In the investigation stage we collected information about green design, the 3 'R's, and commonly recycled materials. We studied existing products of the same sort, and assessed their strengths and weaknesses. We stated the potential significance of our products.

Then in the investigation stage, we came up with an initial list of essential and desirable design specifications for our products. In the design stage, we thought of several different ideas and evaluated each one, mentioning its strengths and weaknesses, and based on that, we chose one idea to work on and develop. We used the evaluation of our ideas to modify our list of specifications. Then we drew free-hand sketches, 2D orthographic projections and 3D isometric or oblique drawings. In the planning stage, we also came up with parts list and an production plan for the creation process.

In the creation stage, it was time to put it all together and create our products. We also had to keep a journal, which we wrote in after every session. In our journals, we had to write what we did, name the equipment and the materials we used and why, and we also had to justify any modifications we made to the design.

Although the evaluation process comes after the actual creation, it is still extremely important. It's a chance to look back at the work you have done and reflect on your strengths and weaknesses. The importance of the evaluation stage is that it provides the opportunity to think about your mistakes and learn how to improve. It also enables you to assess how well you have done in a certain task. In my point of view, self-evaluation is an excellent way to learn because people are usually more critical of themselves than others are of them, so it is a good way to fix mistakes and suggest how to avoid repeating them in the future.

SOCIAL SIGNIFICANCE

My product is designed to provide light for a person who wants to read in a dim room. Therefore, my lighting unit will help people see more clearly and avoid straining their eyes while reading. This helps them maintain their health and ensure that their eyesight remains sharp. In addition, the lighting unit will create a pleasant atmosphere in the room where it is put. Although its light is sufficient for reading, it still creates a romantic ambiance due to the misty effect of light shining on tracing paper. It will help people in the room to relax and unwind, and its attractive appearance will enhance the overall appearance of the room. I can put my product in the sitting room of my house, and use it to provide me with light when I want to read. Also, since the lamp requires less electricity than a larger lighting unit, it will help conserve energy; therefore reducing the electrical bill. Because it is designed based on the principles of green design, my product uses fewer resources and causes much less environmental damage than alternative lamps. Because it reuses existing materials that are available around the house, such as scraps of cardboard and plastic containers, my lamp helped reduce the amount of household wastes. This will help in lessening pollution, because materials are being put to good use instead of being discarded. This will also help in reducing strain on the world's raw materials, because instead of consuming new resources I have reused existing ones. Reducing demand on natural resources helps ensure that they are conserved for the use of future generations, and so we become one step closer to achieving sustainable development which relies primarily on the continual availability of resources. And although the impact of my product on its own is minimal, our class's products will collectively have a more significant impact on the environment. My lighting unit can be regarded as a prototype for making several similar stereotypes that can be sold to the public, and the proceeds can be donated to environment protection charities.

EVALUATION of the Product

I have put in a lot of effort and worked very hard on making my product. I spent about 6-7 hours creating it from scratch. It is simple, attractive and has a strong social significance. It satisfies the design situation and the design brief, and provides adequate light for reading. It also abides very well by the principles of green design, because the materials I used were all already available from previous projects. The cubes are made from scraps of cardboard, the bamboo stick was left over from my personal project, and the base is made of an empty plastic container I found in the kitchen. I also used tea to color the cardboard instead of ordinary paint. When it is switched on, my lighting unit gives a very romantic, soothing and misty light. I also made modifications to my design based on what I thought would make the overall outcome better, and that worked. Together, the combination of bamboo, tea-stained cardboard and calligraphy has made a successful product that has fulfilled all of the design specifications it is supposed to fulfill. However, there are a few things that I think could be improved. First of all, the product is a bit wobbly and unstable, because the bamboo stick is not fixed in place completely. Also, because I had to open the cubes after sealing them with glue gun due to a problem with the bulbs, they are now not very neatly sealed. The cardboard is also a bit fragile and can be easily crushed. Also, the bamboo stick is not completely straight, which makes the cubes a bit awkwardly placed, and they are not perfectly aligned on top of each other.

PDS	COMMENTS
ESSENTIAL SPECIFICATIONS	
The product takes into account the fundamentals and strategies of green design and clean technology.	✓
The product provides sufficient light for reading.	✓
The product is battery operated.	✓
The product has a switch.	✓
The product can be made using machinery and equipment available in the DT department.	✓
The product is possible to make on my own.	✓
The product is possible to make within 2 weeks.	✓
The product is aesthetically pleasing and attractive to look at.	✓
The product has a replaceable battery	✓
The product is not too big so that it fits on a side table in the sitting room	✓
DESIRABLE SPECIFICATIONS	
The product can be made in no more than 4 hours of work.	✓
The product has an unconventional and original design.	✓
The product reflects my personal likes and preferences, such as Japanese/oriental styles.	✓
The battery and the wiring are concealed.	✓

DEVIATIONS:

During the process of creation, I made several modifications to my original plan. Although the changes are noticeable, they are still considered minor changes because they did not change the nature of the product or its social significance.

- In my original design, I planned to make the cubes out of tracing paper and draw Japanese letters onto the tracing paper with a marker. However, I noticed that tracing paper is extremely flimsy and collapsible, so I used cardboard to make the cubes because it is more sturdy. I engraved the calligraphy into the cardboard, and placed a layer of tracing paper on the inside of the engravings to give a misty look when the light is turned on.
- I used teabags to stain the cardboard, because I felt that it needed a bit of color instead of being plain white.
- I used 2 batteries instead of just one, because one battery would not supply sufficient energy to all 3 bulbs, so the light would look dim. However, with 2 batteries each bulb would get what it needs and would shine brightly.
- Instead of making the base out of tracing paper, I used a plastic container that I found in my house. Instead of discarding it, I decided to put it to good use, because a plastic base is better than a paper base in a number of ways. First of all, it is heavier and is therefore more sturdy and stable. In addition, the container has a lid which can easily be removed and replaced, which makes changing the batteries a much easier job.

COMPARING THE
FINAL PRODUCT WITH
THE PDS

PRODUCT TESTING

After completing the creation of my product, I attached two 9-volt batteries to the battery clips, and flipped the switch to see if the light worked. Fortunately, a misty light shone through the cubes, indicating that my product was functioning properly. I also placed the lamp on the coffee table in the dimmed sitting room of my house, switched it on and attempted to read in order to see if the lamp provided adequate lighting, which it did. Therefore, I can say that my product satisfies the design problems and design brief, and fulfills the product design specifications.

FUTURE IMPROVEMENTS

There are a few changes I would make to my product if I ever had the chance to do this project again:

- Make the base out of a more sturdy container, or I change the design of the base altogether so that several bamboo sticks form a sort of bamboo 'sculpture', that make the lamp more stable.
- Paint the cardboard cubes over with a layer of varnish to make them waterproof and more durable.
- Make a more professional circuit, which includes a PCB, instead of having loose wires soldered together, because this makes the circuit less prone to being damaged or disconnected.
- Find a cubic container to make the base instead of a cylindrical one, in order to maintain the symmetry between the base and the cubes above it.

evaluation of the process

Although I originally thought that it would not take me a lot of time to create my product, I soon discovered that I was quite wrong. The process of creation turned out to be more complicated than I imagined. Making the circuit in particular was quite a complex and intricate process, contrary to my initial belief that it would be really easy to make. I planned to spend no more than 4 hours creating my product, but I ended up spending about 6-7 hours instead. However, I found it rather enjoyable because I was creating a product related to something I am really interested in. I did not really mind spending extra time in making my lighting unit because I have a passion for Japanese styles. My work plan helped me a lot because it divided up the creation tasks I had to do into small parts and distributed them over a period of time. Although I made several modifications to my plan, I always had a basic idea of what I needed to do because I had outlined my time and work at the beginning. My plan's only shortcoming was its inability to accurately estimate the time I would need to spend on the creation stage. Also, I came up with a very detailed idea of what to draw on the sides of the product during the planning period. Therefore, making the cubes was a piece of cake, and I was able to work efficiently and without wasting time thinking of what to do next. My modifications did not really affect the steps of work, as they were improvised changes that I made as I went along. The only thing that these modifications affected was the time I spent working on my products, as a few unexpected mishaps cost me a couple extra hours of work. Before every session, I would just look at my production plan and decide which tasks I needed to do that day. The only major problem I faced was in the wiring of the circuit, because the wires had to be hidden inside the bamboo stick, and this turned out to be more difficult than I expected. The reason this happened was that I took the circuit for granted. I just had a general idea of what components I needed, and I assumed that assembling them would not require much effort. I did not really think deeply about the circuit, and this backfired during the process of creation. However, I managed to make it work, and now the circuit functions smoothly.

Now that I have finished creating my product, I can see the importance of the investigation and planning processes. They are just as important as the creation itself because they help to prepare you. When you collect the information, choose an idea and plan your time beforehand, you can see clearly what you have to do, and it saves you from having to do everything all at once.

Self-evaluation

If I were to grade myself for my performance in this project, I would give myself around 9 out of 10. I put a lot of effort into all stages of the design cycle. In the investigation and planning stages, I researched and planned relatively well, so when it was time to create the product, I knew exactly what to do and I had all the resources, pictures, and clipart images I needed. In the creation stage I worked equally hard to produce a high quality product. I handed work in on time, did everything I was supposed to do, followed my work plan accurately and wrote in my journal everyday. I also did not rely on anyone to help me, except for things I did not know how to do. I felt motivated to do well in this project, so I put my best effort to create a high-quality product within the time I had. Even in the evaluation stage, I have looked back on my work throughout the stages of the design cycle, and evaluated my work deeply. However, I feel that due to the short time-span of this project, I was not able to be as creative and thorough as possible. Considering the work I have to do for other subjects aside from DT, the short 5-week duration meant that I had limited time to look for information and inspiration, and less time to think of creative solutions to the design problem at hand. If I had more time, especially for the investigation and planning stages, I would have been able to research and prepare my work more thoroughly. Although it placed a considerable amount of pressure on me, due to its short time span, this project was generally an enjoyable experience. It was difficult at certain times to do all the necessary work because of the lack of time, but I ultimately managed to make the best out of this project and get everything done. I learned a lot about the principles of green design, which increased my environmental awareness and placed me in a position where I was determined to protect it. I learned several new concepts and strategies, and learned things I did not know before about reducing, reusing and recycling materials, how things are done in the wood-work shop, etc.. I also improved skills which I already have. All in all, it was a fun learning experience for me, especially because my product was related to a theme I am very interested in.