



## Primary research

- In the orange box it tells you why I chose the toaster.
- In the blue box it tells you what I already know about the toaster and how it works.
- In the green circle it tells you some main points I already know about it

I chose to do the toaster because in my opinion I think there is a lot to write about and personally I think it would be a very interesting object to do

### What I already know about how it works

When you walk up to the toaster you can see the two slots you put your pieces of bread in. When you put in your bread, you push down the handle and it says down. Then the timer will go off at whatever setting of heat you have it on. Your toast will pop when the timer is up.

### What do I already know?

- Its electrical
- You must plug it in
- The handle stays down when you press it
- The toast will pop when the timers up

## Secondary research

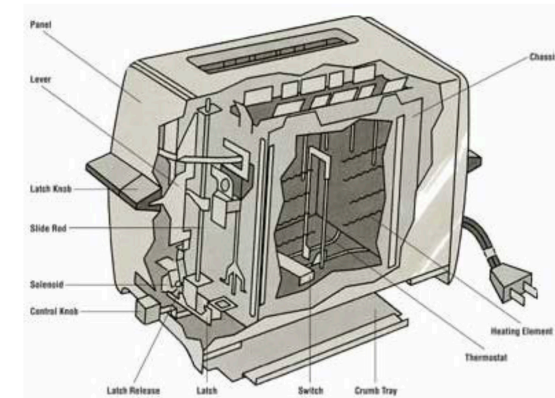
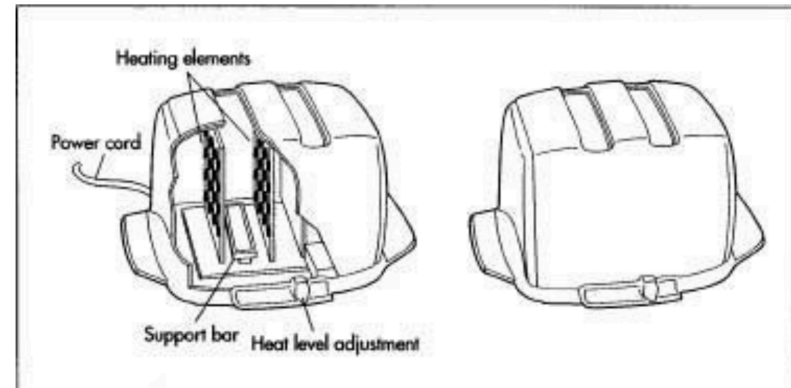
here is some secondary research I found out online

- 
- **Who invented the toaster?**
  - The first electric toaster was invented in 1893 by Alan Macmaster in Scotland. He called it the eclipse toaster and manufactured and marketed in Britton by the Crompton family.
  - **Function**
  - **A toaster** is an electric small object designed to toast various types of bread to radiant heat, browning the bread so it becomes toast. So once you put in your bread the timer will go off and you toast will eventually pop
  - **Who are the target users?**
  - In my opinion I think the target users are for all ages over around 10 years old. I think this because I would think that under 10 years old wouldn't know how to use it properly
- 



## Secondary research

- **Circuit**
- Most toaster use a circuit as a timer. A capacitor is charged and once a specific voltage is reached, the circuit cuts off and pops your toast
- **What is it made of**
- To make the toaster heat resistant plastic cases, flame retardants and smoke substances are added to the petroleum and coal compounds of plastic- if the toaster case is to be metal, aluminum is generally used. Mica is also used because this fire proof, flat sheet made of aluminosilicate minerals holds the nichrome wire
- **Mechanism**
- A simple circuit made up of transistors, resistors and capacitors turns on and supplies power to the electromagnet. The electromagnet attracts the piece of metal on the handle, holding the bread in the toaster. The simple circuit acts as a timer.





## Secondary research

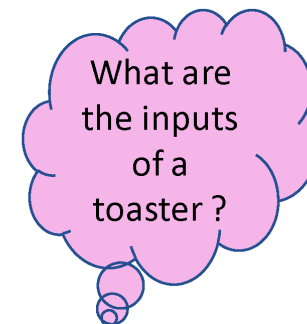
- **What happens when you press down the handle**
- Pushing the toaster lever down connects and starts a circuit. As heat begins to build up in the circuit the bimetallic strip of metal will start to bend until it no longer connects the circuit, which cut of the power and pops your toast out. The bimetallic strip is also used in a fire alarm circuit so when the smoke rises to the fire alarm the strip will eventually bend too much and hit the alarm off

- **Components**

- Heating element
- Spring
- Bread rack
- Heat sensor
- Timing mechanism
- Electromagnet
- Nuts
- Bolts

**Input:** bread

**Outputs:** toast

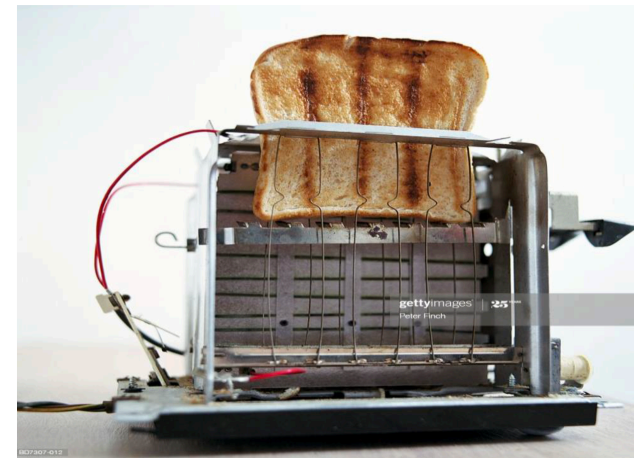
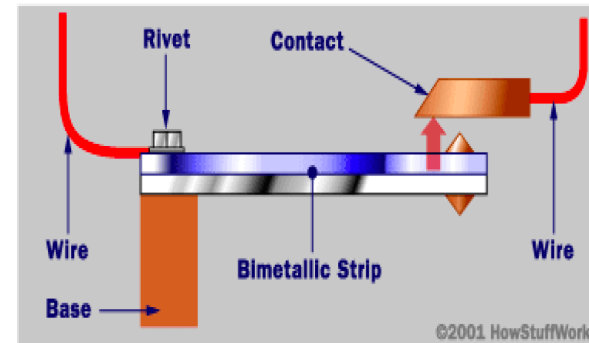


## The insides of a toaster

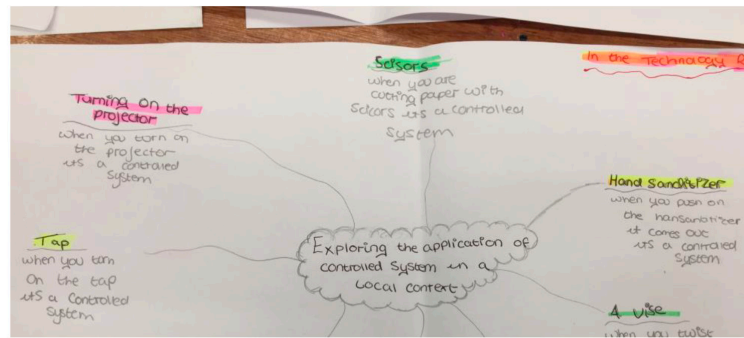
As you can see in the picture to the right, once you push down the lever it will stay down and start up the circuit. The heat will start to build up and then eventually the bimetallic strip will bend until it no longer connects the circuit, and your toast will pop up. If the lever on your toaster won't go down, then it won't toast you bread it will keep popping up until you fix it.

## What kind of heating unit does the toaster use?

Instead of using a thin bare wire (like the ones you can see inside your toaster) they use a different kind of heating unit called an element, which has the bare wires safely contained inside it. The element is the shiny curved piece of metal you can see at the bottom of an electric kettle.



## Primary research log



What Questions	Why Questions	How Questions
When Questions	Where Questions	Who Questions

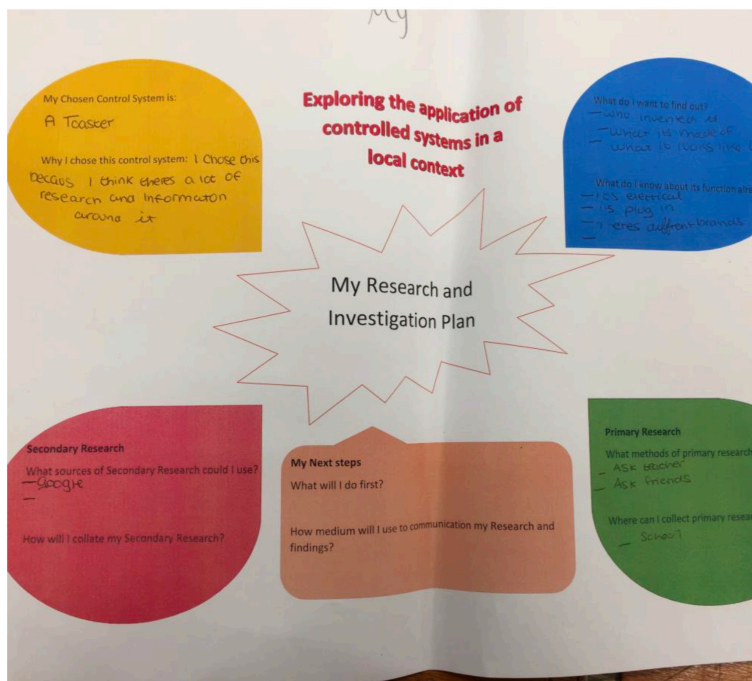
type of questions can you ask that will guide you with your research?

Control System:

the boxes with questions relevant to the system you are researching.

Examples:

Why does the control system work?  
Who uses the control system?  
Where is the control system?



As you can see here are some samples of my primary research, I have done for my CBA in school. In all of these pictures you can see the questions I asked throughout my CBA

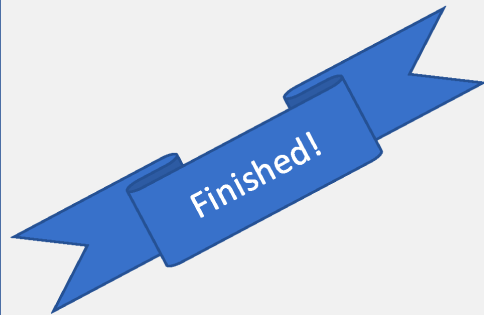
**Primary Research Log**  
Name: Madeline German

**Primary Research method:**  
I wrote down what I already know about the controlled system then I asked teachers what else they know about it.

**What did you find out in the research?**  
I found out how the toaster works and what it looks like and why it's that shape.

**How is this relevant to my CBA?**  
This is relevant to my CBA because it was my primary research about my controlled system and it showed I already knew alot about the item I picked. It is also relevant to my CBA because it gives me a lot of information I need for my CBA.

<b>Why</b> Why is it made? Why is it that shape? Why is there a plug? It is needed to have Biscuits, lunch and Bapper. It is that shape so you can fit 2-3 pieces of bread in it.	<b>Who</b> - who invented it? - who is it designed for?
<b>Where</b> - Where was it invented? Where is it used?	<b>When</b> - When was it invented? When do you use it?



## Overall evaluation

- Overall I picked this object because In my opinion I think it would be interesting to do.
- I found out a lot of information about the toaster and controlled systems.
- I have done a lot of secondary research and some primary research as you can see throughout my CBA
- I found out how the function and the mechanism works



## Teacher Annotations

Effective primary research was used and supported with the use of secondary research in relation to circuits and mechanism.

The research generated an in-depth analysis about the workings of a toaster and showed a very good understanding of the defined function of a toaster.

The work included a relevant and accurate conclusion.

The overall Classroom-Based Assessment was presented to a very high standard and included a range of images and diagrams which aided in communicating the findings.

## Overall Judgement

Above expectations

