

Drive-Thru Trash Bin

Muhammad Fikri Hakim Mhd Moktar, Muhammad Farhan Najmi Salman, Muhammad Adzmeen Rizzuddin, Muhammad Azraie Abdul Kadir*, Mohamad Erwan Sanik

Centre of Diploma Studies, Civil Engineering, University Tun Hussein Onn Malaysia, (UTHM) Pagoh Campus, High Education Hub Pagoh, KM 1 Panchor Road, 84600 Panchor, Johor.

DOI: <https://doi.org/10.30880/mari.2022.03.02.028>

Received 31 March 2022; Accepted 31 May 2022; Available online 28 July 2022

Abstract: Rubbish are waste material or things that are no longer wanted or needed and it is label as materials that are useless, sometimes could cause disturbance. Many people nowadays have a bad habit that can pollute the environment. The bad habits dispose of trash everywhere they go such as on the roadside. This problem effects the environment and the driver focus. Many people did not see it as a big mistake that happen because of their mind set. 'Drive-Thru Trash Bin' is the one of our proposal that can improve the regular trash bin and environment on the roadside. This drive-thru trash bin created to help people who in hurry on the roadside from one place to one place. This study aims to identify the need of drive-thru trash bin and propose a proper trash bin. Survey method is used to collect the information from the student about this drive-thru trash bin. As the result, the proposal design is suitable to be use and drive-thru trash bin is needed at 'Kolej Kediaman UTHM Pagoh'.

Keywords: Trash bin, UTHM Pagoh, Road management system, Survey

1. Introduction

Waste or rubbish is the problem that effected the environment and financial impact to the country [1]. Rubbish could easily be accumulated especially in an enclosed space such as vehicles. Drivers and passengers may encounter this problem. The trash that they produce could not be thrown away since there is the absence of trash can. Many people have a bad habit 'throwing rubbish everywhere'. This habit could cause the environment nowadays for example along the roadside scattered garbage that people can handle. Due this lifestyle, the increasing acknowledgment can impact our environment [2].

Garbage management can be defined as a discipline of knowledge related to the control of the generation, storage, collection, transfer, transportation, processing and disposal of landfills at a landfill with a method appropriate to the basics of public health, economy, engineering, conservation, aesthetics and consideration to the environment [3]. Garbage that can hold water such as empty cans, bottles, vases and bad tires is a breeding ground for mosquitoes like Aedes [4]. Alam Flora Sdn Bhd (Alam Flora) has intensified the campaign 'Anti-litter' to the public especially to the vehicle users to maintain environmental sustainability as well as changing the minds of the community to be more responsible against cleanliness [5]. Examples of non-recyclable waste include soiled paper, tissue, light bulbs and grocery bags [6]. People of the past started to develop a program called the 3R that stands for reduce, reuse and recycle [7]. The basic knowledge about the survey and what the point or aim each part of the

*Corresponding author: mazraie@uthm.edu.my

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question [8]. Since 2008 the EU directive 98/2008/EC gives a more or less clear definition of recycling. Recycling defines as any recovery operation from the waste materials to the same product or another thing [9]. The study aim is to identify the needed of the drive-thru trash bin.

2. Materials and Methods

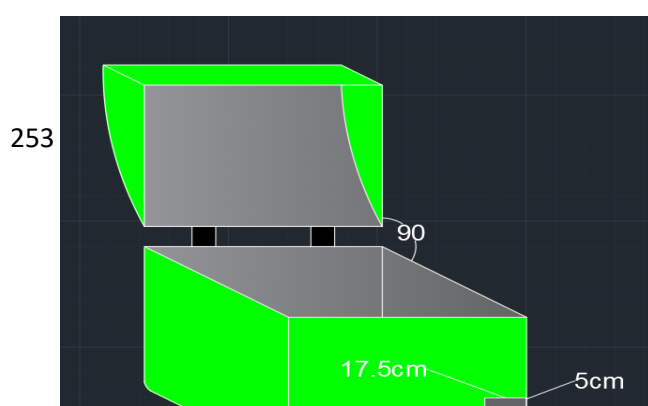
The survey method is the one of the suitable ways to find the response from the UTHM Pagoh people/student about this proposal. The common questions which have been prepared will help this study to make conclusion of the people vote. After get the point, this topic also prepared the evaluation from the vote and combine with the literature review that we have search to support the conclusion. The design of the trash bin in this chapter is new evolution of the trash bin that can easily people to use it. The drive-thru trash bin proposal also provided in the survey to shows how the bin should use.

In this survey, the question divided in 3 part which help to improve the report and achieve the target in objective. First part in this survey is respondent information. It's the simple process to identify the genre and where the respondent stayed in the 'Kolej Kediaman Pagoh' or not. From the result of this part, the survey will show the amount of student that bring a car. Second part is about the respondent knowledge of the environment. In this section, the feedback also supported this study to verify level of the respondent knowledge. The last part in the survey is proposal of the 'Drive- thru Trash Bin'. The question helps respondent to know the objective of this survey and will express the respondent with the proposal of the bin. This part shows the design of the trash bin using Autocad to the respondent and make them compared with the existing trash bin. This division part also helps the people to understand about our proposal and the bad habit that effect the environment.

The **Table 1**, shows the outcomes will give an impact to the respondent habits nowadays. The proposal of the bin also helps this study to give a good effect to respondent. For this result, this study target that many respondents from the UTHM Pagoh to complete this survey. This survey conducted to knowledge the respondent about the importance of the environment. This survey method will help this study to achieve the objective. For the method, divided into 3 part that are source information, tool used and frequency of the collection. Each part target is same as the final conclusion is to create the suitable question for the respondent. In the **Figure 1**, the proposal design with the instruction.

Table 1: Survey Evaluation

Outcomes <i>What will happen as a result of your project?</i>	Indicators <i>How do you know the project is achieving its outcomes?</i>	Sources/Method <i>method used to gather the information</i>		
		Source of Information	Tool/Instrument Used	Frequency of Collection
- Raise awareness about the roadside littering among students	- Results from the survey target number 2	- Project Record	- Survey through Google Forms	- End of Project
- Proper drive thru trash cans could be developed	- The design produced based on the study of this project - Results from the survey target number 3	- Project record - Literature	- Survey through Google Forms - Test of participant awareness of the roadside cleanliness	- End of Project



Instruction of using this 'Drive-Thru Trash Bin'

1. Car slowly move into the ‘Drive-Thru Trash Bin’ yellow box.
2. The car tyres must step on the paddle at the bin.
3. The cover will up and open the bin.
4. Throw the rubbish in the bin.

Figure 1: Proposal design

3. Results and Discussion

Based on the survey, the result gained will be discussed by part. There will be three part and each of them will be discussed separately.

3.1 Survey Correspondents

For the first part which is Survey Correspondents, the results obtained stated that there is a total of 103 people who had answered the survey. As shown in **Figure 2 (a)**, majority of the respondent are aged between 17 to 21 years old that shows that most of the participant of the survey are university students. This data was gained in the **Figure 2 (a)** where 81.6% of them are in the age of 17 to 21 and 14.6% of them are aged 22 to 26 while others are 27 years old and above. The results of the survey show that the respondents are university students and staff plus, it matched with the scope of this project which, the project will be conducted survey in University Tun Hussein Onn Malaysia (UTHM), Campus Pagoh. The most important data in this part is gained at the last part of the survey correspondents which is in **Figure 2 (b)**. The data gained shows 43.7% out of 103 respondents possess a vehicle of their own while the other 56.3% of them does not. This is an important data since this project is a vehicle-based project.

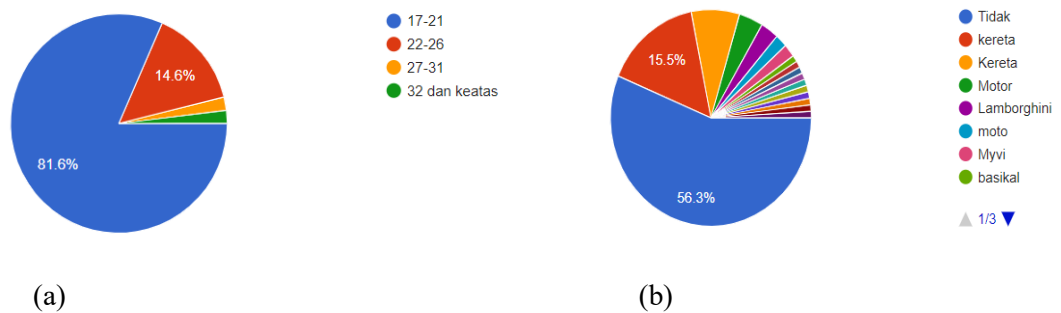


Figure 2: Pie chart (a) respondent age and (b) respondent vehicles

3.2 Importance of Environment Discussions

The survey continues with part 2, that asks the respondents questions related about their vehicles and trash. The first question asks about if they had problems regarding having trash in their vehicles. Respondents then gave an answer between number 4 (31.1%) and number 5(30.1%) based on the **Figure 3**. Both of this number shows that students do have problem related to throwing their trash away while driving their vehicles. Another question in the survey of part 2 asks the respondents if they ever thrown trash outside of their vehicles. This question gives different results then the other questions. The results obtained in **Figure 4** shows the mean is 20.6 and the median is 18. However, number 5 still gain the majority out of the answers. This result means that the problem of throwing trash from a moving vehicle is a problem that people usually encounter in their daily life. This also shows that the students need a drive thru trash bin that could help them throw their trash with ease.

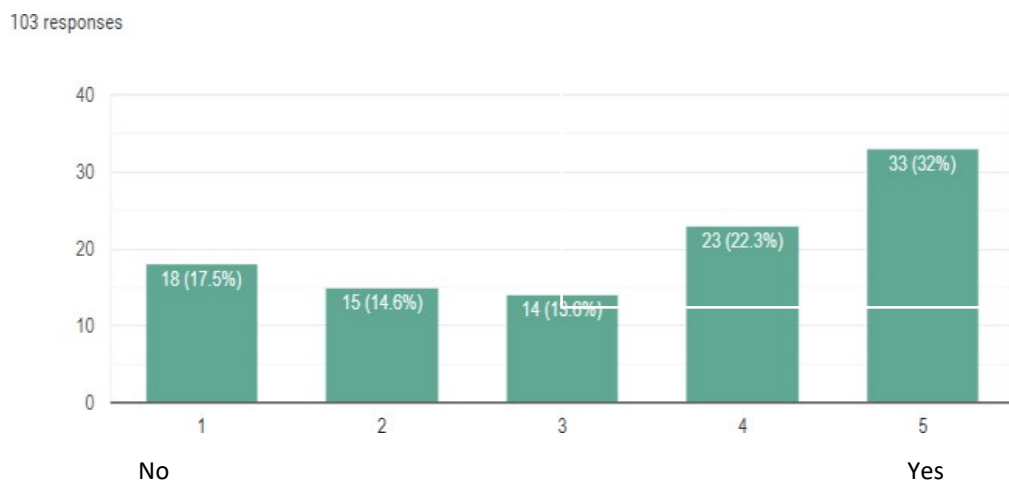


Figure 3: Trash in car

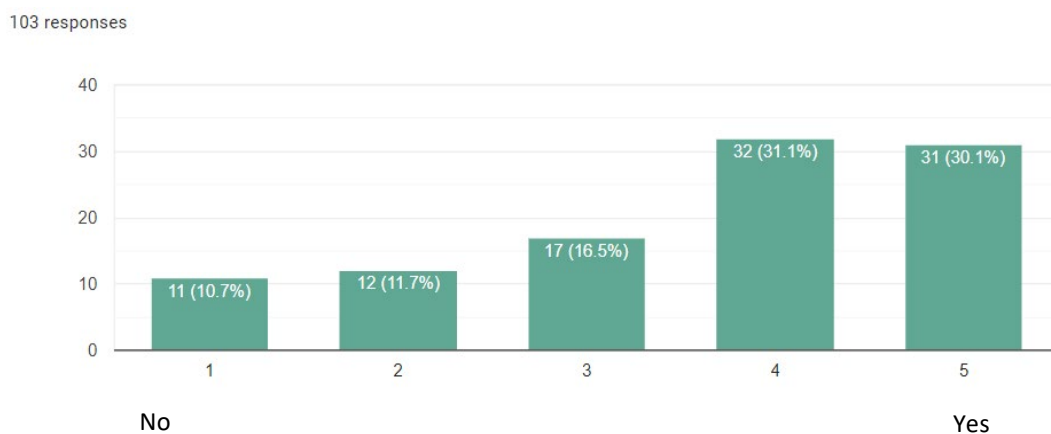


Figure 4: Throwing trash from car

3.3 The Needs of Drive-Thru Trash Bin

The third part which is the final part mainly ask about our drive thru trash bin that this survey proposed. This question then follows by a question that ask whether the drive thru trash bin is needed in our surroundings. **Figure 5** shows that 60.2% of the respondents voted that the drive thru trash bin is really needed in their area while only 1% voted no. This question shows a great result since it is related to our objective which is to identify the need of a trash bin with a drive-thru concept among the UTHM Pagoh students. The next question then shows an example of a normal trash bin and our proposal drive thru trash bin. The 103 respondents then answer the inquiry and gave the highest percentage that had been gained throughout the survey.

Based on **Figure 7**, 97.1 % of them voted for our drive thru trash bin. This result shows that our design would be the suitable design among the two that could be used for solving trash by the roadside issue in UTHM Pagoh. Lastly the survey asks the respondents if this drive thru trash bin is needed in their area which is Kolej Kediaman Pagoh. 54.4% of them agrees with the statement and none of them disagrees since in **Figure 6** shows 0% of them answers no. This shows a really great result since this drive thru trash bin will help reduce the waste in the college area. This drive thru trash bin could also help people ease their problem handling their trash in their own vehicles thus helps to develop a cleaner environment.

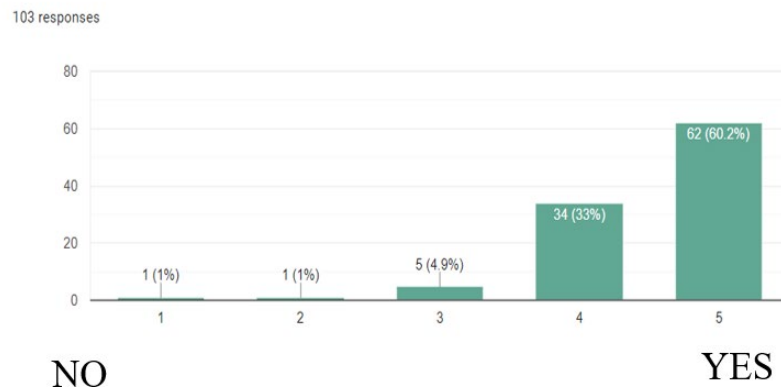


Figure 5: Needed the dive-thru trash bin

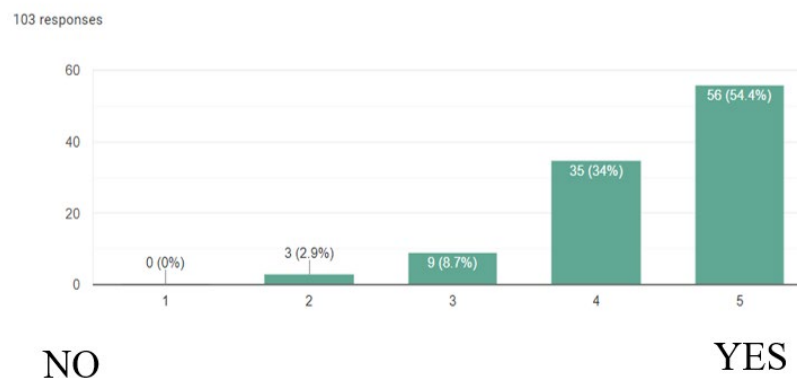


Figure 6: The suitable place for bin

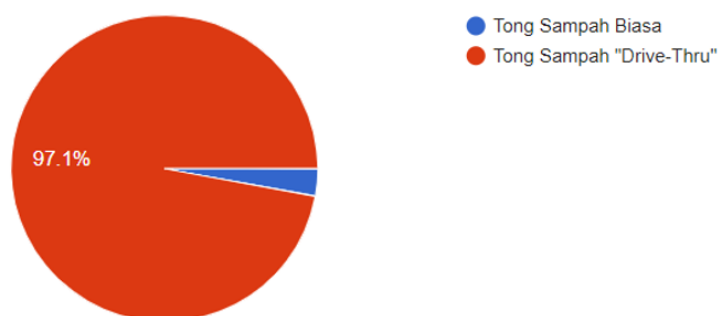


Figure 7: Design of bin

4. Conclusion

Through the studies that have been done taking into account various types of aspects, there are several things that can be observed. There are still many students who do not care about caring for the environment. They are not have been thought to solve the the idea of this “drive-thru” trash bin that has been put forward, it will be able to increase the level of awareness on the importance of throwing garbage to the right place in a way that is more convenient and saves manpower. This innovation will be able to open people’s eyes that throwing garbage to the right place is a very simple thing. In the other hand, from the questionnaires that were conducted, the public was attracted to the innovations presented and gave a positive impact. Furthermore, there are many students who bring their vehicles to the college and this will have a good impact on the garbage situation in the residential college area and its surroundings with the presence of this “drive-thru” trash bin. The presence of this “drive thru” trash bin may help a lot in reducing the garbage that been thrown on the road and at the same time can provide a more positive environment.

Acknowledgement

The authors would also like to thank the University Tun Hussein Onn Malaysia for its support.

References

- [1] G. Lamb, S. R. Pogson and D. Schliebs, Australia, Waste Definitions and Classifications, Feb 2012. Available: Waste Definitions and Classifications (environment.gov.au), [Accessed Jun. 23, 2021].
- [2] G. Gaidajis, K. Angelakoglou and D. Aktsoglou, Greece, E-waste: Environmental Problems and Current Management, Jan 2010. Available: fulltext342010.pdf (jestr.org), [Accessed Jun. 23, 2021].
- [3] N. S. Zamri et al., “The Environmental Pollution and Solid Waste Management, Dec 2019. [Online], Available: https://hrmars.com/papers_submitted/6662/The_Environmental_Pollution_and_Solid_Waste_Management_in_Malaysia3.pdf [Accessed Jan. 18, 2021].

- [4] Pendidikan Kesehatan KKM, “Kempen Cara Hidup Sihat ‘Promosi Persekitaran Sihat’, 2002. [Online], Available: https://www.infosihat.gov.my/images/media_sihat/kchs/KCHS_2002/pdf/manualMesej/Manual%20Mesej%20Utama%20dan%20sokongan%202002_BM.pdf [Accessed Jan. 18, 2021].
- [5] M. Z. Hassan, Alam Flora Appreciatong Life, Kota Bharu, Edar 200 beg ‘Anti-Litter’ Kikis Sikap Buang Sampah Dari Kenderaan, Feb 2020. [Online], Available: https://www.kpkt.gov.my/resources/index/user_1/siaran_media/2020_Siaran_Media. [Accessed Jan. 18, 2021].
- [6] T. Haida Council, “Waste Mgt. Alternatives, Recyclable & Nonrecyclable Materials”, 2012. [Online], Available: <http://www.zendergroup.org/anhbguide/App4.pdf> [Accessed Jan. 18, 2021]
- [7] S. Umar, P. Sehab and P. Yagnik, India, 3R’s Concept: Reduce, Reuse & Recycle, Mar 2018. Available: (PDF) 3R's Concept: Reduce, Reuse& Recycle | IJSRDV6I30058 | IJSRD - International Journal for Scientific Research and Development and Patel Sehab M. - Academia.edu [Accessed Jun. 23, 2021].
- [8] P. A. Glasgow, and McLean, Mitre Washington, April 2005. Available: https://www.mitre.org/sites/default/files/pdf/05_0638.pdf [Accessed Jan. 23, 2021].
- [9] A. Bartl, SAGE journals, Directive 2008/98/EC of the European Parliament and of the Council of 19 November 2008 on waste and repealing certain Directives. Brussels, Belgium: European Parliament and the Council of the European Union. Available: <https://journals.sagepub.com/doi/full/10.1177/0734242X14541986> [Accessed Jun. 08, 2021].