

UNIVERSITI TEKNOLOGI MARA

**DESIGN OF PLAYGROUND
EQUIPMENT THAT CAN
GENERATE ELECTRIC POWER**

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ABSTRACT

Many playgrounds are abandoned and hardly used. Due to its accessibility and appeal, gadgets are more likely to be played. Most of playground equipment as it use the mechanical concept. However, there was a drawback when mechanical energy cannot be generated consistently due to the limited factor that affect the playground. The objective of this project is to design and build a playground that can generate mechanical energy to electrical power. The information data of this project can be collected by doing some appropriate research and study correctly. Hence, it helped to create a playground that mainly targeted on children as the user. This is because they have the most suitable and high potential traits that will contribute in increasing the effectiveness of this facility. Finally, this project had been successfully produced and proven to be able to provide a positive impact to users, the country and the environment.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

There are two types of energy resources that we always use in our daily life. The first one is renewable energy and the other one non-renewable energy. Renewable energy is energy derived from natural sources that are replenished at a higher rate than they are consumed [1]. About 25% renewable energy that has been used in Malaysia nowadays and one of it is solar energy. Natural Resources, Environment and Climate Change Minister Nik Nazmi Nik Ahmad said the country was on the right track to source 31 per cent of its power capacity from renewables by 2025 and 40 per cent by 2035 [2]. Meanwhile, mechanical energy is neither renewable or non-renewable energy itself. Mechanical energy is the energy of either an object in motion or the energy that is stored in objects by their position [3]. Potential and kinetic energy are examples of mechanical energy. This energy can be found in the movement of playground equipment.

In Malaysia, people are really depending on non-renewable energy for domestic usage such as coal, natural gas, and oil. Those sources can give negative impact to our world's health and ecosystem as they will release high amount of carbon dioxide to the air. As an example, high percentage of carbon dioxide can cause global warming, greenhouse effect and acid rain. Other issue is, children nowadays tend to spend more time with their gadget like smartphones and tablets than playing at playground. This situation affects children's bodies and minds which will them easier to have sleep deprivation, insomnia and circadian rhythm disorders, depression, aggression, and anxiety, though more studies are needed to establish the validity and the strength of these connections [4].

So, government has found a solution to reduce non-renewable energy usage which by using alternating resources like hydropower and solar. It is because those energies have unlimited source that can be use many times. Meanwhile, parents can prevent their children from spend more time with their gadget by set up some rules, spend more time with them and encourage 8 them to try outdoor activities. Although