

Personal project: transform Plastic Cover

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Level 3: International Introduction to the Study of Design, Media and Screen

SECONDARY RESEARCH

Plastic pollution is a serious problem. Between 19 and 23 million tonnes of plastic waste seep into aquatic ecosystems every year. (UNEP 20230)

Plastic waste is one of the biggest threats to ocean restoration. Approximately more than 12 million tonnes of plastic are dumped into the oceans every year. Globally, countless marine organisms die each year from accidentally ingesting plastic or becoming entangled in derelict fishing gear.

Plastic breaks down into smaller and smaller pieces over time and enters the marine food chain and is now found in the human body. (Surfers Against Sewage 2025)



Re-creation of discarded plastics



Imitating wave patterns with wood (inspiration: imitating with plastic)



Paper Flower Sea



Re-creation from Waste

Plastic Flower Sea



Rubbish changes shape with human movement through infrared sensing



Changing the shape of plastic to make objects



Using sensing and tracking technology to enable human interaction with the artwork



INTERVIEW

Q 1: How often do you use plastic in your life and why?

Q 2: Do you think plastics are a serious environmental polluter?

Q 3: Do you think there is any way to reduce the use of plastics?

Friend A:

1. I think the frequency is considered high. Because plastic products are everywhere in our lives, such as going to the supermarket to buy things will use plastic bags, drinking mineral water bottles are also plastic .
2. I think it is harmful. Plastic is hard to dispose of and we use a lot of it so it definitely pollutes the environment.
3. I think our society is already trying to replace plastic with other materials, such as paper straws instead of plastic straws, and maybe in the future new materials will be found to better replace plastic.

Friend B:

1. I think it's okay, I just have to use plastic sometimes, like some snack bags, but that's out of my control.
2. Definitely there is pollution to the environment . Plastic can not be naturally degraded and can only be thought to be disposed of, which produces a lot of harmful gases during the incineration process.
3. Many plastic products have now been replaced with biodegradable materials, but I think the quality of such materials is not as good as that of plastic, and perhaps when stronger materials are developed, they will replace plastic altogether.

Friend C:

1. I haven't observed this, but I think I would use plastic a lot in my life, after all, there's so much of it that there's no way I could avoid it completely.
2. It's definitely harmful to the environment. I often see adverts reminding people to minimize the use of plastics.
3. I make a conscious effort to avoid plastic products in my daily life, for example, I take a cloth bag to the supermarket and try to use paper bags.



Designs that can be referenced as encountered in some exhibitions.

PROJECT TITLE	Plastic cover		AIM & OBJECTIVES	Through this project, I hope to learn more about the pollution and harm caused to the environment by the overuse of non-biodegradable plastics and express it through art forms. I will probably study
BACKGROUND Phase 1 Marine pollution and plastic pollution A large amount of plastic flows into the ocean every year, and many marine organisms accidentally ingest the plastic, causing serious pollution to the marine ecology.	Target Audience: All ages Focus of the project: to demonstrate the damage caused by plastic products to the environment and marine life. Objective: To show the audience the seriousness of marine pollution in a visual way. Why you're interested: I have a lot of plastic bottles stacked up in my room, and while cleaning my room, it occurred to me where these bottles go when they're thrown away. Because these plastics are difficult to decompose naturally. When I searched for something related to this, I came across a story in the UK news: Plastic accounts for 85% of marine litter, which is a problem that we humans have created and that we have a responsibility to solve. Concept: What are the dilemmas facing marine organisms in today's increasingly polluted oceans.	Phase 3 Describe the general aim of your project. (e.g. experimental plans or working prototype, etc....)	Through this project, I hope to learn more about the pollution and harm caused to the environment by the overuse of non-biodegradable plastics and express it through art forms. I will probably study subjects such as environmental science, materials science, and interaction design. Through the BBC and other media reports to find out the current situation of plastic pollution, using the installation art figurative expression. During this period, I may use software such as Arduino and Figma, as well as materials such as Arduino development boards and discarded plastics.	
RESEARCH Phase 2 Describe how you hope to conduct research in this project (e.g. contextual exploration; ongoing reflection, conducting interviews or workshops, writing questionnaires, exploring processes and facilities etc....)	Fields: environmental science, interaction design, materials science (sustainable, naturally degradable alternatives to plastics) Sources of information: UAL library, Art gallery, Journal in the field of marine, nature and environment, art exhibition 1. Questionnaires to interview people about their views on plastic products and their knowledge of marine pollution 2. Fieldwork: find and collect plastic products that are thrown away by people. 3. Search for information: search for data and news reports related to marine pollution. 4. Visiting art exhibitions: to see how artists express their ideas and find inspiration.	EVALUATION/ OUTCOMES Phase 4	I will be exploring new forms of expression in this project, experimenting with interactive installations to express my subject matter. I'll try to code-drive my installation to show the current state of the serious pollution of the oceans by plastics	



In the Saatchi Gallery, I saw various artistic representations of flowers. It inspired me that maybe my work can go out of the plane and can be expressed in 3D. What impressed me most was a huge 'book'. Standing in front of this work, I felt as if I had stepped into the author's world, like a little person standing inside the author's head and watching the artist's novel ideas.

In the Serpentine Gallery I saw a new way of expressing nature, as if the artist had moved nature into the gallery. What I remember most is a whole wall made of leaves, I clearly remember I could smell the fresh fragrance of the leaves when I was near it, which made me feel very shocked.

I didn't know much about this kind of graffiti art before visiting the Brick Lane and Graffiti tour, it was the first time I saw that it was even possible to draw a human face realistically on an entire wall, which I thought was a very difficult thing to do, it was also the first time I saw so many different styles, and I also saw many of the artists putting all kinds of interesting and distinctive markings on their work, it was very interesting to me to see that this form of art is almost new to me. This form of artistic expression, which is almost completely new to me, was very interesting to me.




I was most impressed with Japan House because the architectural exhibits were modeled on ancient Chinese buildings. I had studied mortise and tenon design, but it was a novel experience to see a building built entirely of mortise and tenon construction up close for the first time.




idea 1

Plastic Wave 

↓
Collecting plastic products from lifes 

↓
cut into long pieces 

↓
Use a lighter to burn into a wave shape 
(Plastics will change shape at high temperatures)

References to work exhibited at the Saatchi Gallery.

Make it look like a book.

The colour of the 'waves' gets darker/dirtier from the first to the last page.

↓
Representing the increasing pollution of the oceans.

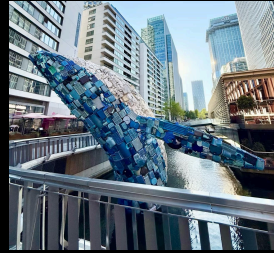
colour scheme : 



idea 2

plastic marine life

Reference Whale on the Wharf (skyscraper)



↓
Piecing together the bodies of sea creatures with plastic items.

↓
plastic rubbish in the oceans is increasing and many marine creatures are dying from accidental ingestion of plastic.

Make an inflatable device to simulate breathing by placing 'small plastic fish' in a transparent balloon.



insufflation

↓
Marine life trapped in plastic










outgassing

↓
increasing pollution
compromises survival of marine
life

idea 3

Plastic ball

1. Making flowers out of paper (environmentally friendly and sustainable) 
2. Putting flowers in clear balloons. 
3. Cut the collected plastic bottles into pieces  \rightarrow , and use a candle to deform the plastic pieces.  \rightarrow 
4. Adding paint to drop glue (clear glue that sets quickly).
5. Pour the glue on the bent plastic sheet. 

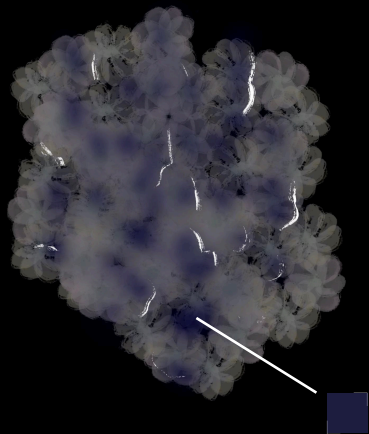
↓
Modelling contaminated water sources

6. Attach the plastic sheet to the balloon. 

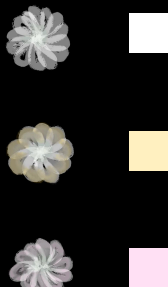
it looks like ↓ plastic sheets wrapped around flowers.

use the breathing apparatus for idea 2

PLAN

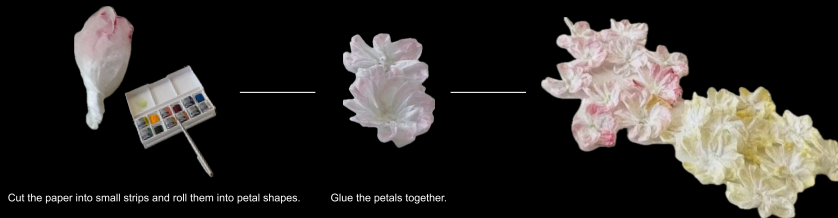


colour scheme



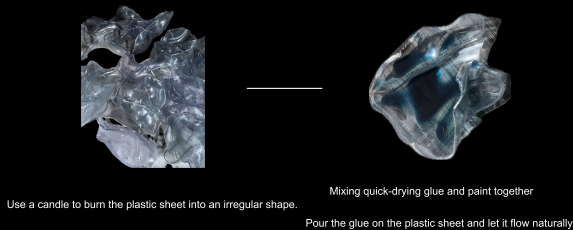
Place the paper-folded flower in a clear balloon and attach a plastic sheet to the outside of the balloon.

manufacturing process



Cut the paper into small strips and roll them into petal shapes.

Glue the petals together.

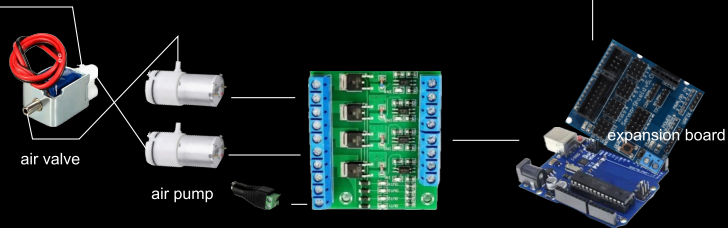


Use a candle to burn the plastic sheet into an irregular shape.

Mixing quick-drying glue and paint together

Pour the glue on the plastic sheet and let it flow naturally

balloons



Field Effect Tube (FET) Modules

development board

CODE

```
int sensorPin = 2; //定义红外传感器引脚2
int airPumpPinA = 9; //定义充气泵引脚9
int airPumpPinB = 10; //定义放气泵引脚10
int solenoidPin = 6; //定义气阀引脚6

long inflation_time = 8000; //定义充气时间8000毫秒
long deflation_time = 8000; //定义放气时间8000毫秒
long motor_pause_time = 1000; //定义气泵停顿时间1000毫秒
long start_time = 0; //定义开始时间
long current_time = 0; //定义当前时间

int sensorValue = 0; //定义传感器值
int motor_work_status = 0; //定义气泵工作状态
void setup()
{
  Serial.begin(9600); //初始化串口通信
  pinMode(sensorPin, INPUT); //设置红外传感器引脚为输入
  pinMode(airPumpPinA, OUTPUT); //设置充气泵引脚为输出
  pinMode(airPumpPinB, OUTPUT); //设置放气泵引脚为输出
  pinMode(solenoidPin, OUTPUT); //设置气阀引脚为输出

  digitalWrite(solenoidPin, LOW); //初始化气阀引脚为低电平
  digitalWrite(airPumpPinA, LOW); //初始化充气泵引脚为低电平
  digitalWrite(airPumpPinB, LOW); //初始化放气泵引脚为低电平
}

void loop()
{
  sensorValue = digitalRead(sensorPin); //读取红外传感器值
  Serial.println(sensorValue); //串口打印传感器值
  if(sensorValue == 1 && motor_work_status == 0) //如果传感器值为1且气泵工作状态为0
  {
    motor_work_status = 1; //气泵工作状态为1
    start_time = millis(); //记录开始时间
  }

  if(motor_work_status == 1) //如果气泵工作状态为1
  {
    current_time = millis(); //记录当前时间
    if(current_time - start_time < inflation_time) //如果当前时间减去开始时间小于充气时间
    {
      solenoid_on(); //打开气阀
      inflate_on(); //开启充气泵
    }

    //如果当前时间减去开始时间小于充气时间加上气泵停顿时间
    else if(current_time - start_time < inflation_time + motor_pause_time)
    {
      inflate_off(); //关闭充气泵
    }

    //如果当前时间减去开始时间小于充气时间加上放气时间加上气泵停顿时间
    else if(current_time - start_time < inflation_time + deflation_time + motor_pause_time)
    {
      solenoid_off(); //关闭气阀
      deflate_on(); //开启放气泵
    }
  }
  else //否则
  {
    deflate_off(); //关闭放气泵
    motor_work_status = 0; //气泵工作状态为0
  }
}
```

OUTCOME

```
//打开充气泵
void inflate_on()
{
  digitalWrite(airPumpPinA, HIGH);
  digitalWrite(airPumpPinB, LOW);
}

//打开放气泵
void deflate_on()
{
  digitalWrite(airPumpPinA, LOW);
  digitalWrite(airPumpPinB, HIGH);
}

//关闭充气泵
void inflate_off()
{
  digitalWrite(airPumpPinA, LOW);
}

//关闭放气泵
void deflate_off()
{
  digitalWrite(airPumpPinB, LOW);
}

//打开气阀
void solenoid_on()
{
  digitalWrite(solenoidPin, HIGH);
}

//关闭气阀
void solenoid_off()
{
  digitalWrite(solenoidPin, LOW);
}
```



REFLECTION

1. In the course of my research, I found that plastic pollution has been very serious, the harmful gases produced by burning plastics may accelerate the speed of global warming, and most of the plastics are not incinerated, but only landfilled, but it is difficult for plastics to degrade naturally, and these plastic wastes are gradually transforming our earth's ecology into a "rubbish dump".

2. In the process of interviewing my friends around me, I realized that in many cases we really can't avoid the use of plastics, so the best way to reduce the use of plastics is to develop another material that can replace plastics completely. After our discussion, I found that the whole world is now consciously reducing the use of plastics and replacing them with other environmentally friendly materials as much as possible, and we can also consciously avoid using environmentally unfriendly materials in our lives.

3. In the course of visiting the exhibition, I found a lot of art forms that were new to me, such as a whole wall made of leaves in the Serpentine Gallery. This kind of simple and direct but shocking form gave me new inspiration, and I would like to try a large-scale art installation in the future!

4. In the process of making the outcome, I actually tried a lot of different materials. I actually wanted to try making plastic sea creatures at first (idea 2), but I found that it was too difficult to control the shape of the small things made from plastic products and it was hard to find materials that fit, so I had to give up. But I didn't take photos of these processes, so this project reminds me that I must record every step of the process in the future, so that I can easily review and organize them. This was my first interactive installation this year, and the final product was a little different from what I had imagined, but I think the beauty of art is in the uncertainty, and I couldn't exactly replicate what I had in mind, just as every flower and piece of plastic I made was a different shape. I will endeavor to make more installations in the coming years of my undergraduate studies.



This was the first time I tried to exhibit my work and I felt nervous and excited. There was a small problem during the exhibition, the infrared sensor in my installation suddenly broke down, but luckily I found a replacement, which made me realize that all kinds of things can happen during an exhibition, and we need to be prepared for all of them.

REFERENCE

UNEP (2023) *Beat Plastic Pollution*. Available at: <https://www.unep.org/plastic-pollution> (Accessed 20 May 2025).

Surfers Against Sewage 2025, *Plastic pollution, Surfers Against Sewage*.
Available at: <https://www.sas.org.uk/plastic-pollution/> (Accessed 20 May 2025)