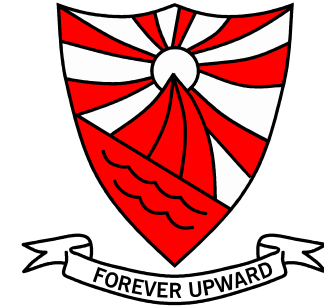
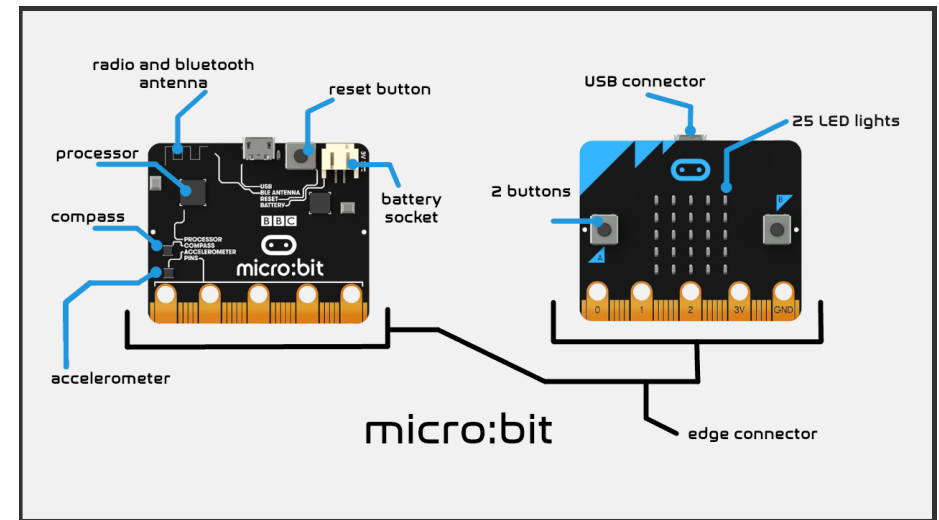


BALCATTÀ P.S.

CIRCUIT BREAKERS



2020



Our School: Balcatta Primary School

Balcatta Primary School is situated 10km north-west of Perth in the suburb of Balcatta. We cater for students in Kindergarten to Year 6 and are very proud of our heritage and multicultural population, representing approximately twenty different ethnic groups.



What we learnt about Western Power

I learnt that Western Power always has an emergency response team at the ready when you call 13 13 51.

- Phe

I learnt the safety rules that they use when around electricity and what they do every day to help the community, like street lights and power lines/poles.

- Kaavya

Western Power has enough power poles to go around the world twice

- Aariq

They know when a power pole falls because of a signal and a number of the poll is sent to them.

- Kayla

Western Power produces electricity to towns miles away from the power station and helps with any damaged wires or poles so the community doesn't get injured.

-Akshit

Street lights have a lot of sensors so they turn on by themselves when it gets dark and know if it has fallen or been crashed into

- Levi

Western Power installs a type of device in their power poles (accelerometer) that is able to detect when a certain pole has fallen, which enables Western Power to pinpoint exactly which pole has fallen.

- Cloud

When a power pole falls it sends a signal to a person called a "receiver" and it tells them that a power pole has fallen over so they send people out to fix it.

- Luke

I have learnt that Western Power has a lot of responsibilities all over the state of Western Australia and not just Perth

- Hung

What we learnt about Engineering

An engineer is a person that solves a problem, the person could be someone creative or someone who is arty. The problems they solve vary depending on each type of engineer, but they all solve a problem in one way or another.

- Phe

It's very hard at times and very easy at times engineering come in a lot of different things such as coding and knowing about power.

- Sienna

Engineering was that it is not always about building it also about safety and designing. Without safety the building wouldn't be able to actually be used.

- Akshit

Engineering solves problems that other people have. There are also a lot of types of engineering and they don't always work on buildings.

- Ibrahim

Learnt that engineering isn't just about electricity. It is also to do with cars, power lines, power poles and more. It is solving problems and making things work.

- Luke

We learnt that engineering is solving problems. There are many types of engineers like mechanical and electrical engineers. They don't only code they also build and design.

- Kaavya

An engineer is person that can fix, build and code machines for everyday usage. There are multiple types of engineers around the world that each specialise on different topics of machinery.

- Cloud

I learnt that engineering is hard work and does not only include building and designing but includes coding and computer work.

- Levi

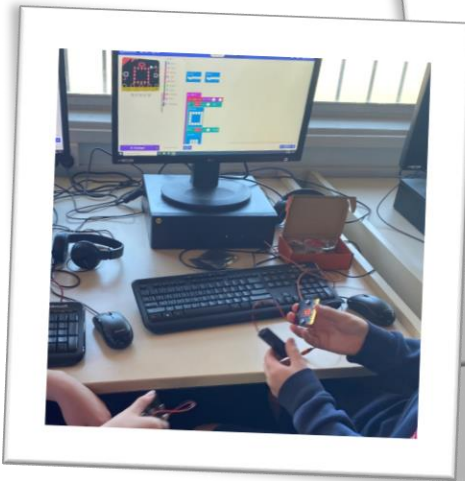
LESSONS

Code and Download

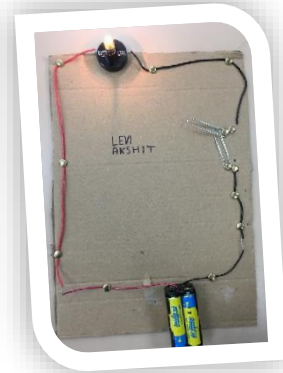
Developing essential skills for working with micro:bits

Rock - Paper - Scissors

Using the accelerometer and the screen to build a Rock Paper Scissors game that you can play with your friends!



Simple Circuit That's Found In A Torch



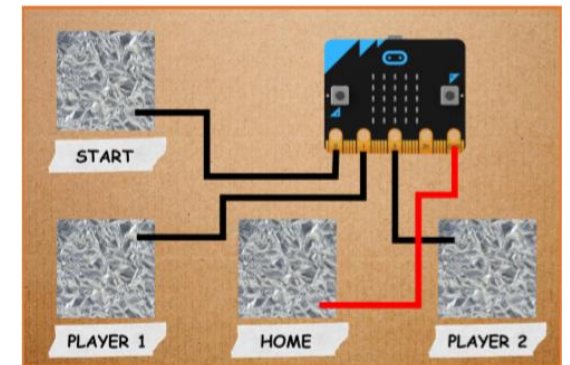
Reaction Times Game

Building a two player reaction time game that uses the fact that humans can conduct electricity.



Emergency Alarm Notifications

Western Power needs a way to know whenever an emergency has occurred. Using micro:bits to simulate sensors and receivers and send messages between multiple micro:bits.



Flashing LED lights Christmas Tree Lesson

The whole class made their own Light Up Christmas Tree!

- We needed to create a code that allowed us to turn the lights on and off
- The code needed to be timed, so that it would flash the different colours at different times
- When wiring up the LED lights we needed to make sure our positive and negative wires didn't touch, otherwise it would short circuit and not work.
- When wiring the LED lights we learnt about parallel circuits, so we could have multiple lights on the one power source flashing brightly.

```
on button A pressed
  if Lights On then
    set Lights On to 0
  else if not Lights On then
    set Lights On to 1

forever
  while Lights On
  do
    digital write pin P0 to 1
    pause (ms) 500
    digital write pin P0 to 0
    digital write pin P1 to 1
    pause (ms) 500
    digital write pin P1 to 0
    digital write pin P2 to 1
    pause (ms) 500
    digital write pin P2 to 0
```



Network of the Future: micro:town

Working together as a group, we used our knowledge of electronics and digital technologies to design and build a working scale model of a community, incorporating 3D models powered by micro:bits.



Network of the Future: micro:town

Wind and Solar Farm:

- Creating renewable energy for a better future

Flashing Signs:

- Display writing for shops and hospital

Lights:

- Lights in a circuit for houses
- Using an on and off switch

Ambulance Siren:

- Buzzer creating a siren when button A is pushed and turning off again when pushed again

Town Christmas Tree:

- Creating a code for the lights to flash at different times
- Making sure the led lights don't short circuit

Street Lights:

- Using a sensor for day and night

Railroad crossing gate:

- Micro Servo going up when A button is pushed and returning back down after a certain amount of time



Network of the Future: micro:town



Street Lights:

- Using a sensor for day and night
- Using parallel circuits, so lights are not dimmer

Draw Bridge:

- Micro Servo going up when A button is pushed and returning back down after a certain amount of time

Lights:

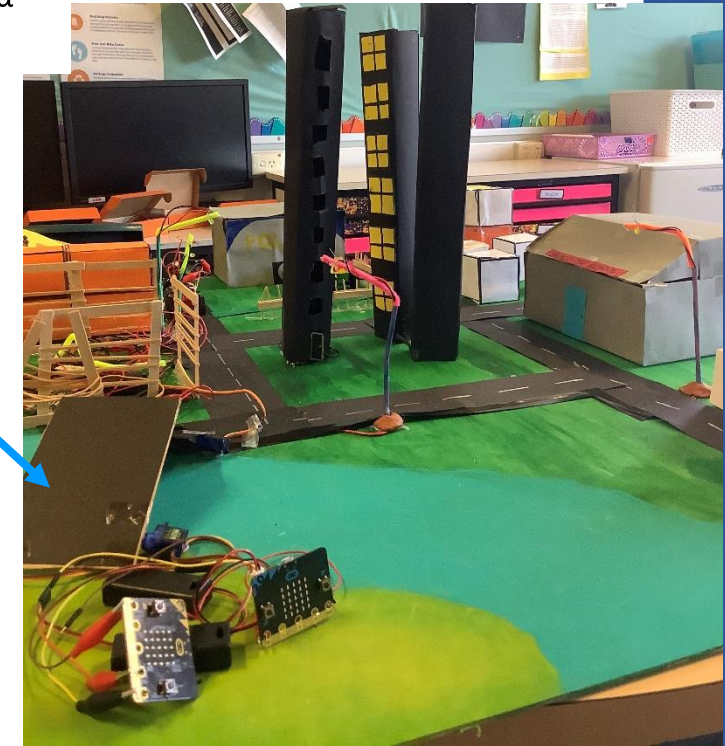
- Lights in a circuit for building
- Using an on and off switch

Flashing Signs:

- Pizza shop advertising on top of their building

Ambulance Siren:

- Buzzer creating a siren when button A is pushed and turning off again when pushed again



Traffic lights:

- Using a code that has a timer and automatically changes between colours

Meeting our Mentor: Simon

It was great fun when Simon came into visit us! We loved seeing all the different wires that Western Power use and trying on all the safety equipment.



What I found really interesting was that there are so many types of wires, some of them which are massive and carry lots of energy.
- Akshit



I found it interesting when Simon told us that when they work they have to wear gear that can be quite hot and they can't take it off on hot days until they finish working.
- Luke

The cables that are used by Western Power are very heavy and are very sturdy.- Phe

Circuit Breakers Reflection

What I Found Most Challenging:

Trying to get the micro servos working, we have to overcome this challenge

My Favourite Part:

When we were allowed to explore what was possible with the microbit and find new things on our own. - Phe

What I Found Most Challenging:

Making a Christmas tree with working lights but the codes weren't working so Miss McFee fixed it then we remade the tree

My Favourite Part:

Making little sculptures with Plasticine.
- Kayla

What I Found Most Challenging:

I found the street light hard because I tried everything I could but it still didn't work. When I asked the teacher for advice I realised that it was short circuiting.

My Favourite Part:

My favourite part was the traffic lights because they turned out really well and the design was neat.
-Kaavya

What I Found Most Challenging:

I found trying to make the drawbridge code the hardest because we thought it was going to be easy, but it wasn't, so we asked for help and then the code for the drawbridge worked.

- Hung

What I Found Most Challenging:

I found difficult was connecting streetlights together. I thought I could use multiple loads in one circuit, but it didn't work. So then I recreated the streetlight and created another circuit, but this time it was a parallel circuit and it worked

- Yashvi

What I Found Most Challenging:

I found that the Christmas tree was most challenging because it kept short circuiting so I had to space the wires out so they didn't short circuit

- Max

What I Found Most Challenging:

The most challenging part was trying to hide the Microbits and cords around the city to make it look nice. We overcame this by hot gluing the roads on top of the cords and we hid the Microbits in a substation.

My Favourite Part:

My favourite part was making the codes for the LEDs for the buildings. - Levi

What I Found Most Challenging:

The most challenging part of the steam was probably coding as I'm not the best at it or putting everything together.

My Favourite Part:

My favourite part of it was probably when we painted the board or how we had to set them up because I got to be creative. - Rojina

What I Found Most Challenging:

The thing I found difficult was connecting streetlights together. I thought I could use multiple loads in one circuit, but it didn't work. So, then I recreated the streetlight and created another circuit, but this time it was a parallel circuit and it worked

My Favourite Part:

My favourite part was helping find codes for the class.
-Aariq

What I Found Most Challenging:

What I really found challenging when doing this was that it was really hard to hide the wire since they were all around the city. So we just used black tape so it looked like it was under the road.

My Favourite Part:

My favourite part was when we made the traffic lights and glued them together with the glue gun. The coding for the traffic light interesting.
- Akshit

What I Found Most Challenging:

I found the coding part a bit challenging because it was a bit complicated to do the coding, but I got the hang of it and knew how to code properly.

My Favourite Part:

My favourite part was when Simon came in and we got to see what electricians use when they work like what they wear, what they use and what they do. - Luke

What I Found Most Challenging:

It was hard to get the servos to function properly so we could build a bridge for the city. I asked the others for help and after a while, we had finally fixed the servos.

My Favourite Part:

I liked making the Christmas tree using LED lights, whilst also creating the code to allow the LEDs to glow. - Cloud