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## GLOW

The GLOW light festival takes place in Eindhoven every year in November. Dozens of national and international light artists show their work in various places in the City of Light. This year GLOW will take place from November 11 to 18.

- Have you ever looked at a GLOW work of art?
- Which ones can you remember and why?
- What else can you tell us about GLOW?



## GLOW-

## The City makes GLOW

This year the children of Eindhoven will take over the Paterskerk in DomusDela. During GLOW they turn the walls into beautiful leaded windows with all kinds of different colorful self-portraits and flowers.

The children show who they are and invite everyone to enter. Inside they surprise all visitors with a sea of flowers.

In addition to a projection on the walls, there are also 3D flowers with a light in the heart of the flower.


## GLOW-

After GLOW, these flowers are offered to the residents of the city who were unable to visit the light festival.

Did you know that the Paterskerk has not been used as a church for a long time? It has become a meeting place where everyone is welcome and allowed to be and show who they are.

We dare YOU to show who you are during GLOW. Are you up for the challenge?


## GLOW-

## OPDRACHIT

Design a flower that gives light.
You design a flower with paper. You turn on an LED light in this flower. Your flower, together with more than 3000 other flowers, will form a sea of flowers during GLOW!

Design a unique flower and use your imagination!


## First we'll look at flowers.

## GLOW

## Petal

The petal of a flower is like the beautiful dress of a flower. They are the colorful, often soft leaves that you see on the outside of the flower. Think of the beautifully colored petals of a rose or a sunflower.
These leaves attract insects such as bees and butterflies. The petal helps the flower attract pollinators such as bees and butterflies so that they can transfer pollen and the flower can grow and make new seeds. The flower uses the petal to show off and show how beautiful it is.


## First we'll look at flowers.

## GLOW

## The Pistil

The pistil is like the treasure chest of a flower. It is the part that is in the center of the flower. The pistil has three main parts: the stigma, the style and the ovary.
The stigma is like the roof of the treasure chest and has a sticky part on top to catch the pollen.
The style is like the long handle of the treasury going up.
The ovary is like the treasure chest itself and contains the seeds of the flower.

The pistil helps the flower to receive pollen from other flowers and to make seeds.


## First we'll look at flowers.

## GLOW

## The Stamen

The stamen is like the wand of a flower. It is the long, thin rods that protrude from the center of the flower. At the end of each stamen are small grains, which are called pollen. Think of it as very small flower seeds.

The stamens help the flower to make pollen and send it to other flowers.


## First we'll look at flowers.

## GLOW

## The sepals and the flower base

The sepals of a flower are a protection of the flower. They are usually under the colored petals of the flower. The sepals are usually green and serve as a kind of shell for the flower before it opens. They protect the flower bud as it grows and develops.

The flower base of a flower is like the stage on which the whole flower rests.
It is the lower part of the flower, and all other parts, such as the sepals, petal, stamens and pistil, are attached to it.
The flower base also often contains nectar, a sweet liquid that insects such as bees love.


## First we'll look at flowers.

- What do you see?
- Which flower appeals to you most?
- What differences do you see?
- What will your flower look like?



## LED

## GLOW

An LED is a special type of light source that uses electricity to make light. It is like a very small light, but much more efficient and durable.

In an LED there are very small particles called electrons. These electrons love to jump around, and when we send electricity through the LED, the electrons start moving. When they move, they emit small pieces of light, which is what we see as the light from the LED!


LEDs come in different colors, because the electrons have different amounts of energy. Some LEDs have electrons with a lot of energy, and that gives us blue light. Others have electrons with less energy, and that gives us red light.


With these 3 colors you can make all the colors of the rainbow!


## LED

What makes LEDs extra cool is that they require very little electricity to work, so they're very energy efficient. They are used everywhere, such as in flashlights, on televisions, in cars and even in phones to help us see and light things up. They are an important part of modern lighting and technology, as they are more economical and environmentally friendly than older light sources such as incandescent bulbs.

So, in short; An LED works by using electricity to make small particles move, and when those particles move, we get light!

The LEDs that you will use in your flower alternate colors: only red, red and green, only green, green and blue, only blue, all colors, etc.
That will be a very cheerful and colorful whole!


## To work!

We have seen what a flower is made of. Now you will create your own flower.

## Stap 1:

You will spend 10 minutes coming up with as many flowers as possible.
Use your imagination (sketch phase)

## Stap 2:

Discuss the results in class and choose which flower you will develop.
Step 3:
Before we continue, learn a little more about the technique and how your flower will give light!


## To work!



Fold the cardboard flower base. You can choose a large or small flower base. You can also choose whether to overlap 1 or 2 areas. Make sure that the LED will still fit through the opening. Glue the flowerbase. Press firmly or clamp with a clothespin. Let it dry and think about which side of the flower base will be the top of your flower.

## To work!



Wire bending. Bend the balck wire about 5 cm from the top to create a kink. This will be the stem of your flower. Hold the red-black connecting wire with the holes side against the black wire and fasten with the cable tie. Tighten the cable tie firmly so that the connection remains in place. Make sure that the end of the cable tie is opposite the wire.

## To work!



Connect LED. The LED has a long and short leg. The long leg must be inserted into the red connecting wire. The short leg should be in the black. Hold the LED by the legs and gently insert it into the connecting wire.

## To work!



Fasten flower base. Place the flower base over the LED. Determine the top and bottom of your flower yourself. (the opposite of what you see in these pictures is also possible)
If all goes well, it fits exactly. If it doesn't work out well, you can bend the wire a bit more. Stick a piece of adhesive tape over the bent piece of black wire and over the protruding part of the cable tie. Make sure that the LED can still be seen.

## To work!



LED testing. Test the LED by inserting the other side of the connecting wire into the breadboard on the wooden plate. The common thread goes in the red side. The black thread goes into the blue side.

If the LED only gives a little bit of light, it may be that the wires or the legs of the LED are not properly connected.

## To work!



Flower designs. Look at the flower sketches you've made. Which parts of the flower will you make?

Tip: You fold a white A4 paper three times in half. When you cut a petal out of it, you immediately have eight of the same petals.

## To work!



Stick all parts of the flower on the flower base.
Do not make your flower too large or too heavy otherwise it will not remain on the stem.

## To work!



Put your flower in the wooden plate. Start by inserting the flowers at the side furthest from the breadboard.
Insert the red wire into the red connector of the breadboard and the black wire into the blue connector of the breadboard.
If the light becomes weaker after you insert your flower, then your flower is not properly connected.

## To work!



Make a beautiful composition together with your classmates. You can bend the stem of your flower, so that the flowers have different heights and all the flowers stand out nicely.

Make sure that all flowers give light.


