



# ASEAN Journal of Science and Engineering Education



Journal homepage: <http://ejournal.upi.edu/index.php/AJSEE/>

## Designing an Educational Website regarding Recycling of Plastic Waste into Roads

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### ABSTRACTS

Plastic waste is closely related to the environment, which is also related to human life. The impact of waste that we can feel is flooding. Plastic waste is very difficult to decompose naturally; thus, it has not been a serious concern due to the lack of human awareness of the environment. The purpose of this research is to educate the public so that plastic waste can be processed into something useful by recycling it into paving blocks for roads. The research method used was qualitative research methods. This study discusses the design of an educational website about recycling waste into roads. This website aims to educate the public to be more concerned about the environment by utilizing waste by recycling it into roads. This research's discussion is the design of an educational website about waste recycling for the community and create a community that cares about the environment. The benefit of this research is to create a society that cares about the environment and can process their plastic waste independently.

### ARTICLE INFO

**Article History:**

*Submitted/Received 1 Mar 2021*

*First revised 7 Apr 2021*

*Accepted 11 Apr 2021*

*First available online 22 Apr 2021*

*Publication date 01 Dec 2021*

**Keyword:**

*Plastic Waste,  
Recycling Waste,  
Waterfall Method*

## 1. INTRODUCTION

To educate the community about how dangerous plastic waste is and how to recycle it into more useful things such as plastic paving blocks, there must be media that the public can easily reach. In general, this research focuses on designing educational websites about waste recycling to make the community on a bigger scale care about the environment. The solid waste management problem became a big obstacle for the authorities in developed countries, both in the cities. It is primarily due to the rising generation of solid waste of this kind and the municipal budget pressure. Besides the high cost, solid waste treatment is synonymous with a lack of awareness of the various factors impacting the whole handling scheme (Abdel, et al, 2018). Waste that is not managed correctly and just driven away. Jambeck stated that Indonesia in the second position in the world after China produced water plastic waste that is reaching 187.2 million tons (Jambeck, et al, 2015). This continuing piling up of waste is the start to initial problems for the environment, including contamination of soil, groundwater, and several other aspects such as cleanliness, health, and comfort. Plastic has environmental impacts, given that such anthropogenic waste. It reduces tourism income; identifying effective abatement policies is imperative to reduce waste and litter before entering the ocean (Wilis, et al, 2018). In natural habitats such as the open waters and sediments within lakes and rivers, plastic contamination has been well reported, the open ocean and even the air, but less attention has been paid to synthetic polymers in human consumables (Kosuth, et al, 2018). There needs to be activated to control waste, especially in organic waste, because it is difficult to decompose; for example, plastic waste takes more than 20 years or up to 100 years to completely decompose (Mwanza & Mbohwa, 2017).

Plastic waste problems have become serious around the globe. Learning is one of the essences. Various countries have different education fields, but there is still room for progress to change people's awareness, perceptions, and behaviors about managing plastic waste. Recycling provides the opportunity to use recovered plastics to create a new product. Recycling is considered one of the best solid waste management options to reduce the impacts presented by post-consumer packaging plastic wastes. It contributes to municipal solid waste management by reducing waste quantities to be collected and disposed of, thus diverting materials with the economic value from the main waste flow (Dryzyga & Prieto, 2019). The percentage should be used for the selection of materials that can minimize the usage of asphalt from petroleum and renewable plastic waste so that, in addition to reducing plastic waste emissions and providing (cheap) economic benefit, the laws or regulations applicable in Indonesia can also be justified (Limantara, et al., 2019). Educational campaigns are now focusing on citizens' understanding as members of a global community that can reduce plastic usage. However, consistent with all current expert reports, if plastics' benefits are to be enjoyed thoroughly, we also got to promote the only sustainable waste management alternatives, encourage recycling, use energy recovery as a complementary option and restrict the dumping in landfills of all recoverable plastic waste (Diana, et al., 2020). The findings revealed that accessibility is the most significant predictor of the quality enhancement of the e-learning website. Usability is one of the variables that can illustrate simplicity and easiness in understanding e-learning so that users feel secure operating it. Usability also applies to the comfort level of the customer.

This research aims to create a society that cares about the environment and can process their plastic waste independently. The research method used was qualitative.

## 2. METHODS

The research method used was qualitative. It is a systematic investigation of social processes in natural environments of observational analysis. These phenomena can include but are not limited to how individuals perceive facets of their lives, how persons and groups behave, how organizations operate, and how experiences from relationships (Teherani, *et al.*, 2015). Site design intends to develop a clear internal organization of its content to find relevant information. This research used the waterfall method to develop the website. The waterfall approach is the most common method used in developing a software project. It has five development stages that help to guide the project from start to end. The waterfall approach is a linear cycle, structured from the top down of requirements, design, implementation, verification, and maintenance (see **Figure 1**).

## 3. RESULTS AND DISCUSSION

The first phase of the waterfall approach method is requirements. The requirements phase is where the project needs are figured by gathering the information. After the information was learned, it was found that to build the plastic waste recycle education website. It should be is lightweight, easily accessible, and accessible from the platforms available in the community. The second phase of the waterfall approach method is design. The design phase is where the project is modeled and designed to fit the needs. Building a lightweight website, easy access and access requires a good framework (Pangaribuan, *et al.*, 2020). After doing some research, Laravel was chosen as a framework. After that, the following is the plan for the hierarchical interface (See **Figure 2**).

The third phase of the waterfall approach method is implementation. Implementation is where the project is built and constructed according to the design. This phase consists of one activity, which is coding. After the coding was done, it is time to present the design results in the form of a prototype plastic waste recycling educational website. There are Homepage, The Danger of Plastic Waste, Recycle Tutorial, and About Us page. The first page is the homepage. The homepage is the main menu of this website. It consists of the program name, an abstract about the program, and the button to go to another page. The following figure is the view of the homepage (see **Figure 3**).

The second page is The Danger of Plastic Waste. It explains the danger of plastic waste and how it can contaminate the earth and affect the living. This is the interface of the page (See **Figure 4**).

The third page is Recycle Tutorial. It explains how to recycle plastic waste into useful stuff. Because it is plastipave, it contains how to recycle the plastic waste into pavements. The following is the interface of the page (See **Figure 5**).

The fourth page is About Us. It explains the plastipave movement, the people behind it, and how to contact the website's author. The following figure is the interface of the page (See **Figure 6**).

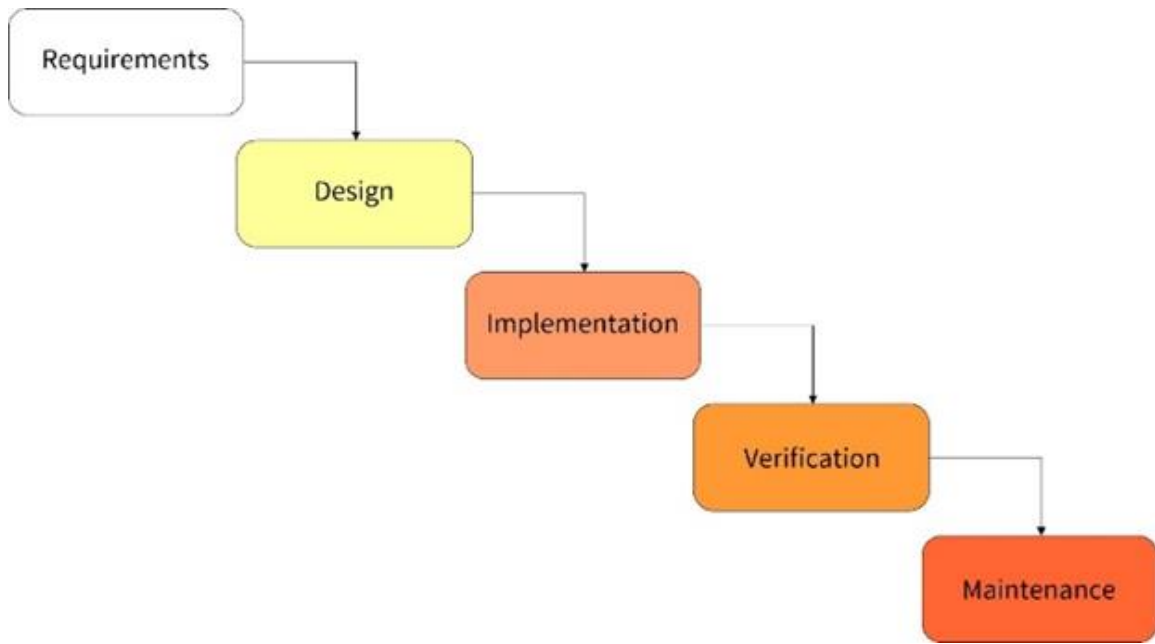


Figure 1. Waterfall Method Diagram.

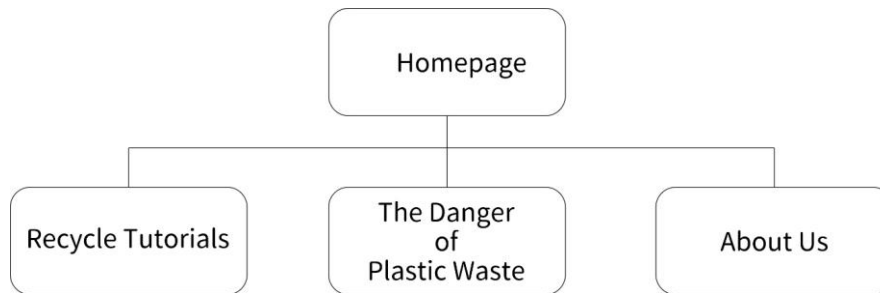


Figure 2. Plan for the Design of Plastic Waste Recycle Educational Website Hierarchy Module.



Figure 3. Homepage Interface of the Website



Figure 4. View of The Danger of Plastic Waste page of plastic waste recycle education website

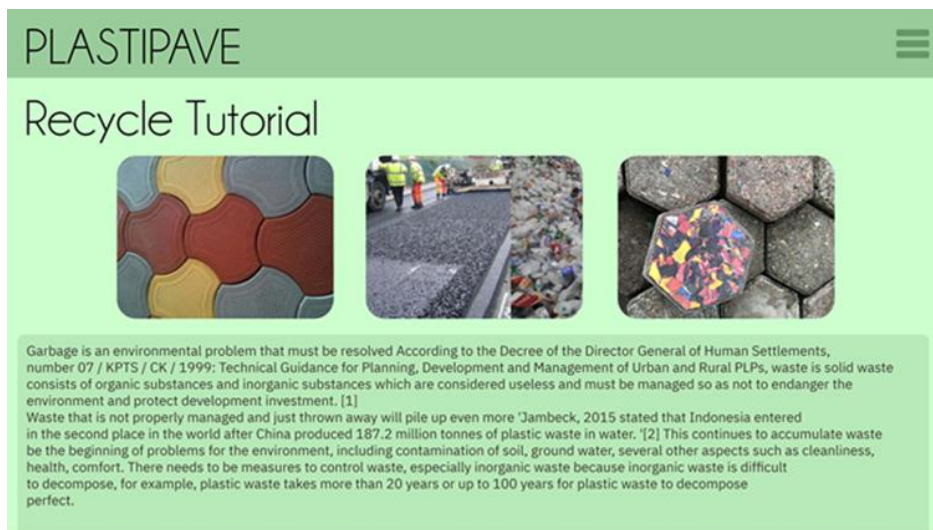


Figure 5. Recycle Tutorial Page

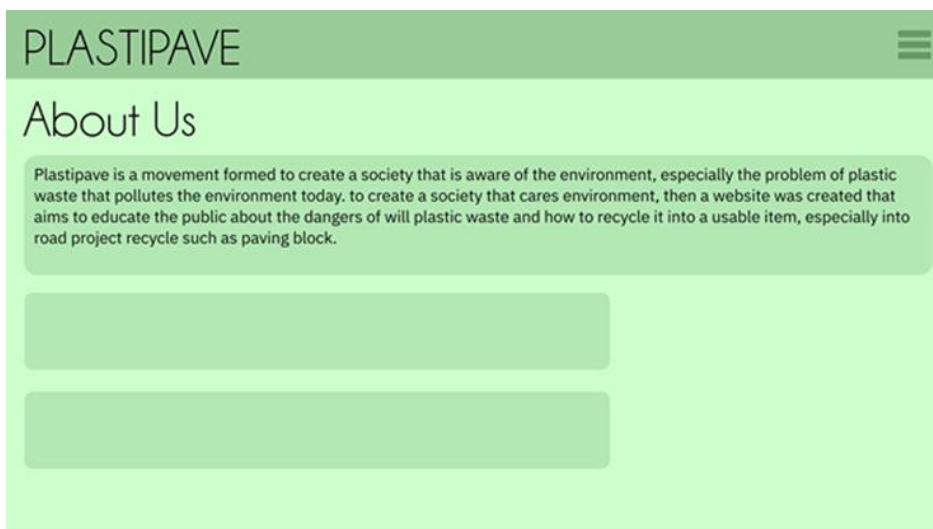


Figure 6. About Us Page

#### 4. CONCLUSION

Plastic waste is polluted our earth and affects the living inside it. To educate the community about dangerous plastic waste is to recycle it into more useful things such as plastic paving blocks. There must be media that the public can easily reach. Website is seen as a suitable medium. The website is created in the Laravel framework. It consists of four pages: Homepage, The Danger of Plastic Waste, Recycle Tutorial, and About Us page.

#### 5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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