**Chapter I: The Problem and its Setting**

**Introduction**: This is the Investigatory Project proposal of Group 5 of 10-Matapat: the homemade battery. In this project, we will know the structure of a battery and how it functions, and how we will be able to increase its abilities to make it stronger. It is stated that a battery is a device composed of one or more electrochemical cells with external connections that are used to power electrical appliances and devices such as flashlights, smartphones, and electric cars.

**Statement of the Problem**: At home, there are times that the batteries we use may run out of energy fast whenever we need them. In these situations, batteries are needed to give power and allow certain electrical appliances to function. The current prices of store-bought batteries are increasing, only adding up to the reason of this proposal to be able to reuse our old batteries. This proposal allows us to make our own homemade batteries for our use.

**Hypothesis**: Can the homemade batteries that we make be rechargeable and last the same or even longer than usual store-bought batteries?

**Scope and Delimitation**: In this study, the aspects that are being analyzed are the capabilities and limitations of energy in a battery, and how this can be compared to a normal store-bought battery. The limitations that were observed in this project was the fact that we weren’t able to test this study in a laboratory.

**Definition of Terms**:

***Old discarded AA sized batteries***: This type of battery is standard in size, and a single cell cylindrical dry battery. AA batteries are commonly used for portable electronic gadgets. An AA battery consists of a single electrochemical cell that may be either a disposable battery or a rechargeable battery. In this context, the battery has to be old and discarded.

***Alum crystal***: These are alum (class of chemical compounds, also used as an acidic component of some commercial baking powders) that are solidified.

**Chapter II: Review of Related Literature and Studies**

**Local:**

(<http://www.instructables.com/id/Make-A-Cheap-Lithium-Battery-Pack/>)

Making a cheap lithium battery pack from old smartphone batteries

(<http://fs.mapua.edu.ph/MapuaLibrary/Thesis/DESIGN%202_Solar%20Battery%20Charger_BODY%20FULL%20TXT.pdf>)

Solar battery charger

(<https://www.techinasia.com/salt-light-poor-homes-philippines>)

Using salt and water and pouring it into a LED bulb lamp for eight hours of light in poor Filipino homes.

**International:**

(<http://scitoys.com/scitoys/scitoys/echem/batteries/batteries.html>)

Method 1: Homemade batteries using soda, Soda Can, Copper, and Aluminum (or zinc depending on the reaction)

(<http://scitoys.com/scitoys/scitoys/echem/batteries/batteries.html>)

Method 2: Homemade batteries using zinc, salt water, hydrogen peroxide (preferably)

(<http://scitoys.com/scitoys/scitoys/echem/batteries/batteries.html>)

Method 3: Homemade batteries using copper, zinc, and vinegar

The same link was used for all three because there were three studies in one link related to our topic.

**Chapter III: Methodologies**

**Research Design:**