

CAT 4 RESOURCE DEVELOPMENT

Group 04-47

PROJECT VOLTAIC

Chong Zhi Le Zach 2P3 (6)

Derry Tan Jia Hao 2P3 (8)

Tan Qi Xuan 2P3 (31)

Teo Wei Xuan Bryan 2P3 (32)

ABSTRACT

Project Voltaic aims to spread awareness on harmful Electronic Waste through engaging, fun and interesting ways to educate Hwa Chong students about the importance of disposing electronic waste properly. This project provides a wide range of information about electronic waste, how electronic waste is treated in E-Waste management facilities and the locations of E-Waste bins in Singapore. Hence, Project Voltaic aims to aid students such that they would be able to dispose their E-Waste conveniently and properly. Students are also able to learn new and interesting facts about electronic waste via our website. This is accessible through any device, be it a smartphone or tablet, in our tech-savvy school community.

1 INTRODUCTION

1.1 Rationale

Electronic waste, or E-Waste, is an increasingly imminent threat to our environment and safety, as electronics such as computers have Cathode Ray Tubes (CRT), which are vacuum tubes used to display images on screens. They contain high concentrations of lead and phosphorus which are very poisonous, and if improperly disposed, such as thrown into water bodies, they would pollute the water body and lead to disastrous results, such as the loss of animal, plant and even human life. Improper disposal of E-Waste would then lead to environmental pollution and consequently, would result in the harm of a human's health. Furthermore, from 2011 to 2018, global smartphone usage had increased from 10% to 36% and it is not slowing down due to the developing world. Many people are not aware of the E-Waste bins around Singapore or do not even bother to recycle their E-Waste. If more E-Waste is improperly disposed, this can lead to large amounts of pollution to the environment.

1.2 Objectives

The objectives of Project Voltaic is to

- Properly educate people on the importance of proper disposal of E-waste through interactive and interesting means
- Educate people on what E-Waste is
- Create awareness on the existence of E-Waste recycling bins in Singapore
- Create quizzes and a website to educate people through a fun and interesting way, as well as a poster that has QR codes to our website and quizzes

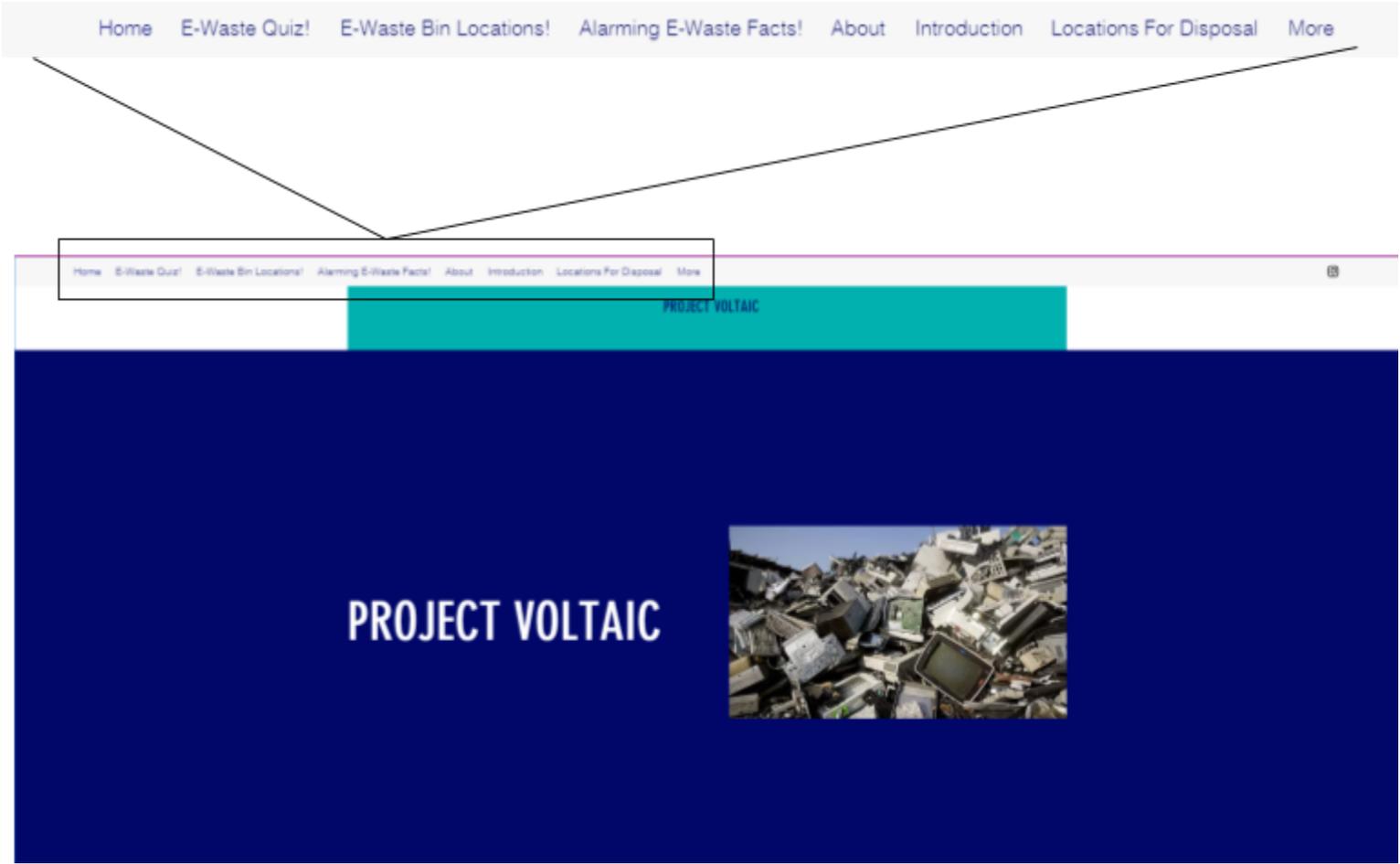
1.3 Target Audience

Our target audience is secondary one to four Hwa Chong students.

1.4 Resources

The resources created for this project are

- An integrated online platform that contains information on methods to recycle E-waste and interesting facts about E-Waste
- A map that shows the locations of E-Waste recycling bins across Singapore in the website
- Quizzes to test users on the amount of information they have learnt about electronic waste through our website
- A poster publicising both the website and the E-Waste recycling bin located in Hwa Chong (College Section).



Components of the website

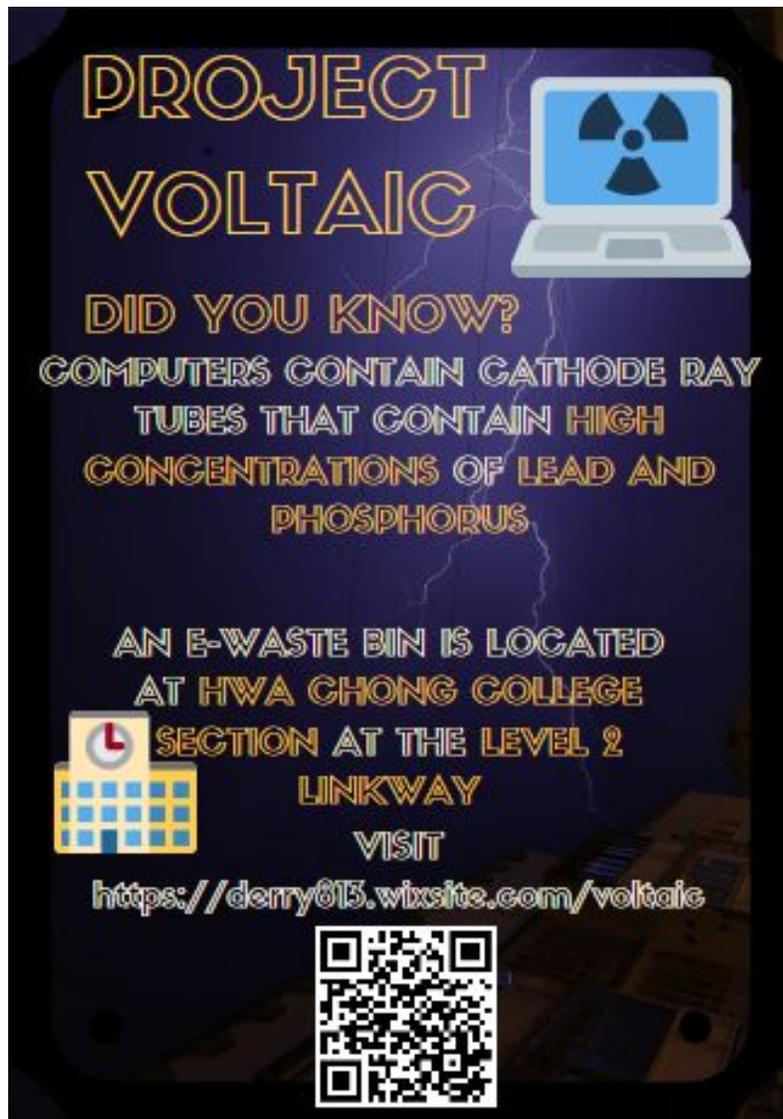


Image of the poster

2 REVIEW

Websites, such as from the National Environment Agency, titled “E-Waste Management”, proved informative and helpful during research, as they allowed readers to understand E-Waste and the process of recycling it better. However, the information provided was dry, boring and discourages students from reading further.

On the other hand, reference books, such as “E-Waste: Implications, Regulations and Management In India And Current Global Best Practices” written by Rakesh Johri, provided knowledge about the effects of E-Waste and the methods to manage it, but it is not engaging and would not captivate readers to read on. Furthermore, it is not easily accessible to students as there is only one book available for students to borrow from the national library, thus it requires reservations which may take a long time. The information could have been arranged in a more aesthetically pleasing and concise manner so as to attract more readers, thus effectively spreading awareness on the serious topic of electronic waste. Other sources were found, but the language and terms used were not easy for readers to understand and required them to already have existing knowledge about the topic.

3 METHODOLOGY

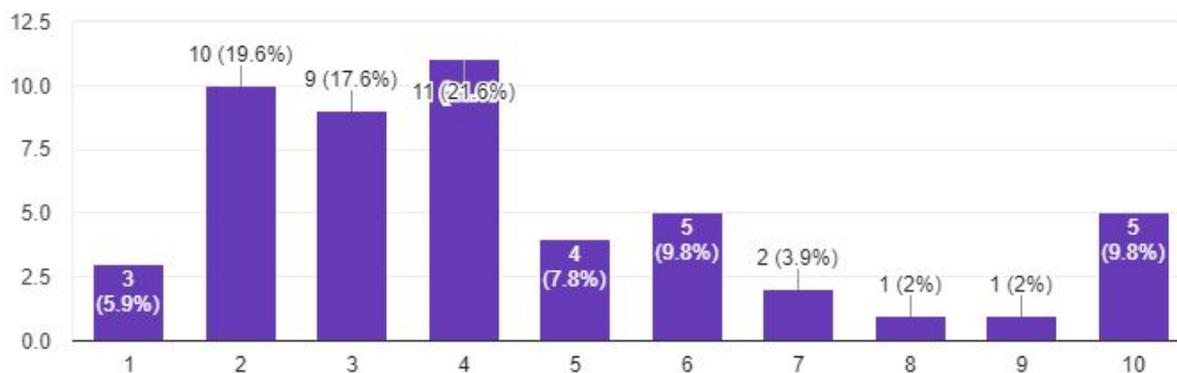
3.1 Needs Analysis

A needs analysis survey was conducted to ascertain the applicability of such a project. A survey was created to establish the respondents' knowledge on E-Waste. Indeed, 37 of the 51 respondents who were Hwa Chong students indicated that they did not have much knowledge about E-Waste. This feedback confirmed the feasibility of the project and that the project could provide a useful resource package to help spread awareness of the imminent threat of electronic waste.

3.2 Survey Results

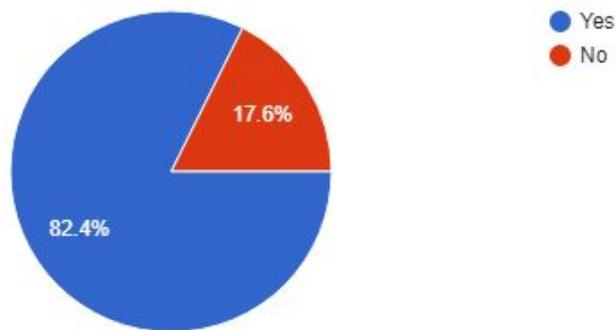
From a scale from 1 to 10 how would you rate your knowledge on electronic waste

51 responses



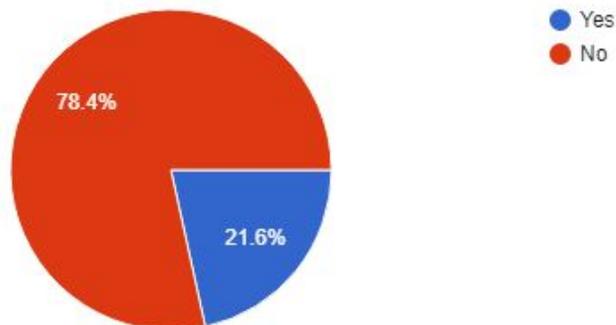
Do you own any electronic devices at home? (etc refrigerators televisions, mobile phones, computers"

51 responses



Do you know how to properly dispose of them? (Answer truthfully)

51 responses



Feedback from respondents who participated in the needs analysis survey

3.3 Development of Resources

After examining the responses from the needs analysis survey, we created the website. Photographs were also taken to provide visual support to the website. Information from various credible sources like informative books and government websites was also

collated into the website as well as the quizzes. Interesting facts about E-Waste was also added to the poster. More importantly, the locations of the E-Waste recycling bins in Singapore was also included in the website. Finally, the final website was uploaded on the online platform to be accessed through both computers and phones.



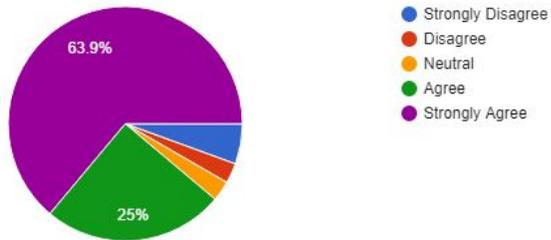
Development of the poster (From left to right: Draft 1, added QR code, designs, information and link to website / Draft 2: Added location of E-Waste bin in HCI, images / Final: Highlighted keywords)

3.4 Pilot Test

A pilot test was administered to 36 Hwa Chong high school students. They browsed the website and took the quizzes in it. Generally, the feedback was positive as a majority of them agreed that the website had helped them to learn more about E-Waste. They also found it to be useful, fun and engaging and was able to provide links to other useful sources about E-Waste.

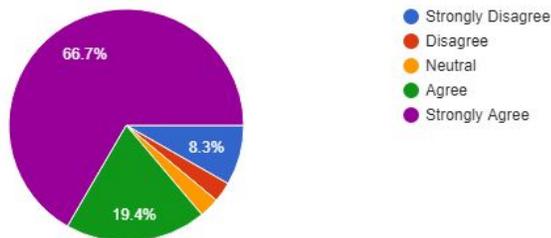
The Website is engaging and informative.

36 responses



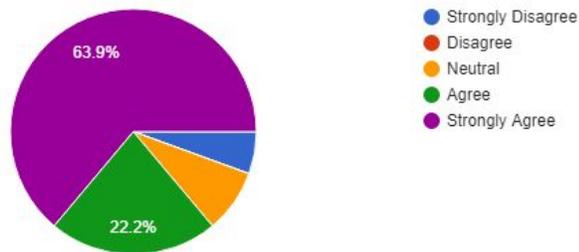
The website is useful to people who want to learn more about E-Waste.

36 responses



The website is able to provide useful links to other sources related to E-Waste.

36 responses



Feedback from respondents who participated in the pilot test

4 OUTCOME & DISCUSSION

Although what was planned at the beginning of the year has already come into fruition and the final products had garnered positive responses, there are still improvements that can be made. More aspects of the quizzes could have been improved such as how to recycle, importance of recycling, and the severity of the problem pertaining to electronic waste. The website could have provided more information and one way the project could have been expanded is to collaborate with other organisations or agencies to conduct learning journeys or field trips. Furthermore, information in the website can be presented in more appealing and engaging way to captivate more students, such as adding videos or creating a game.

5 CONCLUSION

Project Voltaic had been a fun yet challenging project to undertake as it required many hours of work to design the website, collate the information, create interactive quizzes and design a poster. The whole journey had enabled the group to develop many useful skills. Developing critical thinking and an eye for design was crucial during the initial stages of the project, especially during the design stage. Teamwork is essential for the group members to stick together and perform their respective roles efficiently. Our resourcefulness was tested when we had to scour the Internet for information about the topic at hand. Determination and diligence were the final elements that allowed the completion of the project as these gave the project group the motivation to work hard and leave the project in its best form for other users.

6 REFERENCES

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