**CHAPTER TWO**

**2.0 LITERATURE REVIEW**

**2.1 Historical view of Electricity**

The discovery of electricity has improved our lives greatly; without it, it would be difficult to picture what life would be. These discoveries started back in 900 BC, when Magnus walks across a field of black stones which pull the iron nails out of his sandals. This region becomes known as Magnesia. (Uleth , 2008). In 1600, William Gilbert discovers that the earth is a giant magnet explaining how compasses work and He also discusses static electricity and later invented the idea of an electric fluid which is liberated by rubbing.

In 1729, Stephen Gray shows that electricity doesn’t have to be made in place by rubbing but can be transferred from place to place with conducting wires, where He also shows that the charge on electrified objects resides on their surfaces. And in 1733, Charles Francois du Fay discovers that electricity comes in two kinds which he called *resinous(-)* and *vitreous(+)*.(Ulet , 2008). By 1747, Benjamin Franklin invents the theory of one-fluid electricity in which one of Nollet’s fluids exists and the other is just the absence of the first and He proposes the principle of conservation of charge and calls the fluid that exists and flows “positive”. This educated gues ensures that undergraduates will always be confused about the direction of flow of current flow. He also discovers that electricity can act at a distance in situations where fluid flow makes no sense.

However, according to Uleth (2008), Sir William Watson uses an electrostatic machine and a vacuum pump to make the first glowing discharge tube in 1748.His glass vessel is three feet and three inches in diameter; the first fluorescent light bulb and by 1759, Francis Ulrich Theodore Aepinus shows that electrical effects are combination of fluid flow confined to matter and action at a distance. He also discovers charging by induction. In 1775, Henry Cavendish invents the idea of capacitance and resistance (the latter without any way of measuring current other than the level of personal discomfort). But being indifferent to fame he is content to wait for his work to be published by Lord Kelvin In 1879.

In 1780, Luigi Galvani carried out an experiment causes ded frog to twitch with static electricity, and then he discovers that the same twitching can be caused by contact with dissimilar metals. His followers invent another invisible fluid, that of “animal electricity”, to describe this effect. Later in 1785, Charles Augustin Coulomb uses a torsion balance to verify that the electric force law is Inverse Square. He also proposes a combined fluid/action-at-a-distance theory with two conducting fluids instead of one.

Furthermore, in 1793, Alessandro Volta makes the forst batteries. He also argues that animal electricity is just ordinary electricity flowing through the frog legs. In 1800, he develops the Voltaic pile (dissimilar metals separated by wet cardboard) which greatly increases the magnitude of the effect. Later in 1807- Humphrey Davy shows that the essential element of Volta’s pile is chemical action since pure water gives no effect. He argues that chemical effects are electrical in nature. (Uleth, 2008)

Moreover, in 1812, Michael Faraday, a bookbinder’s apprentice, writes to Sir Humphrey Davy asking for a job as a scientist assistant. Davy interviews Faraday and finds out that he has educated himself by reading the books he was supposed to be binding. He gets the job. 1820- Hans Christian Oersted, during a public lecture, discovers that electric current in a wire causes a compass needle to deflect, also in that same year Andrie Marie Ampere, one week after hearing of Oersted’s discovery, shows that parallel currents is carried throughout the volume of a conductor in 1821 by Humphrey Davy and he establishes that

*Resistance = Length/Area*

for long wires. He also discovers that resistance is increased as the temperature rises. According to Uleth (2008), Faraday discovers self inductance in 1834, and by 1841, James Prescott Joule shows that the energy is conserved in electrical circuits involving current flow, thermal heating, and chemical transformations. By 1865 Maxwell summaries the work of many but most notably Faraday, Ampere, Biot, Savard in what has become known as Maxwell Equations and complete description of electromagnetism. It is now widely accepted that light is an electromagnetic wave.

Likewise, in 1881, Helmholtz, in a lecture in London, pointed out that the idea of charged particles in atoms can be consistent with Maxwell’s and Faraday’s ideas, helping to pave the way for modern picture of particles and fields interacting instead of thinking about everything as a disturbance of the anther, as it was popular after Maxwell (Uleth, 2008)

**2.2 MERITS OF THE DEVELOPED POWERSOFT PACKAGE**

The importance aspect of computer programming in physics is majorly in terms of making electricity less formidable to student with limited Mathematical skills. These have been achieved through the development of this package using Microsoft Visual basic.NET 2010 due to its simplicity and easy accessibility. Some others advantages are discussed below;

* The introduction of this software could takes direct advantage of ability to the human mind to process and remember visual information as well as of interactive key learning and flexibility
* This will encourage student to explore and interact with the system by observing the changing parameter and their output results.
* Its serves as a great potential to enhance student achievement academically, when it is appropriately used as a part of a coherent education approach
* The software package provides a quick approach to formulas and the respective unit of measurement that is SI unit
* The nature of the software output result will facilitate further data processing and analysis for practical purposes
* The modeling of computer programming tools can also help students to understand equation as physical relationship among quantities, thus helps in visualizing student thinking ability
* Easy accessibility of the Interface of VB.NET 2010 has helped in proper separation of the defined models from their respective implementation, thereby preventing post-implementation changes to design from breaking down application codes compared with other programming language like C++, java e.t.c (ww.altrhnology.com)