

E-Campus Community: Proposed E-Waste Management System Framework

Rafiza Bt Kasbun
Fakulti Sains Teknologi Maklumat
Kolej Universiti Islam Antarabangsa Selangor
rafiza@kuis.edu.my

Noor Fadzilah Abdul Rahman
Fakulti Sains Teknologi Maklumat
Kolej Universiti Islam Antarabangsa Selangor
noorfadzilah@kuis.edu.my

Khairil Ashraf Elias
Fakulti Sains Teknologi Maklumat
Kolej Universiti Islam Antarabangsa Selangor

ABSTRACT

Electrical and electronic goods are expiring as new models are introduced into the market. Thus, the damaged or unused goods are to be properly disposed to prevent pollution of nature. Electronic waste management is a major challenge for every country, including Malaysia to sustain the growth of nature. Uncontrolled and lingering e-waste disposal can harm human health and the environment. The remaining of e-waste are either stockpiled in garages, closets or when thrown away they end up in landfills or incinerators and even more worrying they are exported to Asia countries to be disposed. Based on these problems, the study was conducted to propose a system of e-waste disposal among the campus community. The research case study will take place at the Selangor International Islamic University College. The proposed e-waste management system framework will be aiming in educating and promoting the campus community on proper e-waste disposal practices. It functions as a platform to inform, alert, update and to gain campus community engagement on the issues with regards to e-waste. This e-waste management system is expected to increase awareness among the campus community in maintaining and preserving the environment of Malaysia's environment.

1.0 Introduction

E-waste covers all electrical and electronic equipment discarded or not used anymore. With the right recycling process, 90 percent of an electronic device can be recovered and reused. This is a great saving on the materials and accessories of electronic devices. However, how far is the e-waste management being taken care of by the Malaysian community? Electronic equipment is a requirement of all societies today. So, it is important that it is well managed from production to disposal. The Malaysian society, in general, still takes this issue easily because of its individualistic attitude and is not aware of the environmental sustainability. An easy and rewarding system for consumers may be able to promote proper e-waste disposal practices.

1.1 E-Waste and Malaysian Community

Jabatan Kastam dan Eksias Di Raja had crippled 28 illegal e-waste shipments from entering Malaysia in 2009. The E-waste was returned to home countries such as USA, South Korea, India, Canada, Indonesia, Japan, New Zealand, Hong Kong, Philippines, Singapore and China. This shows the critical stage of a country to ensure that their country is not polluted with chemicals from electronic equipment. Norazli (2015) found that among the 3 levels of income earners, LI (Lower Income), MI (Middle Income), and HI (High Income), more LI people practiced 4R (Reuse, Repair, Remanufacturing, Recycling) compared to MI and HI 33% and 35% respectively. The finding of this study opens a new perspective on the thinking of recycling among the Malaysian society today. The more developing a country is the more critical of the e-waste disposal method. It is a big threat to the country if there is no good e-waste management practice.

Many efforts are being made among the community in e-waste management. However, the number of community involvement remains low as compared to the increase in population and the use of electronic equipment. Among the government's efforts are to enforce laws in organizing e-waste, advocating related campaigns and activities as well as collaborating between municipal councils with electronic goods manufacturers. But this effort has not been proactively promoted among the younger generation. Therefore, this study is expected to provide some ideas and solutions to e-waste management in higher education center specifically and in Malaysia generally.

1.2 The Needs of E-Waste Management System in Malaysia

Minister of Natural Resources and Environment, Datuk Seri Junaidi Tuanku Jaafar, said Malaysia would emerge as the first country in the Southeast Asian region to develop an e-waste management system. This is especially important as Malaysia is estimated to generate 53 million units of electronic goods such as mobile phones, televisions, washing machines, refrigerators and air-conditioning equipment by 2020.

From Wan Junaidi's above statement, it can be concluded that how this e-waste problem requires a good system for its disposal. Undoubtedly, the role of young people in fulfilling this mission is very important for the future of a healthier and safer country. It is desirable that the e-waste management system is effectively introduced at the school and university level. Various ways can be done to get people involved.

Disposal landfills and wastewater collection systems that are not systematic and organized are among the major sources of e-waste management less than welcome. Training and dumping practices among Malaysians who are still at a worrying level are also among the major factors of e-waste not being adequately compensated. A user-friendly and easy-to-use education and awareness system needs to be introduced so that the encouragement of this e-waste management can be a good culture among Malaysians and students at institutions of higher learning in particular.

MCMC in collaboration with Jejak Digital conducts various awareness campaigns on e-waste disposal. Resolution 79 also emphasizes that electronic device manufacturers perform the recycling of materials contained within the device. Figure 1

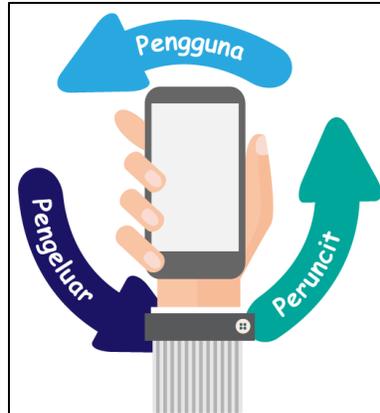


Figure 1: Device Manufacturers Need to Implement Material Recycling (Resolusi 79)

The iCycle blue bin system launched by the Prime Minister of Malaysia in March 2017 commenced a good move when MMU used it as an Initial Scheme at the university and started collecting good electronic waste around the MMU campus. The iCycle system is a system platform for people to get the claim reward in iCycle by sending e-waste to the bin located in selected areas and then it can be disposed of properly. Figure 2 and 3 describe how the iCycle system works.



Figure 2: iCycle System Registration



Figure 3: iCycle Framework

Kavita and Sameer (2015) in their study state that the failure to implement Green ICT in institutions of higher learning in India is as in Chart 1.

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- 1 Lack of adequate funding and support from top management
 - 2 Lack of participation from necessary Students/Staff/Faculties
 - 3 Environmentally unconcerned institutional cultural
 - 4 Lack of Awareness of Green ICT
 - 5 Lack of education or training from Institutes
 - 6 ICTs environmental impacts are not considered as significant
 - 7 Lack of motivation among faculty/staff/student of institutes.
 - 8 Lack of Government strict Regulation
 - 9 Lack of good procurement practice at education institutes
 - 10 Inadequate Research & Development Activities
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Chart 1: Barriers for GICT implementation at Higher Education in India

Hence, it is found that a simple and friendly management system among the options to ensure students and staff at the institutions of learning support effective campaigns and e-waste management efforts. This step should be disclosed to all institutions of higher learning and schools in Malaysia. At least, it can give an early education to the present generation and beyond to be the custom of future generations.

2.0 Discussion

Based on some observations and readings and searches, it was found that an e-waste management system shall be introduced among the KUIS community as an encouragement and effort to create a healthy community environment.

3.1 Proposed Framework of KUIS Community E-Waste Management System

Below is the framework for the e-waste management system for the KUIS community.

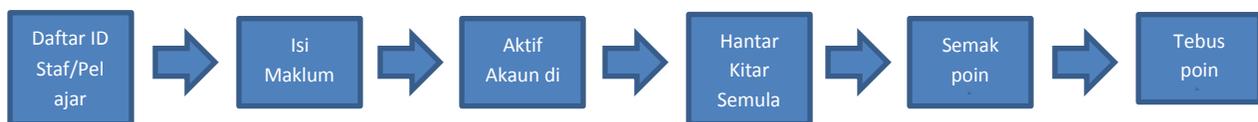


Figure 4: KUIS Community E-Waste Management System Framework

Figure 4 suggests the workflow of the KUIS community e-waste management system. Students and staff of KUIS have the opportunity to collect points and redeem them either in the form of mentoring scores for students or KPIs for KUIS staff. This system is expected to encourage the involvement of KUIS residents to jointly manage e-waste management at KUIS premises.

This proposed system can be integrated with MyLMS for students or KPIs for staff to view accumulated points. It can be developed separately where it is developed in the form of mobile applications and is taken into account when points are sufficient to redeem them as mentoring or others

(Figure 5). Some constraints should be taken into account first. However, further studies will be carried out subsequent to this proposal.



Figure 5: Accumulated points can be reviewed by KUIS Students and Staffs

4.0 Conclusion

When the phenomenon of the whole world is so passionate about electronic devices now, the rise of e-waste takes place without us knowing we're actually sinking ourselves. From here, the education and awareness of the younger generation on e-waste management needs to be highlighted to further extend it to future generations. Therefore, it is desirable that an education system on this e-waste is introduced in all national higher education so it can indirectly educate Malaysians to be more aware of the proper disposal of the e-waste. It is hoped that the proposed system in this paper will receive good feedback from all parties. This effort is to safeguard the natural environment for the health of Malaysians in general and not depend on the country's top management only to solve it.

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