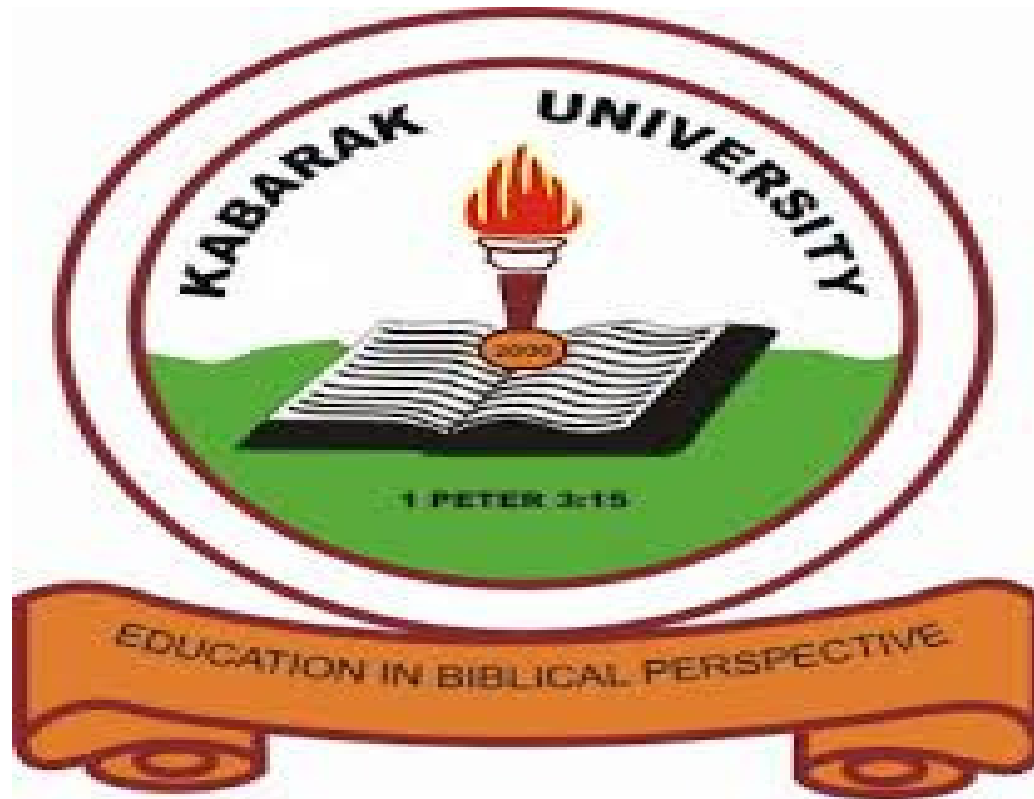


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**5<sup>th</sup> ANNUAL INTERNATIONAL CONFERENCE.**  
**STUDENT INNOVATION EXHIBITION 2015**

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**THEME: RESEARCH, INNOVATION FOR SUSTAINABLE  
DEVELOPMENT AND A SECURE WORLD.**



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## **DECLARATION:**

I hereby declare that this research proposal is my original work and has not previously been presented in whole or in part, to any University, College or any institution of higher learning other than Kabarak University for academic award.

**NAME:** Wabwire .O. Collins

**Signature:.....**

**Date:.....**



## CONT...

I wish to confirm that this research proposal write up enhanced with innovation was done under my supervision and has my approval to be presented for examination as per Kabarak University regulations.

**Supervisor:** Mr. Michura

**Signature**.....

**Date**:.....



## ACKNOWLEDGEMENT:

We wish to give glory, honour and praise to God Almighty for seeing us through this process and making this achievement a possible and reality. More, so our sincere thanks and gratitude to our support Dean, School of Business Mr.Gathii and his team in coordination with the Environmental Science department lecturers particularly Mr Michura for their material and moral support, the entire subordinate staff and students fraternity for enabling us to come up with this project. Not forgetting our family for believing in us for their support whenever indebted and the entire Kabarak University fraternity for giving us an opportunity to conduct this research.



## ABSTRACT:

Our major aim in this project is to produce cheap water heaters that can be used to boil water thus mainly destroying the micro-organisms that can be dangerous to human health.



## **MODE OF PRESENTATION:**

1. Verbal and alternate method.
2. Demonstration.
3. Use of projector.
4. Use of a chart.

## **OBJECTIVES:**

1. To sustain utilization of available resources.
2. To reduce the rate of unemployment.
3. To make cheap electrical heater.
4. To make electrical heater from locally available materials.
5. To generate income to low income earners hence economic recovery thus research, innovation for sustainable development and a secure world.





# CHAPTER ONE:

## 1.0 BACKGROUND INFORMATION:

One's of the man's activity is the manufacturing of electric heaters. Due to the heating effect of electric current, physicians are able to make water heaters that simplify work and save energy when using firewood and other sources. Heaters can be used to heat water to eliminate germs from it and almost all of them use electric current.



# 1.1.LOGICAL SEQUENCE OF IDEAS:

## 1.2 PROBLEM:

-Is it possible to produce heat from electrical current and use it heat water?

## 1.3 HYPOTHESIS:

-Yes, since any substance that is a good conductor when passed through by current for a given period of time acquires heat.

## 1.4THEORY:

-Electric current has heating effect that is directly proportionally to time, potential difference and current passing through a conductor.



## 2.0 CHAPTER TWO: DEVELOPMENT OF THE THEME: STATEMENT OF THE ORIGINALITY

Currently, the third world countries are facing an indiscriminate rise in the cost of electricity. It is also propagated that the resources like time and energy are wasted.

Presently, the heaters propagations have high costs thus the local citizens find it difficult to afford, in turn embarking on the use of firewood and charcoal hence causing deforestation, desertification and aridity. This finally leads to depletion of resources hence is lowering the economy of Kenya.

Time and sequence after floods have occurred, water borne diseases spread among the nearby people. This is because of the consumption of the contaminated water. Due to these effects, I as a young scientist as well as economists decided to come up with a better method of eliminating the germs from water. A simple WAPE water heater can easily heat water and hence reducing the spread of the diseases.



# **CHAPTER THREE:**

## **3.0. METHODOLOGY:**

This chapter describes the methodological procedures and steps that will be used in conducting this project, the tools and instruments for gathering the data and the methods of measurements and analysis.

### **3.1. APPARATUS:**

- 2 good conductor plates.
- Connecting wires.
- Thermometer
- Small piece of wood and a stick.
- Rubber bands
- Plastic bowl
- Water source
- A hammer



## **3.1.2 PROCEDURE:**

1. Hit the plates using a hammer to flatter them.
2. Lay the flattened plates in between the piece of wood.
3. Cross the small stick in between the two plates. This makes the plates not to be in contact.
4. Connect the wires to the two plates where one can act as the anode and the other as the cathode.
5. Tighten the apparatus using the rubber band taking care that the wires or the plates do not come to contact.
6. Put the plates in a cup of water then insert the plug in the socket and switch on the current.
7. Note the temperature change using the thermometer.

## **3.1.3 OBSERVATION:**

It is observed that within a period of time, the temperature on the thermometer starts to rise. On further heating, the water starts to boil. The duration taken by the water to boil depends on the surface area of the plates and the volume of water being heated.



## **3.2 PARAMETERS:**

- 1.The plates should be immersed in water throughout the heating process.
- 2.They should be broad to provide large surface area.
- 3.The plates used should be good conductors.

### **3.2.1.EFFECT OF CHANGE OF PARAMETERS:**

When the plates are not broad or not fully/totally immersed in water, there is no observation that will be notified. Good conductor plates will reduce the time taken to heat the water.

### **3.2.2.CONSTRAINTS:**

While heating water, one can easily be shocked by the plates if not observable.

### **3.3.ASSUMPTION/PRECAUTION:**

Make sure the plates do not touch each and that the bowl must be made out of poor conductor to avoid electric shock.



### **3.4.EMERGING ISSUES:**

My project tries to solve emerging issues like;

.High national expenditure.

.Disease outbreaks.

.Unemployment.

### **3.5.APPLICATION:**

The heater can be used at home for boiling water.



## **3.6.MERITS:**

- 1.It is cheap.
- 2.Leads to self-employment.
- 3.Requires little skills to make and use.
- 4.Materials used are locally available.
5. It leads to the growth of jua kali sectors.
- 6.It raises the standards of living since those working in the jua kali sectors can generate income.

### **3.6.1.DEMERITS:**

- 1.It is time consuming.
- 2.Requires knowledge in use of electrical appliances.
- 3.One can easily be electrocuted if not observable.





## 3.7.DATA ANALYSIS:

### PEWA'S WATER HEATER:

-It is made from locally available materials such as wood.

-Price: ksh.50.00

### COMMERCIAL WATER HEATER:

-Expensive materials used such as plastics for insulation.

-Price: ksh.300.00



### 3.8.CONCLUSION:

From the data analysis, we can conclude that the cost incurred in PEWA's water heater system is less compared to that of a commercial water heater. This ascertains to as that since it requires fewer funds, one can easily be self employed in the making of water heaters thus generating income to low-income earners and thus helping in the recovery of the economy thus Research, Innovation for sustainable Development and a secure World.



## **RECOMMENDATION:**

Our project can be handy and useful to the world societies hence we have reservation whatsoever recommending that the government and higher institution to consider the project for economic improvement hence recovery of our economy thus research, innovation for sustainable and a secure world.

## **COMMENDATION:**

We therefore, thank our honorable judges for being patient to listen and analyze our project.



## REFERANCE:

Taffel Alexander; PHYSICS 1986; Allyn and Bacon  
Press page 477-478

