E-Waste Project Progress Submission
Group 2K

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STAKEHOLDER IDENTIFICATION AND DATA COLLECTION

STAKEHOLDER SELECTION AND TARGET GROUP FOCUS

In this project we've considered five key stakeholders in the construction of our problem statement and requirements, while not considering two others. The first two stakeholders are our main target group, with all stakeholders below ranked in order of descending project importance.

Considered stakeholders

First-year University of Melbourne students who are unaware of the e-waste programs available to them

- We've considered these students' needs in that increasing awareness of these schemes is likely to increase the uptake of these programs, with these programs beneficial for students. Most of our interviewees discussed disposing of their e-waste, even though some were incorrectly disposing of their items. Therefore, there is a need for these students to get rid of unwanted items. For these students we are considering the programs offered and promoted on the university's 'E-Waste' webpage for students, which includes Fluorocycle, battery disposal (B-Cycle), cartridge disposal, and other personal e-waste (offered by individual faculties for students).

First-year University of Melbourne staff at Parkville campus who are unaware of the reuse service

- While we did not directly interview or contact any staff, we are assuming the same level of knowledge for first-year students and staff, given the similar amount of promotion for e-waste programs for both stakeholders. For example, while the e-waste programs available to students and staff differs, they are explained on the same University of Melbourne webpage with the Sustainability Team not 'actively promoting' the reuse service. Therefore, we can assume the same sentiment for staff about the reuse service – that they would like to dispose of e-waste but incorrectly do so for reasons of convenience or a lack of awareness. It is also crucial that we are specifically referring to those who are unaware of the reuse service, as we aren't focussed on improving the operation of the service itself. To this end, we are not making it more desirable to use for staff already familiar with the service.

University of Melbourne Sustainability Team

- We've considered the Sustainability Team in the hopes that exploring this problem will positively influence the team's target to reduce waste to landfill to just 10kg/person by 2025, as mentioned in the university's Sustainability Plan 2030 (University of Melbourne, 2022). Australia recycles only 44% of its e-waste nationally (International Comparisons and Exports - DCCEEW, 2024), so increasing awareness of e-waste recycling programs is likely to boost the university's waste to landfill metric.

University of Melbourne's e-waste cleaning contractor ISS World

- Considering this contractor when exploring our problem will ensure that less illegal e-waste dumping takes place on campus. This also means that when we eventually explore the problem, we might tailor our awareness approach to specifically address ISS World's needs. It could also mean an improved cleaning efficiency on campus for the contractor.

Victorian Government

- We've considered the Victorian Government as a stakeholder because we hope that exploring our problem will result in the university more strictly abiding by e-waste disposal regulations. This also has benefits for University of Melbourne as government regulations will hopefully be more stringently followed. According to our research, the Victorian Government places great importance on e-waste recycling and disposal, and is one of the earlier states in Australia to implement a ban on e-waste going to landfill (EPA Victoria, 2020).

Unconsidered stakeholders

Reuse service/Campus assist staff

- We haven't considered the reuse service staff's needs because part of our problem is centred around how to promote and increase uptake on the reuse service, rather than solve operational issues. In fact, it is hopeful that campus assist will be dealing with disposing and sorting a greater volume of items. This may prove challenging for several reasons, including storage of items. However, Callum from Campus Assist details that this 'would depend largely depend on the type of items that increase consists of.'

Other entities that purchase or recycle university e-waste

- These entities are similar to the previous stakeholder in that a greater volume of items may need to be processed. For the same reason, this is outside of our problem space.

DATA COLLECTION

Our main interactive data collection involved interviewing five first-year university students (With four from University of Melbourne and one from Monash University). This provided us an insight into new students' e-waste knowledge and behaviour and allowed us to form requirements and a tailored problem statement. See Appendix for interview questions and responses.

Other data we collected includes interviews with the Campus Assist and Sustainability teams (as provided in the subject resources) as well as legislation from the Victorian Government.

DATA ANALYSIS AND INSIGHTS

There are two main reasons that discourage interviewed students from disposing of their e-waste. The first reason is inconvenience, with students seeking an option that is time efficient and simple. Additionally, unsatisfying disposal methods mean that some students sought a method which is 'rewarding'.

It is clear that some students do not correctly dispose of their e-waste or have noticed when others fail to do so. For example, one student 'toss[ed] them in the bin downstairs' while another 'often see[s] other types of waste in the wrong bin.' Both of these students have no knowledge of any of the university's e-waste programs.

From the provided reuse and sustainability team interviews, it is evident that both teams desire an increased usage and awareness of the reuse service. Campus Assist is 'always wanting to see reuse and resale figures improve' while the Sustainability Team notes that 'the biggest issue is awareness.'

When discussing the efficacy of Melbourne University's e-waste initiative, awareness and accessibility are found to be the key factors behind low e-waste turnover among staff, with students not being able to access this service at all. To gain a better understanding, a staff member of the Monash IT Asset Disposal team was interviewed, and greater insight was provided upon an equivalent e-waste disposal initiative at Monash University, which is an institute comparable in both student/staff body size and by extension ecological footprint.

The key findings discovered were that Monash University provided students with a dedicated secure e-waste disposal area located on campus which resulted in 30% more e-waste collected by volume annually, when compared to Unimelb's initiative. Also, the Monash IT disposal team consistently ran online and in-person awareness campaigns during student orientation and club events, informing students on how and where to safely dispose of their electronics while also improving awareness on the negative impacts of e-waste ending up in landfill.

In contrast, interviews from Callum (Campus Assist) and the Melbourne University Sustainability Team highlighted the lack of any outreach programs/campaigns that targeted student/staff members in raising awareness around safe disposal of e-waste. Furthermore, only around 11% of e-waste collected at the university was reused, compared to 20% of waste collected at Monash University, highlighting a lack of awareness and understanding of appropriate e-waste handling and disposal procedures among both Campus Assist and Sustainability Team staff. This contributes to the overall lack of awareness and accountability.

PROBLEM STATEMENT, NEEDS AND CONTEXT

PROBLEM STATEMENT

How might we increase the awareness and uptake of e-waste programs for students and staff at the university?

STAKEHOLDER NEEDS/CONTEXT

Increase participation in e-waste recycling generally

- Based on a survey in 2018, people are more influenced to recycle e-waste by information, convenience and personal gain rather than moral goals (Siringo et al., 2020). Usually, the harms of e-waste were well known. Therefore, much needs to be done to provide information about e-waste programs and improve convenience by making it easier for students and staff to know how they can dispose of e-waste.

Reduce the incidence of the dangerous, illegal dumping of e-waste

- 95% of a battery can be turned into new batteries or used in other industries. Batteries contain toxic materials and can start fires in garbage trucks or landfill (Clean Up Australia, n.d.).

  The University of Melbourne's Sustainability Team reports that they don't 'currently measure' the level of staff awareness but have reports of illegal dumping of e-waste. Therefore, multiple stakeholders including the university Sustainability Team, e-waste cleaning contractor and Victorian Government require a solution which can address this issue.

Develop a way to keep high turnover staff/students informed

- As a lot of students and staff pass through the university quickly, it is hard to sustain high awareness of e-waste programs, evident when Callum from Campus Assist states that the reuse service is 'not something we actively promote.' This need to address the lack of awareness is of greatest benefit to the relevant students and staff, as well as the university Sustainability Team.

DESIGN REQUIREMENTS/METRICS

At least 60% of first-year Melbourne University students that are surveyed have a fair knowledge of available e-waste programs for them.

- Out of the five first-year students that we interviewed, two informed us that they had at least a fair knowledge of available e-waste programs. We hope to achieve at least three out of every five students having a fair knowledge of ways they can dispose of their e-waste. Fulfilling this requirement will highlight an increased student awareness about the e-waste programs that are available to them (the specific university programs are mentioned in the stakeholder section).

At least 60% of first-year Melbourne University staff that are surveyed have a fair knowledge of the reuse service and other available e-waste programs.

- This 60% figure is based on the first-year students' statistic, as mentioned in the stakeholder section. This requirement aims to show staff's increased awareness about the reuse service in addition to other e-waste programs on offer for the university staff.

Melbourne University surveys its e-waste cleaning contractor (ISS World) and finds that the contractor observes 35% less illegal e-waste dumping on campus in the first one-year period of implementation compared to the previous one-year period.

- This 35% figure comes from the yearly difference between the university's waste to landfill at the end of 2023 and the desired target at the end of 2025. These statistics are 23kg/person and 10kg/person respectively. Although this is not a perfect measurement, it provides a good starting estimate for our metric.
  We hope that this requirement will signal whether there has been an increased uptake in the e-waste programs for students and staff. Although potentially challenging, a possible way of detecting this requirement would be to ask on a monthly basis how many instances of e-waste dumping the contractor observed in the last month and then sum the total for the year.

The reuse service has a 35% greater volume of items submitted by staff in the one-year period after implementation than the previous period.

- This 35% figure uses the same justification as in the previous requirement. Although this figure has not been perfectly devised, it is our best approximation. Achieving this requirement would satisfy the 'increased uptake' component of our problem statement.

TEAMWORK

CONTRIBUTIONS

Jasper

- Collected data from external sources through interviews
- Specified the various requirements and metrics and helped in the construction of the problem statement. Also assisted with identifying stakeholders.

Kexuan

- Collected data from external sources through interviews
- Collected information from academic papers and websites to improve the stakeholder identification and definition section.

Bilal

- Collected data from external sources through interviews
- Contributed to the identification of relevant stakeholders and determination of appropriate needs for a viable solution

Kehong

- Collected data from external sources through interviews
- Assisted in the formulation of the requirements and contributed to the stakeholder section.

Zhengnan

- Collected data from external sources through interviews
- Contributed to stakeholder needs and established context of the problem through data insights.

TEAM PROCESSES

Our team used a shared Word document and often provided comments to clarify issues with some of our statements that we independently devised. Our group had a team WhatsApp where we coordinated meeting times and deadlines and made sure we were all on track.

APPENDIX

REFERENCES

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INTERVIEWS WITH FIRST-YEAR STUDENTS

Questions

The interview questions for first-year students were variations of the following:

1) What do you know about the impact e-waste can have on the environment?
2) What type of e-waste items do you usually discard?
3) Do you know of any programs related to recycling of electronic components in universities?
4) What are some reasons/factors that would discourage you to properly dispose of your e-waste?
5) Do you have any comments about the university's programs related to recycling e-waste?

Interviewee 1

What do you know about the impact e-waste can have on the environment?

- Not much, I've heard that batteries in rubbish bins can cause fires, and I noticed that sometimes you can see that there are places that you can recycle e-waste so I know that there must be something wrong with putting them in recycling, but I don't know what it is.

What type of e-waste items do you usually discard?

- Batteries, old computers, anything that doesn't work, old earphones.

Do you know of any programs related to recycling of electronic components in universities?

- No. I presume there is somewhere you can dispose of e-waste but I'm not too sure where. I could probably find it if I looked up on the intranet. I'd rather go somewhere close to my home.

What are some reasons/factors that would discourage you to properly dispose of your e-waste? Such as not convenient enough, not rewarding, other factors?

- Can't be bothered, too much effort, too far from home, don't know where the drop off points are.

Do you have any comments about the university's programs related to recycling e-waste?

- I don't really know what they are which makes me think they should advertise them more.

Interviewee 2 (First-year University of Melbourne students)

What do you think are the main e-waste items and how would you deal with them?

- Old mobile phones, old computers, Power banks and so on. I usually either store them in the storage room at home or just toss them out.

Where do you usually throw away the e-waste?

- I usually just toss them in the bin downstairs.

Do you know of any programs that the University of Melbourne holds to recycle e-waste?

- No, I'm not really sure. I've just started studying at the University of Melbourne and I'm still getting used to life here.

What obstacle did you face in dealing with e-waste?

- Time, I don't want to spend too much time on these things.

Do you have any suggestions for our project, the University of Melbourne's activities, or other aspects?

- As for unimelb's activities, I think offering small gifts to participants or organizing interesting activities could increase its appeal.

Interviewee 3 (First-year University of Melbourne students)

What do you think are the main e-waste items and how would you deal with them?

- Old mobile phones, old electronics and other items with printed circuit boards. I sell old electronic devices that are still in good working condition as second-hand items, and the ones that don't sell, I just throw away.

Where do you usually throw away the e-waste?

- I try to find the recycling bins for e-wastes to dispose of them.

Do you know of any University of Melbourne e-waste programs?
- No, I don't know such activities.

If the university holds an activity about e-waste disposal, would you be interested in joining?
- Yes, I think I would attend if I had the time.

What obstacles do you face when disposing of e-waste?
- I think it takes the effort of the whole community to do this properly. Even though there are separate bins for sorting, I often see other types of waste in the wrong bin.

Do you have any suggestions for our project, the University of Melbourne's activities, or other aspects?
- As for recycling e-waste, I think offering rewards for recycling could be a good idea, just like how you can get 10 cents for bringing plastic bottles to a recycling station. This would motivate citizens to participate in e-waste recycling.

Interviewee 4 (Monash student)
What do you know about the impact e-waste can have on the environment?
- I know some impacts, that kinds of electronic waste into a lot of soil after landfill for many years cannot be degraded, there are some especially some battery products causing worse pain to the land.

Have you ever heard of the publicities about the e-waste reusing, recycling of the government, school or other organizations?
- No, almost never heard of such saying.

What's the most common electronic device you throw away?
- Batteries, a lot of disposable batteries or button batteries.

What is the electronic device you spend the most money on each year?
- Maybe cameras? Yes, it is. But they don't need to be updated.

What obstacles do you face when disposing of e-waste?
If there is a station about the e-waste recycling, I won't go there if it's too far.
- And I'm willing to do it even it's free.

Do you have any suggestions for our project, the University of Melbourne's activities, or other aspects?
- I'd definitely prefer it if I got something in return for my participation.

INTERVIEWEE 5 (undergraduate Melbourne University student)
What do you know about the impact e-waste can have on the environment? Are they different from regular trash?

- Then there will certainly be a difference ah, in this case, like for example, there are some metals, such as plating the air-carrying sheet above the metal , those will be easily degraded, may cause greater harm to the environment, with the ordinary kind of food waste is not quite the same as the kind of waste can be degraded oh.

Typically, which type of the electronics product you discard highest frequently? Any electronics item, such as cell phones, computers, headphones, data cables, batteries.

- It must be the data cable, because the data cable is easier to break.

Have you ever heard of the publicities about the e-waste reusing, recycling of the government, school or other organizations?

- In China, you can use an app called Spin to trade and reuse used electronics!

How about in Victoria?

- There's one that seems to have one that has a TRADING on the Apple store near the Melbourne central station, but Apple only has its own TRADING on their product.

What obstacles do you face when disposing of e-waste?

- Maybe not rewarding

Do you have any suggestions for our project, the University of Melbourne's activities, or other aspects?

- You can contact the manufacturers of such electronic products to seek cooperation, this example students basically change the frequency of electronic products will be higher, so that when the students go to provide their unwanted old electronic products to be recycled, can we give higher discounts on some of the new products?

INTERVIEW WITH MONASH SAFE IT DISPOSAL TEAM MEMBER

Dean is a current student at Monash University Caulfield Campus and a team member working under the safe IT disposal program on campus. Dean is part of a team responsible for running regular e-waste collection stalls for students and staff/faculty members alike, as well as organising hard and e-waste collection on campus by contracting external waste collection services. Dean was interviewed online to gain further insight into e-waste collection at Monash University.

How do you and your team currently promote the e-waste collection program to students and staff at Monash?

- We promote the program through a mix of digital and physical outreach. That includes announcements on Monash's internal staff and student newsletters, posts on campus social media pages, and eye-catching posters placed around high-traffic areas like the campus centre and libraries. We also set up visible

collection stalls at busy times during the semester to spark interest and start conversations.

Have you received any feedback from students about the accessibility and convenience of the e-waste collection initiative?

- Yes, we regularly receive feedback and most of it is positive. People appreciate that the service is available on campus, especially for things they wouldn't know how to dispose of otherwise, like old USBs or broken chargers. Some suggestions we've received include having more regular stalls and clearer signage, which we're working on.

Why do you think it is important to have a streamlined e-waste collection process on campus?

- Because when the process is simple and efficient, more people are likely to use it. It reduces confusion and makes sustainable action feel like a normal, everyday part of university life. Plus, it ensures that e-waste is properly managed and doesn't end up in general landfill bins or just thrown around on campus grounds.

What were some quantifiable metrics that underline the success of IT disposal program at Monash University?

- It is important for us to have measurable and achievable targets so we can ensure that all resources provided by the university management are appropriately directed to the right areas within the disposal initiative. In 2024, approximately 76 tonnes of e-waste was recycled through our disposal channels, which made up around 80% of total e-waste collection figures. 20% of e-waste was re-used, either on campus through distribution back to students/staff in need, or by donation to external collection agencies.