REPUBLIC OF ANGOLA
DODET ENGLISH SCHOOL
VOCATIONAL TRAINING CENTRE

ENGLISH FINAL WORK

THEME:

ELECTRICITY

FULL NAME: FILIPE LUNFUANKENDA

COURSE: ENGLISH

CLASSROOM: L

Instructor

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INTRODUCTION

Electricity is the name given to a set of phenomena that occurs thanks to the imbalance or movement of electric charges, an inherent property of protons and electrons as well as electrically charged bodies. It is obtained through equipments which can generate mechanical energy (by movement) or thermodynamics (by heat).

Electricity is actually the area of physics that studies phenomena associated with electrical charges. Some examples of electricity are natural phenomena caused by lightning, static electricity, and electrical currents in electrical wires. It is the movement, usually of electrons, produced from two points of a conductor. In general terms, electricity studies the phenomena caused by the work of electrical charges.

Electricity is present in virtually everything we do in our daily lives. Heaters, air conditioners, light bulbs, showers, and electric irons are some of the examples of everyday appliances that need electricity to function.

A body says it is electrified when it acquires properties of attracting light bodies, that is, it gains electric charge. For example, if we rub a plastic ballpoint pen or plastic tube with a wool cloth, it gains the properties of attracting bits of paper, getting electrified.

In our daily lives, we talk about the electric current, its production and transport by means of conductors in order to produce electric energy for our benefit. The word *current* means “movement of anything” e.g. the current of water in the pipes, oil in the pipes, ocean currents (or rivers) and so on.

In bodies as in conductors there are particles in chaotic movement (disordered). Under the action of the electric field created in the conductor, the charged particles move and move in the direction of the action exerted by the electric forces and the electric current will be produced.

Electrical current is the orderly and directed movement of charged particles and is obtained through sources such as galvanic elements and accumulators.

HISTORY OF ELECTRICITY

Electricity was discovered by the "father of science", the Greek philosopher **Thales of Miletus** (625 BC – 547 BC). From *amber* (in Greek *Élektron*) emerged the name electricity.

The finding that would revolutionize the world was discovered by chance, when the thinker rubbed a substance called **amber** with sheepskin and observed that from there small objects moved attracted as by the effect of a **magnet**.

Subsequently, studies in this field have been initiated and expanded for many years since the 17th century. Among other researchers, **Otto Von Guericke** in 1672 invents an electric charge machine where a sulfur sphere rotated constantly rubbing itself on dry land. Half a century later, **Stephen Gray** examines the difference in the behavior of electrical conductors and insulators.

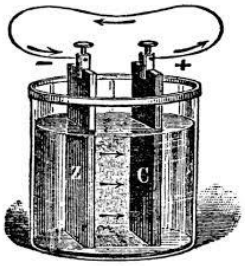
During the 18th century, electrical machines evolved to a rotating glass disc that was rubbed into a suitable insulator. An important discovery was the **condenser**, independently discovered by **Ewald George** and **Petrus Musschenbroek**. The condenser consisted of an electrical charge storage machine. They were two conductive bodies separated by a slender insulator.

Benjamin Franklin invented lightning rods in the 18th century, he said that the electrifying of two frictionless bodies was the lack of one of the two types of electricity in one of the bodies. These two types of electricity were called *resinous* and *vitreous* electricity. Today it is known that electrification occurs due to lack or excess electrons in bodies.

In the 19th century, **Luigi Galvani** invented the voltaic cell, discovering that electrical potentials produced contractions in the leg of a dead frog.

The discovery of electrical potentials was attributed by **Alessandro Volta** who invented voltaica. It consisted of a series of altered *Copper* and *Zinc* discs, separated by pieces of cardboard soaked in salt water or sulfuric acid. With this invention, a stable electrical current source was obtained for the first time. As a result, investigations into the electric current have increased more and more.

Experiments with the decomposition of water into one Oxygen atom and two Hydrogen atoms (H_2O) have already begun. In 1802, **Humphry Davy** electronically separated sodium and potassium.



Even with the fame of the Volta batteries, more efficient batteries have been created. **John Frederic Daniell** invented them in 1836 around the same time as Georges Leclanché's batteries and Raymond Louis Gaston Planté's rechargeable battery.

It was in 1820 when the Danish physicist **Hans Christian Örsted** discovered the relationship between electricity and magnetism when he saw that a needle of compass placed next to a conductive wire deviated from its position when the electric current passed, thus verifying that the behavior of the magnetic needle was the same in the approximation of the electric current and in the approximation of a magnet, then concluding that the electric current creates a magnetic field around it.

In 1831, **Michael Faraday** discovered that the variation in intensity in electrical current travelling through a closed circuit induces a current in a nearby coil. An induced current is also observed when introducing a magnet into this coil.

This magnetic induction had an immediate application in the generation of electrical currents. A coil next to a spinning magnet is an example of an alternating current generator. The generators were improving until they became the main sources of electricity supply used primarily in lighting.

In 1875, a generator was installed in Gare du Nord, Paris, to turn on the station's arc lamps. Steam machines were made to move the generators, and stimulating the invention of steam turbines and turbines for the use of hydroelectric energy. The first hydroelectric plant was installed in 1886 along Niagara Falls.

To distribute energy, iron conductors were initially created, then copper ones and finally, in 1850, the wires covered by an insulating layer of vulcanized gutta-percha, or a layer of cloth, were already manufactured.

The publication of **James Clerk Maxwell**'s 1873 treatise on electricity and magnetism represents a huge advance in the study of electromagnetism. Light comes to be understood as an electromagnetic wave, a wave that consists of electric and magnetic fields perpendicular to the direction of its propagation.

Heinrich Hertz in his experiments carried out from 1885, studies the properties of electromagnetic waves generated by an induction coil. With Hertz's work, he demonstrates that radio waves and light waves are both electromagnetic waves. Thus confirming Maxwell's theories, radio waves and light waves differ only in their frequency.

Hertz did not explore the practical possibilities opened up by his experiences. More than tem years passed until Guglielmo Marconi used the radio waves in his wireless telegraph. The first radio message is transmitted across the Atlantic in 1901.

One of the features that most marked the development of electricity was the invention of the **lamp** in 1879.

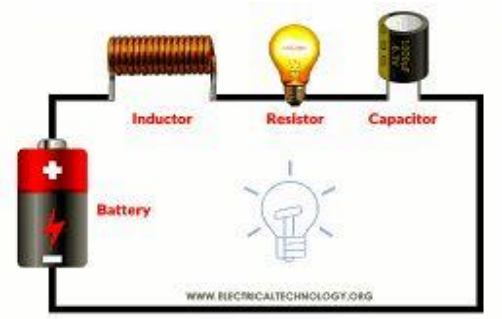
We can say that the lamp arose or was the result of the need for luminosity particularly during the night. A long time ago several scientists had tried to make the light bulb viable, the great challenge was to find a filament that would not burn when passing electricity.

American scientist **Thomas Edison** (after more than a thousand attempts) used a vacuum glass bulb to increase combustion and inserted a coal filament into it. The light that went on kept it on for about 45 hours.

After that, he proceeded the studies of the other scientists, creating his masterpiece – the incandescent lamp of Thomas Edison.

Another great invention was the electric circuit. Alessandro Volta invented the first electric circuit in 1800, and it is still in using today. When Volta discovered that he could generate a steady flow of electricity by connecting bowls of salt solution together with metal strips, it was a game changer.

The **electric circuit** is the path to the electric current, it is the physical system through which there is transfer of energy and transport of electric charges. The electrical circuit is the interconnection between the sources of galvanic elements, switches, batteries, generators, resistors, inductors, capacitors, diodes, transmission lines, voltage sources and others.



The phenomena caused by the electric current in a circuit are called the effects of the electric current, and we can feel its presence. The effects of electric current have practical applications in our daily lives and can be:

- **Mechanical**;
- **Thermal** (heating of objects connected to current e.g. irons or hair dryers);
- **Chemical** (used in industries to obtain aluminum, copper and other metals);
- **Magnetic** (the bell, cell phone waves, X-rays, radio waves, magnetic cards, data transmission antennas, microwaves, among others).

TYPES OF ELECTRICITY

There are two main types of electricity:

- **Static Electricity** – generated by rubbing two or more objects causing to build up friction.
- **Current Electricity** – generated by the flow of electrical charge through a conductor across an electrical field.

Static electricity is the process of concentrating electrical charges at rest that, from the contact or approach with another body frictions and, transferring charge to this body, manifests itself.

An example of this are the explosions that can happen with flammable materials. Static electricity is the object of study of the electrostatic area.

The concept of electricity is very broad and is divided into three parts as the principal areas of study, each one with an aspect of electricity:

1. **Electrostatic**: it is dedicated to the behavior of electrical charges without movement, or in a resting state.
2. **Electrodynamics**: as its name implies, it is dynamic, that is, it studies the resulting behavior of electric charges in motion.
3. **Electromagnetism**: studies the relationship of electricity with the ability to attract and repel poles.

Electricity and Magnetism are both phenomena that relate to each other. Since magnetism has the ability to attract bodies, electricity, in turn, produces a magnetic effect to the extent that it is subject to conductors that allow its movement.

Electromagnetism deals with the relationship established between electricity and magnetism.

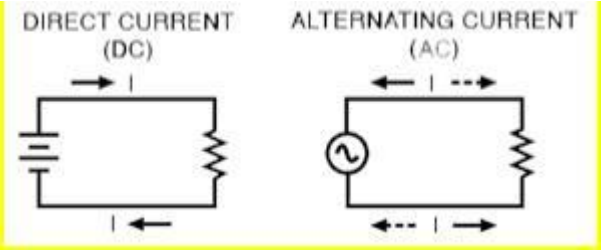
There are two types of electrical charges: *positive* and *negative*. **Electrical charges** are a property of matter responsible for the forces of attraction or repulsion between two electrified bodies. We know that all matter consists of very small particles called **atoms**, which have a nucleus with a positive charge where the **protons** (+) are, and an electronic cloud (envelope) with negative charge **electrons** (-).

There are two kinds of current electricity: **alternating current** (AC) and **direct current** (DC). The main difference between AC and DC lies in the direction in which the electrons flow.

In **Direct current** (DC) the electric charge (current) only flows in one direction. The major use of DC is to supply power to electrical devices and also to charge batteries. DC has the combination of a plus and a minus sign, a dotted line or a straight line. E.g: *mobile batteries or phones, the laptop battery, solar panels, flashlights, flat-screen, television and electric vehicles*.

On the other hand, in **Alternating current** (AC) the electric charge flow changes its direction periodically. An alternating current has a wide advantage over direct current as AC is able to transmit power over large distances without great loss of energy.

AC is the most commonly used and most preferred electric power for *household equipment, offices, buildings, etc*. It was first tested and based on the principles of Michael Faraday in 1832 using a Dynamo Electric Generator. AC is used in power houses and buildings because generating and transporting AC across long distances is relatively easy. AC is capable of powering electric motors which are used in refrigerators, washing machines, etc.



ADVANTAGES OF ELECTRICITY

Electricity is a type of energy that consists of the movement of electrons between two points when there is a potential difference between them, marking it possible to generate what is know as an electric current.

There are many advantages of electricity use in which we can mention:

- **Accessible and easy to produce** – electricity can be generated from a wide variety of energy sources, both renewable and non-renewable;
- **Manageable and easy to transport** – it can be transported over long distances and on a large scale through transmission and distribution network;
- **Versatile and easy to transform** – it can also be transformed into other types of energy such as light (lightning a light bulb), heat (lightning an electric radiator), or motion (using an engine) as well as being transformed from direct current to alternating or vice versa;
- It is a clean, cheap, safe and convenient source of energy;
- Lower maintenance cost;
- More efficient;
- No tailpipe emission;
- It doesn't require as many employees;
- Reduces greenhouse emission;
- Makes barely any pollution compare to other ways of creating or generating electricity;
- Hydroelectric station are inexpensive to operate;
- Hydroelectricity produces no gas emission;
- A station can operate and run for long periods of time.

CONSEQUENCES OF ELECTRICITY

Nevertheless, there are some harmful things that electricity may cause:

- **Varying impacts** – power companies use a variety of processes to creat electricity, and not all processes affect the environment in the same way. Coal is a much more environmentally problematic source energy than solar power, which has minimal environmental effects. Other form that might affect include natural gas, hydroelectric power plants, nuclear energy and oil.
- **Green house gases** – most mechanisms release carbon dioxide and other gases which absorb and emit radiation into Earth's atmosphere. It is believed that this contributes to an unnatural degree of global warming that has the potential to affect the global climate, destroy animal populations and change local ecosystems.
- **Pollution and Acid rain** – almost all forms of electricity generate waste. For example, natural gases release carbon dioxide and nitrogen oxide. Earth's atmosphere traps these gases, leading to air pollution and smog. When smog containing sulfur dioxide and nitrogen oxide os released into atmosphere, it can contaminate precipitation and rain back down as acid rain.
- **Waste Disposal Challenges**
- **Injuries to wildlife**

harms caused by acid rains and pollution

greenhouse gases

CONCLUSION

Electricity is the flow of electrical power or charge. It is a secondary energy source which means that we get it from the conversion of other sources of energy, like coal, natural gas, oil, nuclear power and other natural sources, which are called primary sources.

It is used for lightning rooms or illuminated places, working fans and domestic appliances like using electric stoves, electronic devices and more. In factories, large machines are worked with the help of electricity. Essential items like food, cloth, paper and many other things are the product of electricity. All these **provide comfort to people**.

In summary, we can say that *electricity brings forth developmemt*. It is enough to underline the consequences that cause the lack of electricity in our cities, homes or power stations, even for a short period, to realize the importance and necessity of its existence.

In addition, nowadays life would be difficult if there was no electricity. For example, in developed countries even small communities depend on this form of energy, services and means of production such as telegraphs, telephones, water distribution teams, teams for research and treatment of illnesses or diseases, machines, industries and so on need it. Besides, without electricity there would be no radio, television, computer and other electronic devices.

It has been continuing to be a determining factor on which the various sectors of science, production and services of all kinds that the population needs in their daily lives depend.

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AUTOBIOGRAPHY

My name is Filipe Lunfuankenda and I am 16 years old. I'm an Angolan and I was born in Luanda. My dwelling is in Golf 1 close to a supermarket named Prelex and I have lived here since my childhood. I live with my family who are my two siblings (a brother and a sister), my cousin and my mother although I have other siblings on the part of father who no longer live with me. I am the youngest among my siblings.

My parents and most of my relatives are from Uige, some of them came from Congo and they all can speak Lingala and Kikongo. However, because of being born in any of these places, me and my siblings as well as all my cousins and nephews or nieces have an unlike mother tongue which is Portuguese. My father's name is Afonso Lunfuankenda Landa and my mother's name is Senga Pelagi and they are both from Uige, which means that they are Bakongo.

My father is already deceased and he was a journalist for Radio Nacional de Angola (RNA), he died in 2019 of diabetic disease that provoked some wounds. My mother is a saleswomam and a dealer. She is a very hardworking womam and I am so grateful for everything she has been doing to provide my support, studies and efforts, even though she can have her flaws she is very important to me. My father also contributed, while he was alive he always cared about his children and hardly missed anything at home, always supporting us in our education and safety.

I studied from initiation to ninth grade at Ndofula College in Palanca neighbourhood and I can say that I could please all the teachers I met there, being able to show and develop my intelligence, knowledge, capabilities and get good grades as well.

In this moment, I study in high school at Alda Lara in Maianga and my course is Electronic and Telecommunications because I like spending time doing or studying things like Computer Science, Entrepreneurship, Mathematics, Physics, Electronic, Languages and so on. That is why I love reading, writing, studying, playing guitar and piano, doing physical exercises, watching and playing football games, playing chess, resting and attending to the things in which I appreciate. I know my stuffs when it comes to Computer, mathematics, physics, telecommunications, some languages, football, financial education, some means of communications, electrcicity and chess.

I chose to learn English because I have always been interested in learning languages this is why I want to be a polyglot. Desiring to be a polyglot, I decided to learn English firs even though my favorite language is French and I have got some notions. However, I like speaking English and like English accent very much, reason why I wanted to learn it. And my new goal now is to study more and more things about English grammar and sound like a native speaker.

I have been doing many things to improve my English development such as reading (essentially English books and dictionaries), watching videos and series, listening to music and to other people who speak English fluently and the most important key that I have done is to practise. I can also speak a little bit Germany and Italian.

That is all I have to say about myself and I hope you are satisfied with it.