

AS PRODUCT DESIGN

38 DEVELOPMENT AND TESTING - FIXTURES

INTRODUCTION
I will research different materials and processes than that to help me make a final design for my product.

LEDs
LEDs are available in different types, colors and sizes, I will need the ones in my product to be bright, lightweight, small and I will test different colors to find the most effective.

SIZE
Size takes up less space but not as bright as the bigger size and only light a smaller area. Small will be easier to mount and not be very bright, I will use 5mm LEDs due to the bigger size I will use 5mm LEDs as they have the most effective combination of size and brightness.

TYPE
Bright light LEDs and low energy LEDs are available but are often more expensive and more difficult to buy than standard LEDs.

COLOR
I looked different colored LEDs, I could either use colored LEDs or colored other materials to create the color in my product. Blue and yellow LEDs for my design, these colors can be available with clear or colored lenses, the colored gives a stronger, more consistent color while the clear was brighter as the clear, it is getting the color elsewhere in yellow or white LED would be best, giving off a warm or cool tone respectively.

NUMBER OF LEDS
I tested how much light I would need to produce a light, but not overpowering, light through transparent acrylic.

RESEARCH
A different material will be used to help the cell's, overpowering the LEDs depending on the voltage and current of the cell's.
Voltage [V], current [I] resistance [R]
Source voltage [V]
divide forward voltage [V]
number of LEDs

My circuit will therefore include 2 1.5v CR2032 batteries with a 50mA/200mA battery pack, with a LED in parallel and a 220ohm resistor and a 100ohm resistor. The one that fits in the end of an open 2.1v/200mA/200mA power.

As first I thought to use two AA cells because they will last a significant amount time longer than a battery cell which was tested as important for a number of my target market. However other things a scale resistor for my product I found it would be really too big using AA cells and I decided to use button cells because of how small and light they are because this will make my product more portable and useful.

Therefore I will use two 3V lithium batteries.

SAFETIES
There are many different types of batteries that have different properties, size will need to be both small and light to make my product as portable as possible without needing to be replaced very often this was seen as a large inconvenience. If more than one battery is used they should be connected in series.

TYPE OF CELL	VOLTAGE PER CELL	NUMBER OF CELLS REQUIRED	TYPICAL CAPACITY	MAX CURRENT	DIAMETER	LENGTH	AVAILABLE AS RECHARGEABLE	CURRENT FEATURES
D	1.5v	2	300g	15000mAh	6A	34.2mm	61.3mm	Yes High capacity
C	1.5v	2	180g	6000mAh	4A	26.2mm	50mm	Yes High capacity
AA	1.5v	2	30g	3000mAh	3A	14.5mm	30.5mm	Yes Low cost, readily available
AAA	1.5v	2	10g	1000mAh	1.5A	10.5mm	44.5mm	Yes Low cost, readily available
BUTTON CELL CR2032	3.0v	1	5g	200mAh	100mA	20.0mm	5.0mm	Yes, low cost High capacity

Requirements of battery used for comparison
3.0v is needed as any lower will not power the LEDs in parallel.
More cells will be needed but will increase the product too large.
As low as possible, the lighter the better. Flexibility will power the product for.
As high as possible, the longer the long. Flexibility will power the product for.
As small as possible.
As small as possible.
Being rechargeable would increase environmental impact.

29 CLIENT INTERVIEW AND CURRENT TRENDS

INTRODUCTION
I will look at trends in original Memphis design as well as that in current design trends. By interviewing a member of my target market I will create a client profile.

SUMMARY
Current trends I will try and use in my design include neutral colors and versatile lighting. I will research standard LED fixtures and compare these to original Memphis design. From my client interview I found that design was prioritized by my target market over function.

ORIGINAL MEMPHIS DESIGN
These are lamps designed during the original Memphis movement (around 1981), they use hand made, used simple shapes put together to create unique, decorative designs. The designs are both warm and cool based colors with naturally consistent shapes in [1] and [4] both use circles respectively in the lamp whilst [3] uses rectangles. This makes the shapes seem more connected.
Whilst [1] has both red bulbs, the red just looks nice, however in most lamps the bulbs is somewhat exposed (for temperature one could), the green is more neutral.
Bulbs [1] and [3] are for decorative purposes since in light is not turned out and on, however [2] can be turned on as the light can be controlled in different directions.
These are all desk lamps so add as features to the house, turning off will give off a significant amount of light.

CURRENT DESIGN TRENDS
In recent years there has been a trend for using more pastel colors in products. This gives a softer effect, it is less stark and could be considered more sophisticated. On the right are some examples of Memphis design that is replaced by the trend that I could use as inspiration for my product.
LEDs are becoming more common in lighting due to their reliability, sleek design and low temperature they are. However they are normally built in to the lamp, this could cause problems as they are not replaceable if anything breaks or if more efficient models are introduced. To counter this companies like Design and Forge have started designing and selling standardized LED fixtures that can be used in products from industrial and regional artists. Companies are looking for designs that are more accessible to their market, including lighting where the color and intensity can be controlled, and lamps that can be adjusted and integrated in to the room, I will be referring to this in a list of color and shape in Color Lighting Design from the client interview.
Light and a design feature to that home with natural tactile on costume.
BUDGET - £20 - £50

CLIENT INTERVIEW
WHAT FEATURES WOULD YOU EXPECT FROM A LAMP (E.G. PORTABLE, REPLACEABLE LIGHTS SOURCE)?
As it's decorative than for use as a lamp, it's probably a central design piece so it wouldn't be moved much, and I wouldn't expect the light to illuminate a room fully, but look nice. Obviously I'd expect the bulb to either be replaceable easily, or be on LED light that lasts a very, very long time. But when I give the LED should automatically be replaceable.
DO YOU HAVE ANY IDEAS OF WHAT EXTRA FEATURES WOULD MAKE YOU WANT TO BUY THE PRODUCT (BEING ENVIRONMENTALLY FRIENDLY, COMING WITH LATTERS IF APPLICABLE)?
Environmentally friendly definitely, although that's maybe less of a concern with a design piece rather than a functional piece. I'd prefer warm LEDs than an incandescent bulb or a halogen, but wouldn't be a deal breaker. If it was going to be used indoors I don't think I'd want something with batteries, I'd expect to be able to plug it in so it'd never have to worry about it charging. I guess with something designed in the Memphis price range that most of what would make me buy it would be the aesthetic design.
WITHIN WHICH PRICE RANGE WOULD YOU IDEALLY BUY IT?
If I guess it's a really lovely design piece I'd be willing to go up to about £75 for a small lamp. Probably more likely to buy something in the £35-£45 range.

REFLECTION
The number of my target market I interviewed thought design would be the most important selling point of my lamp, practicalities were less significant. They would prefer a plug in design as they would not have to worry about charging. I will research more into the advantages and disadvantages of each aspect from personal preference. If the lamp is meant to be moved batteries would be better value for a price that would not mean plug in would be preferable. I will research how the different materials I could use affect the environment as the consumer thought this was important.

CLIENT PROFILE
AGE - between 21 and 35 years old
HOUSING - likely in student or rented accommodation
LIFE INTERESTS - current trends, design and design inspiration
LOOKING FOR - a lamp with more of a decorative purpose than a practical one, a way to add colored light and a design feature to that home with natural tactile on costume.

42 FINAL DESIGN

INTRODUCTION
I will use my developments to draw out and annotate the final design for my product.

SUMMARY
I will use this slide to compare my product to design manufacturers to check I am putting the different pieces together in the correct way.

The light will be made from layers of clear acrylic pieces attached together with laser cement.
The electrical components will be hidden within the mirrored acrylic cavity with the LEDs stuck through gaps in the acrylic.
The magnets will be stuck with super glue inside holes in the acrylic.
As far as possible, the design has long flexibility will power the product for.
As high as possible, the longer the long. Flexibility will power the product for.
As small as possible.
As small as possible.
Being rechargeable would increase environmental impact.

52 EVALUATION - IMPROVEMENTS

INTRODUCTION
After evaluating my final product I found a range of ways I could improve the manufacture and design, from the I could create another version of my product that functions better. I look at a range of client opinions and how well the product met my specifications.

1 To improve the product from the prototype I have made I could make some changes to how I manufactured the product.

2 The angled pieces of acrylic do not completely fit against each other due to them not being lined up correctly, which is why the angle was later on. The effect the outside piece of acrylic, there are two ways to solve this, one is to use their tabs, to prevent this I could use tape to cover the parts which would not get glue on them therefore protecting them. I could also use specially shaped tools to spread the laser cement and epoxy resin as it is easier just where it needs to be.

3 I could also use a cylindrical jig to put the acrylic pieces of the holder in during manufacture that would all be up completely, while in this prototype where they don't sit slightly out of place.

4 To make the magnets in the better holder (not sticking out of the acrylic), I could add an extra layer of acrylic (without any holes or) which the magnets could use to stick against. This would make them more likely to fit making the piece sturdier.

5 There is a bit of glue where it is not meant to be on the acrylic as it was hard to control with a pipette, to prevent this I could use tape to cover the parts which would not get glue on them therefore protecting them. I could also use specially shaped tools to spread the laser cement and epoxy resin as it is easier just where it needs to be.

6 During manufacture I had to add an extra 3mm space in these places as the light became it had to be covered by the acrylic, so I had to cover the parts which would not get glue on them therefore protecting them. I could also use specially shaped tools to spread the laser cement and epoxy resin as it is easier just where it needs to be.

7 The tabs of the holder are not stuck down very well, this is because I could not create them with the acrylic in the way. To stop this problem I could tape the acrylic in place after the other tabs.

