

# **LAPORAN PENELITIAN**

## ***“Rancang Bangun Alat Musik Cymbalum Berbahan Limbah Kaleng”***

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# CYMBALUM MUSICAL INSTRUMENT DESIGN BY USING WASTED CANS AS MAIN MATERIAL

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**Abstract—** Human activities in their daily lives have produced a lot of waste. One type of waste that is widely produced and easily found around our living environment is metal cans from food and beverage packaging. Wasted cans that used only in the form of trash that is considered worthless, through a sense of taste and creativity turn into an extraordinary work of art, including works of alternative musical instruments; they become a musical instrument called Cymbalum. This activity is an effort to recycle cans, especially used cans, to be used as an alternative musical instrument. The original Cymbalum musical instrument is a typical musical instrument from Hungary which is played by being hit. There are a number of artists from various countries who make use of used these tin cans made into Cymbalum musical instruments with different sound characteristics from the original Cymbalum. This research was carried out by means of experimentation using the theory of creativity with the method of direct experimentation, namely the manufacture of Cymbalum musical instruments made from wasted cans as had been made by other artists. After the testing process, the advantages and disadvantages will be analyzed and studied, and the author will apply the idea by adding a resonator/resonance chamber that aim to produce Cymbalum musical instruments made from wasted cans with a relatively better sound quality than before.

**Keywords:** creativity, recycling, waste, wasted cans, musical instruments, cymbalum

## I. INTRODUCTION

The condition of our natural environment which is increasingly polluted by waste generated by human everyday became the inspiration to conduct this research. One type of waste that is widely produced and easily found around our lives is used tin can waste, which the author chose as material for the design of this Cymbalum musical instrument. Wasted cans that used only in the form of trash that is considered worthless, through a sense of taste and creativity turn into an extraordinary work of art, including works of alternative musical instruments.

The author is interested in treating waste to make it more useful and has more value. During this time the author has been active and focused on processing waste into works of art and design, which during the process can not be separated from experiments and creative processes. The author has made many home decor products from waste glass bottles in the form of lamps, flower vases, flower pots, stationery, aroma therapy stoves, ashtrays, and containers. The author has also done his research and designed several musical instruments made from glass bottle waste and has held musical performances using musical instruments made from the wasted glass bottles.

The original Cymbalum instrument is a typical musical instrument from Hungary. Cymbalum musical instruments are played by hitting strings which are stretched with different thicknesses and lengths of strings, as well as with different strings resulting in varying pitch sounds. This Cymbalum musical instrument has a very distinctive and very beautiful sound.

Through various media, the author has obtained information about several artists in foreign countries who have made Cymbalum musical instruments using wasted cans. From some video shows on the internet, it was shown that the Cymbalum musical instrument playing from wasted cans can not use a resonator/resonance chamber as a sound reservoir. Resonator/resonance chamber is an air chamber that captures sound vibrations and makes the sound longer and louder without an electric amplifier. Example of resonators / resonance chambers that are most easily encountered is the acoustic guitar. The acoustic guitar has a resonant chamber in the form of a hollow body that has air space, through a vibration hole the guitar strings are captured and entered the resonance chamber so that it can produce relatively loud sound. The author has a new idea to be applied in this research, which is to make the body of this musical instrument as a resonator/acoustic resonance chamber to produce a relatively better sound quality, which is to produce sound with longer, flatter and more balanced waves.



Pic 1. Example of Cymbalum musical instrument made from wasted cans without a resonator that was made by other artists

## II. METHODOLOGY

The author will examine the problem using the Research and Development method which is a research method to produce a product and test the effectiveness of the product (Sugiyono, 2008: 297). The method used by Sugiyono will go through ten stages which are longitudinal research. Considering that the research that will be carried out takes a maximum of seven months, the author will adjust the time to make it into the seven stages of this design process, with the following details:

### 1. Potential and Problems

A research can depart from the existence of potential, in this case the potential of waste raw materials that have the opportunity to be made into an alternative musical instrument through a research process. The problem is a contradiction between what is expected and what is happening. The problem in this research is that there is still a lot of wasted/used goods that have not been used optimally as raw materials in making an art work, even though wasted/used goods have a great potential to become extraordinary works of art.

### 2. Data Collection

At this stage the author will carry out the process of collecting data related to Cymbalum musical instruments made from wasted cans that have been made by other artists who do not use resonators/resonance chambers, with observation techniques and interview those who are experts in making acoustic musical instruments. These observations and interviews will produce data which will then be analyzed to be used as a gauge in the design of Cymbalum musical instrument designs made from wasted cans with a new design idea that will use a resonator/resonance chamber.

### 3. Product Design Based on Used Goods Exploration

After obtaining the results of the second stage, then will head with the process of designing Cymbalum musical instrument products made from wasted cans that will utilize the resonance chamber to produce a relatively better sound quality.

### 4. Design Validation

At this stage, the design will be consulted with those who are considered to have expertise in the related field.

### 5. Product Testing (Initial Prototype)

The initial prototype that has been made before will be tested by operationalized/played to find out the shortcomings to be fixed later

### 6. Product Usage Trial (Prototype continued)

After the shortcomings of the previous stage are corrected, this stage is testing on an advanced prototype by playing and analyzing the results. If in Step 6 the product being tested already does not need to be repaired, then the final prototype will be made.

### 7. Making the Final Prototype

At this stage the authors make the final process by making the final prototype of an acoustic Cymbalum musical instrument made from wasted cans. The prototype was made in the acoustic guitar industry with a home industry scale

## III. RESULT

Referring to the stage of research implementation, after completing the stage of formulation of potential and problems as well as data collection and analysis, the author will carry out a product design process based on the exploration of wasted cans materials. In this study the author will develop things that already exist in Cymbalum made from wasted cans that have been made, then in this process the initial stage is to mimic the existing Cymbalum cans, henceforth will be carried out a process of testing and analyzing the aspects that are made can be further developed. In this case the author will conduct a trial and analyze the sound system that has been produced by the Cymbalum that has already existed; which does not use the acoustic resonance space, as will be developed by the author. After completing the trial and analysis, several parameters that can be used as a foundation in the design process will be obtained, where the final result of this research is the prototype of an acoustic Cymbalum musical instrument that uses wasted cans materials.



Pic 2, Acoustic Cymbalum musical instrument made from wasted cans by using a resonator/resonance chamber, as the results of this research

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