

PORTFOLIO (ASSIGNMENT 12)



COURSE: ENVIRONMENTAL AWARENESS AND RESPONSIBILITY

CODE: GGH3708

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DEPARTMENT OF GEOGRAPHY

UNIVERSITY OF SOUTH AFRICA

Part 1: Raising awareness about electronic waste in the community

Introduction

After having casual conversations with people in my community about recycling, it came to my attention that most people in my community do participate in recycling at home. However, they do not recycle their electronic waste, but dispose of it in their municipal waste bins. I came to realize that people are unaware of the hazardous nature of electronic waste and the effects on the environment when it is disposed of incorrectly.

Definition of electronic waste

Electronic waste or e-waste can be defined as all items of electrical or electronic equipment and its components which have been discarded without the intention of reuse (Baldé et al., 2015).

Classification of e-waste

In general (Chatterjee & Abraham, 2017) e-waste can be classified into household appliances, information and communication equipment and consumer electronics, computers, laptops, printers, mobile phones and computer accessories. One e-waste product may contain a variety of different materials and elements which differentiate it from other household and industrial waste.

Why has e-waste become a problem?

The steep increase in e-waste came about with the rapid changes in technological development and the low cost of many electronic products. According

to U.S.EPA (2009 cited in Saphores et al., 2011:49) e-waste has been observed as the fast growing segment of household waste.

Quantities of e-waste

Globally the total amount of e-waste generated in 2014 was estimated at 41,8 million metric tonnes (Baldé et al., 2015). The total estimated amount of e-waste produced in South Africa is 322000 tonnes per year (GreenCape, 2016). However only 12% is being recycled. The StEP Initiative (Solving the e-waste problem) estimated that the average South African generates approximately 6.6kg of e-waste per year (StEP Initiative 2015). The Western Cape population of 5.8 million generates 40000 tonnes of e-waste available for recycling. This amount does not include the additional e-waste in storage.

Considering the excessive amount of e-waste quantities in the Western Cape which is where I live, there is an opportunity to inform the community about the benefits of recycling e-waste and the harmful effects on the environment when e-waste is not recycled. The most important factor for increasing e-waste recycling is to create awareness through different media channels as this is how most households can be reached.

Factors contributing to increased e-waste recycling

As a general observation participation in recycling activities is not the norm for most households. A study on the willingness of households to participate in e-waste recycling (Saphores et al., 2011) found that educating consumers on the benefits of recycling, promoting moral values and the convenience of e-waste recycling motivates households to engage in e-waste recycling. In addition, other studies concluded that people who are more inclined to recycle e-waste are likely to be part of larger families, have knowledge about the toxic effects of e-waste and have encountered conventional recycling (Saphores et al., 2011).

Promoting moral values

According to Clark et al., (2003, cited in Saphores et al., 2011: 50) an individual's personal norms, beliefs or attitudes influence their behaviour. Therefore, by creating awareness about the consequences of an individual's indirect actions towards the environment can initiate personal norms which can activate a response. To simply the concept:

- Norms influence behaviour.
- Awareness about consequences activates response.

Convenience of recycling

It is perceived (Tanskanen, 2012) that consumers appreciate information on where and how to recycle their old electronics. Efficiency and convenience were identified as factors that increase consumer participation in recycling programs.

Benefits of recycling e-waste:

- Recycling e-waste saves already limited landfill space and creates jobs (Saphores et al., 2011).
- The materials from e-waste are valuable secondary resources for manufacturing new products (Baldé et al., 2015). These valuable materials include iron, copper, aluminium and plastics and precious metals such as gold, silver, platinum and palladium. Tansel (2016) states that it requires between 60 to 64 elements to make one mobile phone. The extraction of huge quantities of materials to manufacture electronics puts increasing stress on the environment and the earth's resources.
- Recycling e-waste prevents the release of toxic materials into the environment. The hazardous materials found in electronic waste are mercury, lead, cadmium and brominated-flame-retardants which can be harmful to the environment if treated or disposed of incorrectly (Baldé et al., 2015). The potential health effects of toxic substances in e-waste include Impaired Mental Development in babies, damage to children's nervous system and the reproductive system of adults. Toxins from flame retardants released into the air can cause lung damage.
- Efficient recycling of metals from e-waste can reduce greenhouse gases emissions. When metals are manufactured from raw materials it produces a large carbon footprint. A smaller carbon footprint is generated when metals are produced from e-waste compared to the conventional method of production from raw materials. For example, recycling 1kg of aluminium prevents generating 2kg of CO₂.

Management of e-waste

According to Tanskanen et al., (2006, cited in Tanskanen, 2012: 1005) the process e-waste recycling can be divided into three steps (Fig. 1) with separate management and technical strategies. Disassembling and sorting and bulk recycling are part of e-waste recycling and recovery processes.



FIGURE 1: The three steps in the recycling process (Adapted from Tanskanen, 2012).

Successful recycling programs

The success of recycling programs in China have been partially accredited to the offering of different incentives such as pre-paid phone cards and eco-friendly shopping bags to recyclers of e-waste (Tanskanen, 2012). Partnership with different organisations such as telecommunication operators, recycling companies and environmental NGOs can be beneficial in connecting recycling programs with communities.

Conclusion

Globally electronic waste is rapidly increasing with the demand for new trends in technological innovations. Electronic waste contains valuable secondary resources which can be used in the manufacturing of new products. Consumers are often unaware of the opportunity to recycle their electronic waste. Households are more inclined to recycle their e-waste when they understand the benefits of e-waste recycling and when it is convenient to do so.

Planning of e-waste recycling project

Situation assessment

As previously mentioned the Western Cape population of 5.8 million generates 40000 tonnes of e-waste available for recycling. This amount does not include the additional e-waste in storage. Therefore 6.9kg of e-waste is generated per person. The targeted group is Cape Town Church of Christ. However, the project does not exclude other consumers. Cape Town Church of Christ has a membership of 250 people. The average total amount of e-waste produced by this group is 1725kg (6.9kg x 250).

Goal:

To decrease the average total amount of e-waste available for recycling for Cape Town Church of Christ.

Objectives:

- Create awareness about e-waste through promoting education about the benefits of recycling e-waste using different media such as Facebook, a personal blog and WhatsApp groups.
- Improve the convenience of recycling e-waste.

E-waste recycling action plan

Education and Promotion activities

Create a personal blog

The name of the blog is called E-waste Awareness. The blog will be used to educate consumers about the increasing e-waste quantities and the challenges connected to that. It will also highlight the benefits, classification and the processes involved in e-waste recycling.

The blog describes the definition of e-waste and the items and components that make up e-waste. It describes the harmful substances contained in e-waste and the effects on the environment. Each entry of the blog has an image which facilitates the understanding of the different facts. The blog will be updated regularly and will be linked to my personal Facebook account which will further support the promotion of electronic waste recycling.

Refer to Annex 1 in Appendix to view screenshots of blog posts.

Choose an e-waste recycling company

It is necessary to research different e-waste recycling companies to verify whether they comply with the ISO 14000 Requirements Act. Contact the company to inquire about the services they offer. Schedule a date on which to deliver e-waste. The company confirm the date for delivering the e-waste on 1 June 2017.

Name of the recycling company: Harris E-Waste Recycling. Contact person: Brice Harris. Contact number: 074 877 2583. E-mail address: info@ewastect.co.za

Advertise e-waste drop-off dates.

Create electronic flyer to inform people of the date of collection of e-waste. The flyer will contain a short summary of different types e-waste that will be recycled and the benefits of recycling e-waste. Drop off venue for e-waste will be at the church venue, at Parow High School. Collection dates are scheduled for 28/05/2017 and 4 June 2017.

Refer to Annex 2 in Appendix to view copy of electronic flyer.

Media used to advertise e-waste drop-off dates.

The electronic flyer will be posted on my personal Facebook page and the Cape Town Church of Christ's Facebook page. Communicate with the Cape Town Church of Christ's office to get permission to post the electronic flyer on the church's website. Create a WhatsApp group, "Recycling Project" to post electronic flyer on group.

Refer to Annex 3 in Appendix to view copy of screenshot of WhatsApp group, personal Facebook page and the Cape Town Church of Christ's Facebook page.

Convenience of recycling

People are more inclined to participate in recycling when it is convenient to do so. The project activities should therefore be efficient, convenient and should not be time consuming.

Choose dates for collection of e-waste

E-waste will be collected on 28/05/2017 and 4 June 2017 at church. This venue will be convenient for the targeted group of people. I will use my car to collect and transport items. Larger electronics items will be collected directly from people's homes or offices.

Schedule collection dates and times with different people. Collection of e-waste from Taylor Blinds in Montague Gardens. Take photos at different collection locations. Date for collection is set for 1 June 2017.

Delivery of e-waste to the recycling company

The electronic waste will be weighed at the recycling company. The company will pay a small amount for the e-waste which is based on the weight of the e-waste.

Incentives offered for recycling e-waste

Incentives are used to motivate people to participate in recycling projects. It will also be beneficial for the sustainability of e-waste recycling activities. If people know that they will be rewarded for dropping off their e-waste they will be motivated to do so. The money received from the recycling company for the e-waste can be used to purchase specific products to reward recyclers.

Collection and delivery of e-waste

Collection at church on 28/05/2017 and 04/06/2017

The e-waste was collected from church members at Parow High School. Items were placed in the boot of my car. The items that were received included radios, cell phones, printers and VCRs. Photos were taken at the time of collection. Refer to Annex 4 in Appendix to view photos.

Collection of larger e-waste electronics on 1 June 2017

The e-waste was collected from Taylor Blinds offices in Montague Gardens. Photos were taken at the time of collection. Refer to Annex 4 in Appendix to view photos.

Delivery of e-waste to Harris Electronic Waste Recycling on 1 June 2017

I delivered the e-waste to Harris Electronic Waste Recycling in Montague Gardens. The e-waste was weighed and inspected. The total weight of e-waste was 156kg. Photos were taken of the compliance regulations at Harris Electronic Waste Recycling. A Short video interview was conducted at the recycling premises with the owners of the company. Jeremy and Brice Harris, owners of Harris Electronic Waste Recycling explain the different processes that are conducted at the factory¹. Refer to Annex 5 in Appendix to view photos at the factory and Annex 6 to view video interview.

Program evaluation

The responses from the educational and promotional activities were satisfactory. Many people had questions about the continuation of the project. Some people expressed that they had no knowledge about the benefits of e-waste recycling and expressed their respect for the commitment I have shown to make a change in the environment.

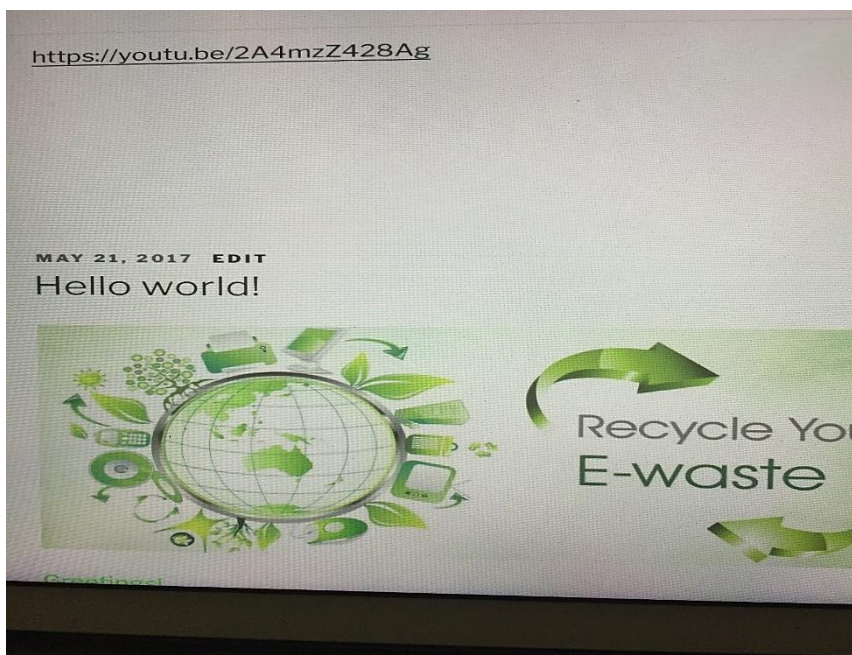
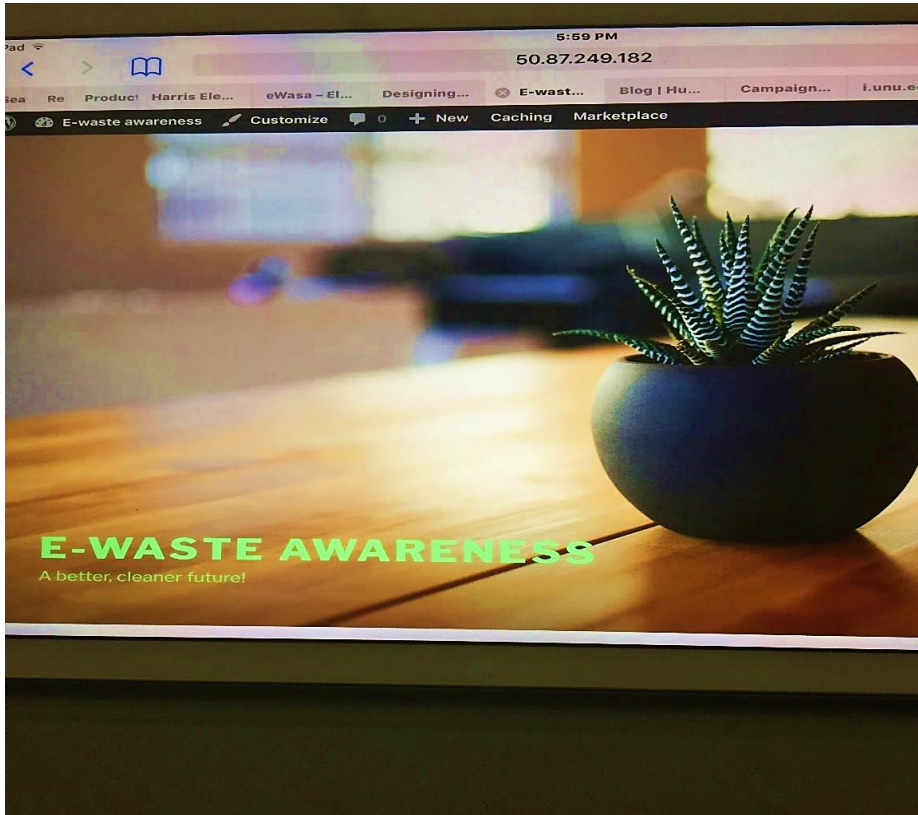
If the average total amount of e-waste produced by this group is 1725kg (6.9kg x 250) and I have collected 156kg of e-waste then the percentage of e-waste collected is 9%. This means that there is a decrease of 9% in the total amount of e-waste produced by the Cape Town Church of Christ.

To improve the e-waste collection outcome, I would create more opportunities for people to drop off their electronics. In addition, I would extend the target groups to schools and small businesses in my neighbourhood.

APPENDIX

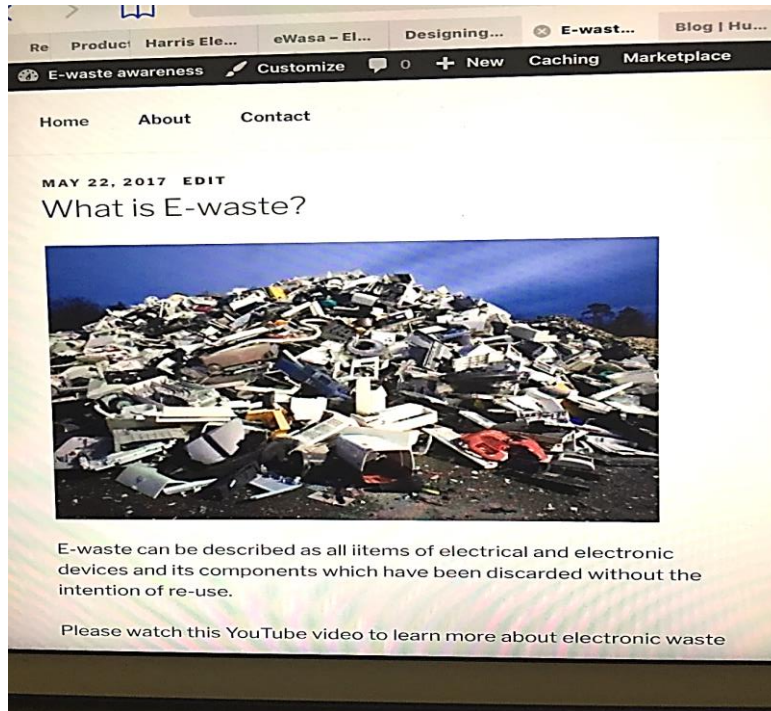
Annex 1:

Screenshots of E-Waste Awareness blog posts



Screenshots of blogpost

Screenshots of blog posts




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E-waste awareness Customize + New Caching Marketplace

Home About Contact

MAY 22, 2017 EDIT

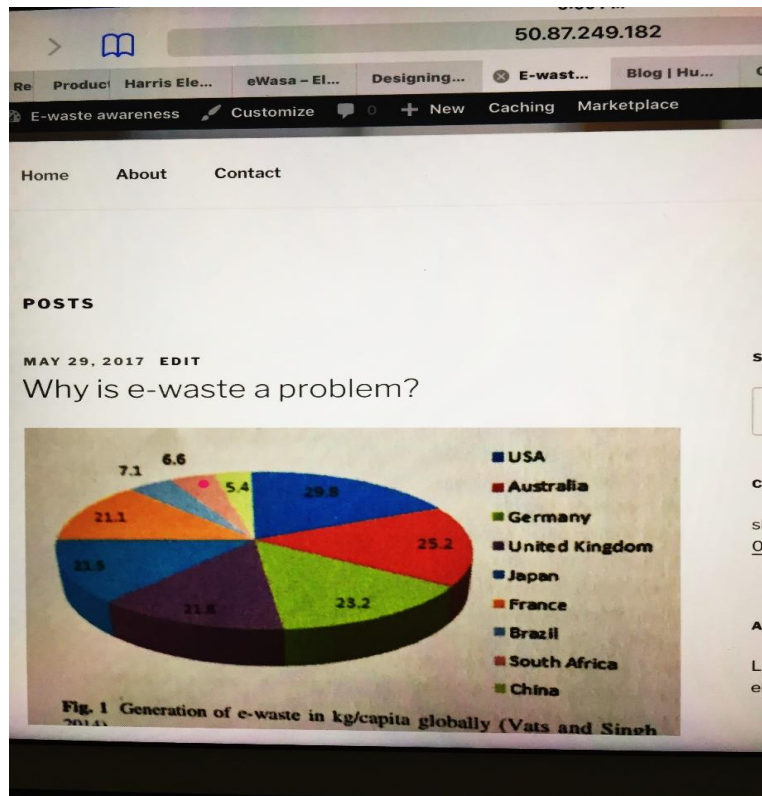
What is E-waste?



E-waste can be described as all items of electrical and electronic devices and its components which have been discarded without the intention of re-use.

Please watch this YouTube video to learn more about electronic waste

Screenshots of blogpost



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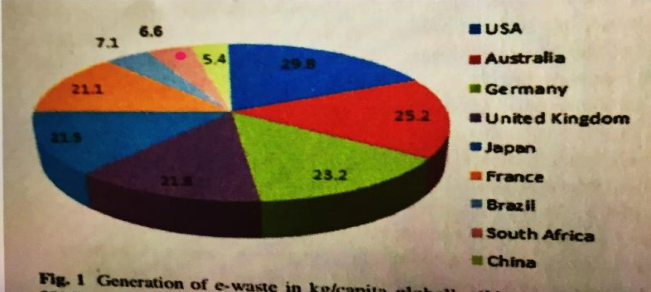
E-waste awareness Customize + New Caching Marketplace

Home About Contact

POSTS

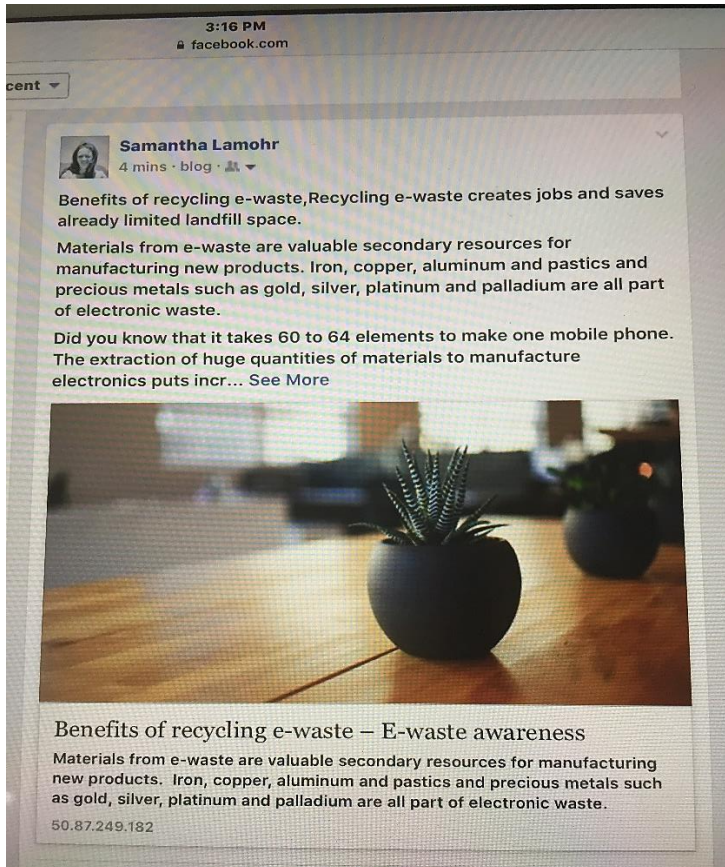
MAY 29, 2017 EDIT

Why is e-waste a problem?



Country	Percentage
USA	29.8
Australia	25.2
Germany	23.2
United Kingdom	21.5
Japan	21.1
France	21.1
Brazil	7.1
South Africa	6.6
China	5.4

Fig. 1 Generation of e-waste in kg/capita globally (Vats and Singh 2014)



Screenshot of personal Facebook page linked to my E-waste Awareness blog

Annex 2

Electronic flyer

Electronic Waste Recycling Project 

DID YOU KNOW? Electronic appliances contain toxic substances and should be disposed of in an environmentally safe way to protect our earth

Please bring your unused electronics to church on Sunday 28 May and Sunday 4 June.

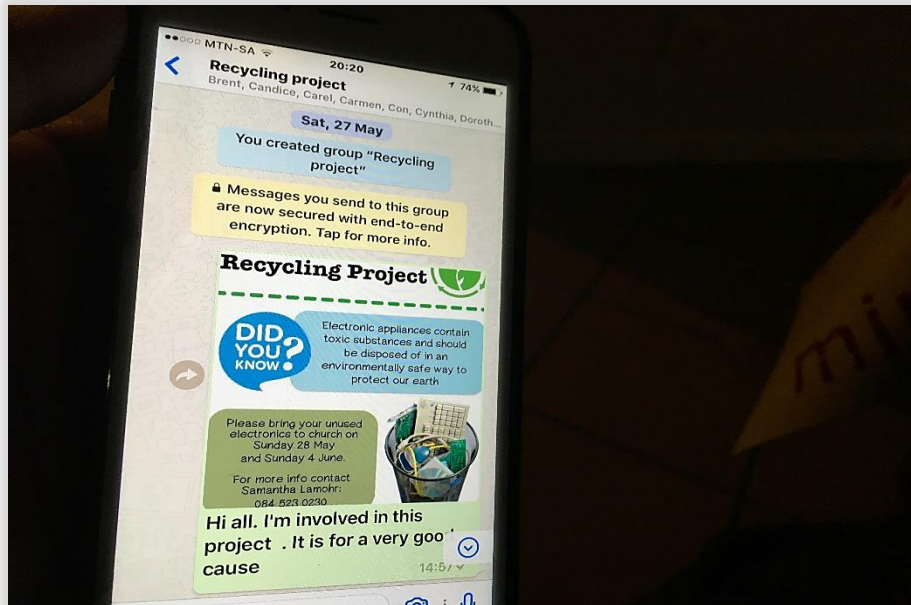
For more info contact Samantha Lamohr: 084 523 0230



Electronics list: cellphones, pc keyboards, headphones, consoles... basically anything that uses electricity ☺

Annex 3

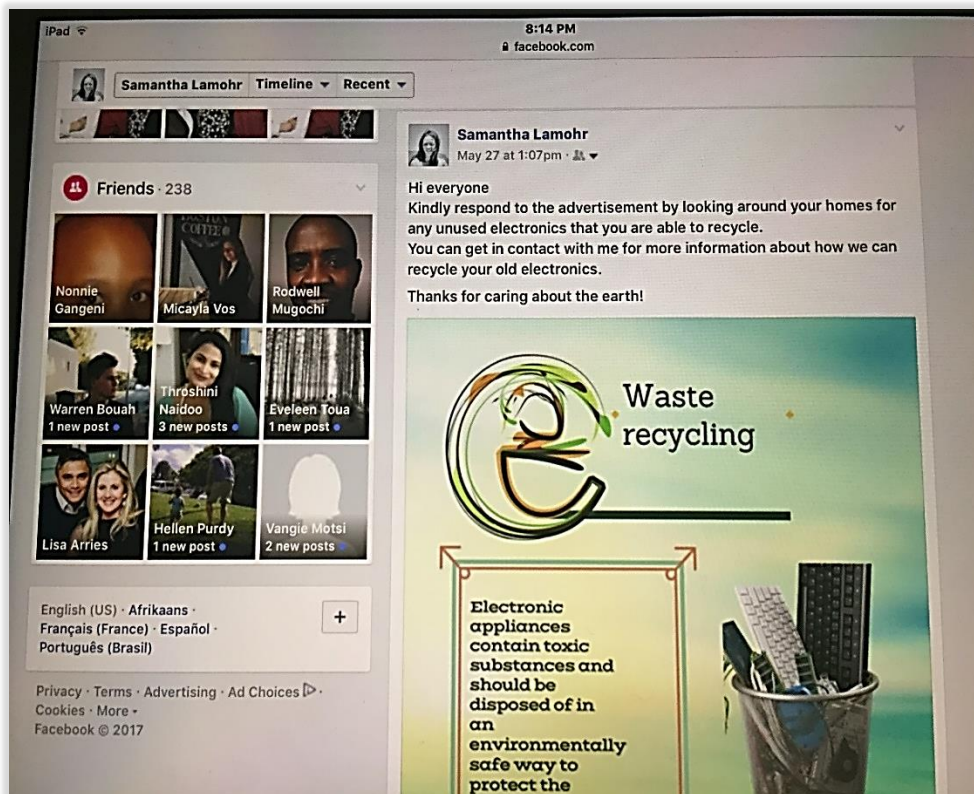
Screenshots of WhatsApp group, personal Facebook page and the Cape Town Church of Christ's Facebook page.



WhatsApp group



Church of Christ Facebook page



Personal Facebook page

Annex 4

Collection of e-waste at church and Taylor Blinds' office building



Collection of e-waste at church

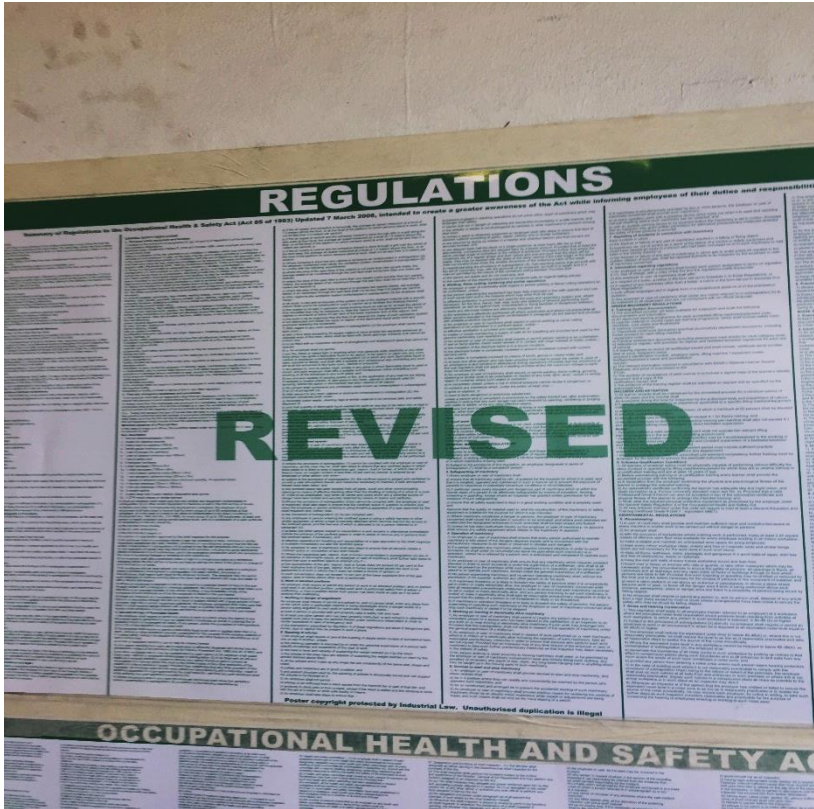


Collection of e-waste at Taylor Blinds

Annex 5

Delivery of e-waste to Harris Electronic Waste Recycling





Notice of regulations at Harris Electronic Waste Recycling



E-waste weighed on scale

Annex 6

Brief interview with owners of Harris Electronic Waste recycling. Click on link to view video <https://youtu.be/dZLwjkuelAA>.

Part 2: Declaration of Environmental Awareness and Responsibility

The knowledge I have obtained while doing this portfolio created in me a sense of protectiveness over the earth and all living organisms in it. I have realised I can contribute to the well-being of the environment I live in.

Environmental responsibility

As a citizen of Cape Town, South Africa I have the responsibility to live in such a way that will secure the environmental wellbeing of others at present as well as for the future. I accept accountability for my actions and therefore choose to dispose of my electronic waste in an environmentally safe way by recycling. Since I am currently unemployed I am confined to only make a difference in my immediate environment. My goal is to start working soon after the completion of my studies which will be this month (June 2017) and have a bigger impact with raising awareness on electronic waste recycling.

Environmental awareness

With the knowledge, I have gained about e-waste recycling I am compelled to create awareness about the toxic effects of disposing of e-waste in an improper way as well as the benefits of recycling e-waste. My E-waste Awareness blog will serve as a platform to educate and motivate others to participate in e-waste recycling.

Sustainability of e-waste recycling

I want to continue to connect e-waste recycling with the people by giving of my time and resources. I will create a community drop off site for e-waste every three months. People will be allowed to drop off their e-waste at a central, convenient location. I will take photos of these activities and upload it to my blog and Facebook page. People are more inclined to imitate what they see and not what they are told to do.

Other forms of waste

It was almost impossible not to reflect on other forms of waste while studying the topic of electronic waste. I have become more conscious towards the impact of my household's waste on the environment. To decrease my household waste, I have decided to choose products made from recycled materials such as glass, paper and other recovered materials. I will buy less meat products and more fruit and vegetables. I will save energy by unplugging appliances when not in use and switch off lights when not needed. According to Adelson et al., (2008) we live in a world

where it is acceptable to have an affluent-consumption orientated lifestyle which results in an increased ecological footprint. I want to decrease my household's ecological footprint by reducing my household waste.

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NOTES

- ¹ Information from interview with Mr B. Harris and J. Harris, owners of Harris E-Waste Electronics, Cape Town, 1 June 2017.