Waste Station User Experience: A CBSM Approach

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Special Thanks

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1.0 Introducing the Project

This project was designed to gauge the effectiveness of the outdoor waste sorting stations on the University of British Columbia (UBC) Vancouver campus. Utilizing the resources of the Campus Sustainability office and the knowledge available through UBC's Social Ecological Economic Development Studies (SEEDS) program, this research project has been able to analyze the habits, preferences, and opinions of students using the outdoor waste stations on campus. This information was gathered to advise on changes to be made to the design of the waste stations, aiming to reduce user confusion and improve waste diversion on campus. An example of these waste stations can be seen in Image 1, found in **Appendix B.** This project falls within UBC's Zero Waste Initiative, the UBC Waste Action Plan.

To allow for a comprehensive understanding of user's interactions with the waste station two surveys were distributed with three objectives; gauging the users' comprehension of the waste stream receptacles, understanding the components currently in place that are beneficial to the user experience, and identifying the barriers that are preventing or hindering the users' comprehension. The results of these surveys have been analyzed in order to make recommendations to improve the waste diversion system on campus. Recommendations have been made based on a social practice theory called Community Based Social Marketing, discussed within section three.

2.0 Project Methodology

This research was conducted at the UBC Vancouver Campus, located at 2329 West Mall, Vancouver, BC, 49.2611° N, 123.2531° W. There were several data collection methods used, which contributed to a mixed-mode data collection methodology. Using a mixed-mode methodology allows for the collection of data from a variety of sources, which in-turn contributes to a dataset that is representative of the population and less likely to show statistical error or user bias (Vannieuwenhuyze, 2013).

The mixed-mode methodology was used to capture the diverse range of user experiences on campus through in-person and online surveys. As students are the primary users of the outdoor waste stations on campus, a cluster sampling methodology was used to collect the primary data. The two surveys utilized were distributed within the subset population of the UBC student bodies through different methods. The structured in-person survey involved two volunteer surveyors engaging with students walking by waste stations on the UBC campus. The surveyors asked every student passing by the waste station to fill out an eleven question survey based on their knowledge of the waste sorting system (as seen in **Appendix A**). By approaching every student walking by, the surveyors were able to ensure that a random, un-bias sample was collected. Baker defines random sampling as every unit having an equal chance of selection so as to avoid

selection bias (Baker, 2002), utilizing a random sampling method for this survey ensured that surveyors were not imposing a selection bias upon the sample population.

To ensure variability in student body the surveyors were located at three different waste stations on campus at different times of the day and week. To assist with their comprehension of the waste sorting process a sample waste box was created (image two, **Appendix B**), allowing the participants to visualize waste that is commonly found on campus. In total thirty in-person surveys were performed to collect data for this project.

The second source of primary data was collected through a short, six question online survey. To facilitate the online survey a survey software, Fluidsurveys, was used. This allowed the online survey to be broadcast to a wide range of UBC students. The online survey was sent out to 30 student associations, as well as the Alma Mater Society student communications manager. In addition to this, the online survey was shared with several classrooms within the Geography faculty. Similar to the in-person survey the online survey was a structured survey, with one open ended question given to allow the participant to express any other questions or comments they may have wanted to contribute. The distribution method of this survey utilized more of a systematic sample style, as it was specifically sent to groups within the student body through student associations and within classrooms. In total 178 student surveys were completed online; to encourage participation an incentive of prize draw for a $15 UBC bookstore gift card was offered to participants.

Both the in-person and online surveys utilized a method of survey questions that was conducive to inciting a behavioural based response rather than an appeared 'socially desired result'(Braun *et al.* 2012). In addition, online survey response was kept anonymous to eliminate social desirability issues and increase self-disclosure of waste disposal knowledge and behaviours.

To gain insight into current trends in waste management a waste management specialist, Alida Kusch, Dillon Consulting, was consulted. This information was useful in understanding what to focus on when conducting a waste management survey, as well as how best to pose questions to members of the public to ensure full user comprehension. In addition to Mrs. Kusch, consultations with UBC's Water and Zero Waste Engineer, Bud Fraser, and the SEED's project coordinator, Liska Richer, were held regularly to provide guidance and suggestions for project improvement. Geography professor Simon Donner provided academic oversight. These consultations, supported by pertinent research as described in the literature review, provided concrete secondary data for this project.

These methods have provided a comprehensive insight into the barriers encountered when promoting waste diversion, and some tangible solutions to overcome those barriers. This project has been structured upon the social theory practice of Community Based Social Marketing, or CBSM, an approach to sustainable behaviour developed by Dr. Doug Mckenzie-Mohr.

3.0 Literature Review

Several sources were used to outline the methods used in CBSM, primarily the book Fostering Sustainable Behaviour by Dr. Doug Mckenzie-Mohr. This methodology employs a strategy of selecting a specific sustainable behaviour, identifying the barriers and benefits to completing that behaviour for a targeted demographic, and developing a strategic plan to encourage the desired behaviour. Within the framework tools such as gaining commitment from individuals, creating social norms, and providing prompts to remind individuals of their goals are all used to encourage the desired behaviour. Contrarily, barriers to prevent undesirable behaviours are outlined within the framework and implemented within the strategic plan. The foundation of a CBSM plan is ensuring that the framework has been piloted thoroughly before broad scale implementation. Upon implementation, plan evaluation is necessary to ensure the continued efficacy of the program (McKenzie-Mohr, 2013).

This project has adopted the CBSM framework to create a lasting behavioural change within waste station users on campus. The scope of this project thus far is to select the desired behavioural change, increase the correct usage of the campus waste stations, identifying the barriers to correct usage, and to propose recommendations to eliminate these barriers, as outlined in the recommendations section. To fully implement a CBSM approach to waste management further work will have to be carried out to pilot and analyze the recommended improvements, as well as continued plan evaluation to ensure the plan is working effectively and targeting the desired behaviour. To identify the barriers and benefits to correct utilization of the waste stations both the in-person survey and online survey attempted to capture behavioural patterns within the sample population. By posing questions in a situational format, and having in-person participants use the example garbage pieces to assist with their knowledge of sorting, the survey incited a sense of user action rather than capturing the users' ideal action. This produced survey data that is more consistent with the participants' actions when using the waste sorting stations. Behavioural-based information is key to correctly identifying barriers and benefits within a CBSM project.

To assist with the focus of this project previous on campus waste reports such as the Outdoor Waste Station Audit Summary 2013, the UBC Waste Action Plan, and Increasing UBC Campus Stewardship within Public Space: Recycling, Composting and Reducing Waste were evaluated.

These reports assisted with putting the project goals in the context of what work has already been accomplished on this topic and helped to formulate the project thesis.

To support the creation of purposeful and applicable surveys several academic journals were consulted. The journal *Survey Research Methods* provided the literature used to define the mixed-mode data collection methodology, using an article by Vannieuwenhuyze (2013). This article outlined the development of a mixed-mode methodology, highlighting the benefits of adopting a mixed-mode methodology, and outlining ways in which researchers have done so. To ensure the survey questions were designed in a way that promotes behavioural answers over idealized answers Braun *et al.*'s (2012) discussion of questionnaire design was taken from the journal *Educational Research Review.* This article outlined the ways in which the design and structure of the survey affect the participants' response. The concept of 'socially desired result' was incorporated into the survey question design in an attempt to curb responses generated out of perceived desired results and promote honest results that mirror actual behaviour. This technique was analyzed and synthesized in Self-reports: How the questions shape the answers (Schwarz, 1999), and is consistent with the current survey research psychology. Contrary to Schwarz and Braun's 'Social Desirability' theory, Kroznick (1999) attributes the discrepancy between survey intention and fulfilled action not to a participant's desire to act in a way that is deemed socially acceptable, but rather to potential memory confusion (Krosnick, 1999). To address this possibility survey questions were worded explicitly with further explanation included on questions that had the potential to be misunderstood (e.g. see question six of the online survey).

4.0 Analysis of Survey Results

4.1. In Person Survey

When looking at the locations of the waste sorting stations, question one of the survey as seen in **Appendix A,** we found that 93.3% of participants found the waste sorting stations easy to locate, indicating that the placement of stations on the main corridor of Main Mall is allowing for ease of access to many students.

When asked if they were likely to bring their waste indoors to sort in the event there was no outdoor station nearby, we found participants were equally as likely to wait and bring their garbage indoors as there were to wait until there was any sort of garbage receptacle close by, such as a garbage bin. This can be seen in figure 1 below.

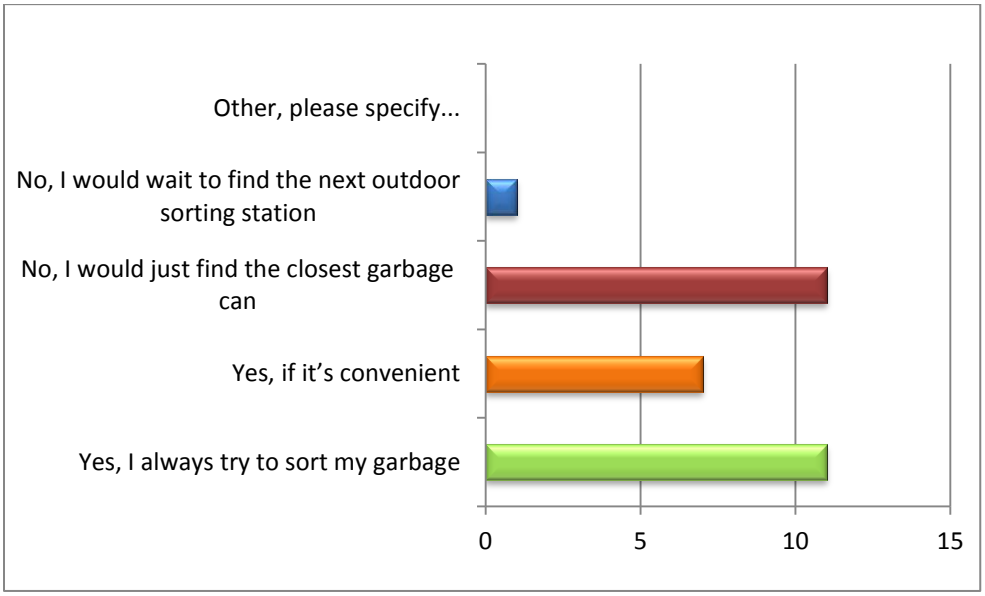

Figure 1: If you were not able to find an outdoor sorting station would you bring your waste inside to sort?

The majority of participants had a good idea of what was to be placed in each waste receptacle, with 40% stating they know what goes in each bin, and 56.7% stating they have a pretty good idea. When given the "example" garbage (as seen in image two, found in **Appendix B**) 63.3% of participants were able to sort the majority of it, with participants not knowing where items should be placed being the top reason for waste not being sorted at 80%. The coffee cup, sleeve, and lid was the most commonly confused item, mentioned five times, followed by the food container, which was mentioned three times. The second most commonly chosen reason stated for participants being unable to sort their garbage was "I was in a hurry", with 28.8% of participants selecting this option.

When asked if the signage was helpful in assisting with waste sorting, 53.3% of participants stated it was helpful, however 43.3% of participants stated they had difficulty with some items despite the signage, as seen in Figure 2. These items included mixed products such as paper and plastic mix, food waste, the coffee lid, sleeve, and cup, and containers that may not show visible recycling symbols.

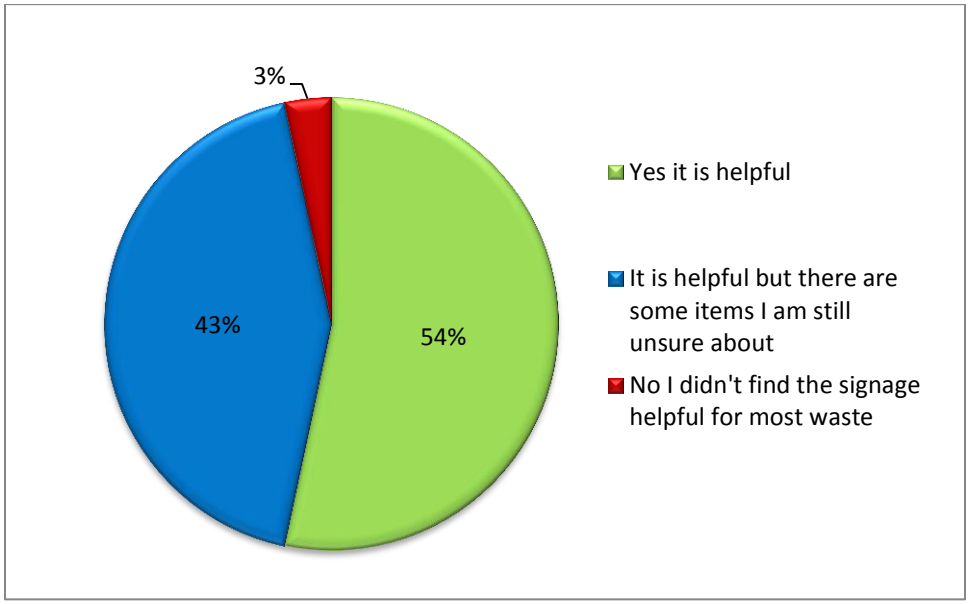

Figure 2: Did you find the signage helpful in sorting your waste into the correct bins?

When asked what was most helpful in sorting waste, the symbols on the front of the waste receptacles were the most commonly chosen answer for question number seven, of which 86.7% of the participants chose this option, followed by 20% of participants selecting colour as the most helpful indicator of waste placement. Despite the icons and colours being helpful, there were still 67.7% of participants that found the containers confusing or difficult to use. A more in-depth breakdown of these results can be seen below in figure three, as seen below.

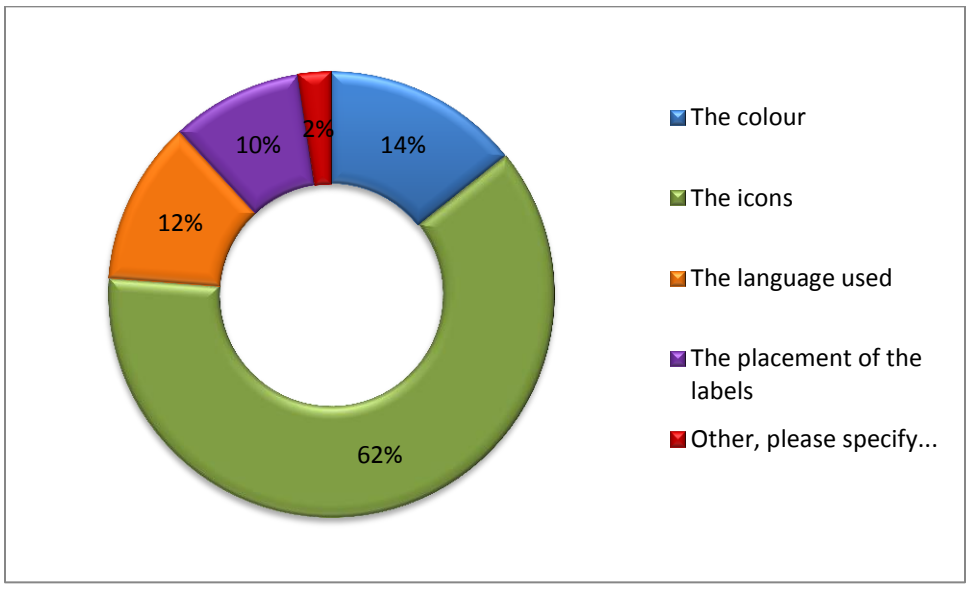

Figure 3: What did you find most helpful about the signage on the bins?

When asked about the colour selection of the waste containers, 5 out of the 17 (29.4%) responses noted that the colours were "bland", "boring", and that they "don't stand out enough", with several participants noting that the colours should be brighter to assist with quick sorting. In addition to this, 23.5% of participants who answered stated that the grey scale colouring was confusing, especially when participants are in a hurry to dispose of their waste. One participant stated "[t]he grey scale colours are confusing, make the colours brighter and more distinguishable" and another "[g]rey and black are too close together to make for quick sorting". There were two separate instances where participants explained to the surveyors that they were unable to perceive colour variation due to a colour vision deficiency and therefore had a hard time distinguishing between the three sorting station colours. This issue raises a barrier for people with this condition, preventing them from easily sorting their waste. Having colours that are more vibrant could help to overcome this issue.
As well as the current waste station colours being noted as bland, 7 out of the 17, participants, 42.2%, found that the colours were not consistent with traditional waste diversion colours, stating that blue would be a more appropriate colour for the containers recycling receptacle and not the paper recycling container. There were several suggestions to make the stop sign on the garbage container stand out more by colouring it red.

Question 8c asked participants about the utilization of the waste station icons, what they found difficult or confusing about the icons and if there were any suggestions for improvement. From this we can see that icon size and quantity is an issue to address, with 35.3% (6 out of 17) of participants stating that the icons small size and limited quantity were reasons for confusion. In addition to this three of the respondents stated that they found the coffee cup and coffee cup sleeve icon confusing, noting that it is hard to discern between the two icons when in a rush, and that the difference between the two was confusing. There was one participant who had a positive opinion of the dotted line coffee cup symbol, stating "I like the dotted lines on the coffee cups!". Three participants stated that having wording or labels underneath the icons would be helpful in placing the items when in a hurry. Several participants noted that having wording or icons on the garbage container would be helpful.

In addition to the component specific questions, question 8d allowed for open-ended opinion based answers, within this question there were additional sentiments agreeing with the confusion created by the coffee cup/lid/sleeve icon. Furthermore, five participants expressed their

confusion of where to put the coffee cup components, with one participant stating "[t]he dotted line on the coffee cups is confusing, at quick glance it looks like cups can go in both". There were also 7 of the 15 question respondents (46.7%) who mentioned the wording and language used on the stations was a barrier to their comprehension of the waste sorting station. Several participants verbally expressed to the surveyors that there was a language barrier, some even asking the surveyors to explain what the terms on the waste station meant, such as "recycling" and "organics" and "food scraps". One participant wrote within the survey "[t]he question on the garbage bin is confusing to me and other ESL students, it is not fast to read and understand", referring to the "Stop, can't you recycle that?" question on the garbage container. Another participant expressed that "multilingual would be good", referring to the wording on the containers. One participant suggested that there be a blurb in other languages explaining the waste diversion process and the reasons for waste diversion on campus. This participant stated that there are many cultures where waste diversion is not addressed or discussed, in having an explanation of the process cultural barriers would be driven down.

Question nine asked participants whether they would find a paper-recycling or food scraps receptacle more useful, or would having both options at a waste station be best. To this 43.3% of all 30 participants stated that a food scraps and paper-recycling receptacle would be most useful, followed by 30% of participants having more need for a food scraps receptacle, this is shown in Figure 3.

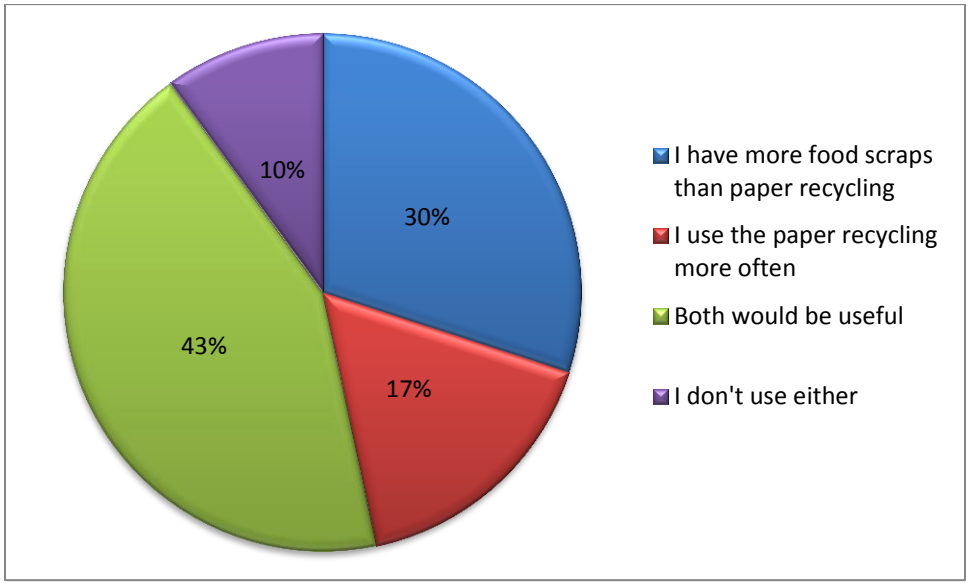

Figure 4: Survey Question Nine: Would either a food scraps bin or a paper recycling bin be more useful to you at this station?

Question ten asked participants about items that they utilize regularly that they are unable to sort, or are often unsure about, the list of items mentioned includes: mixed products, such as paper and plastic bags (the most commonly mentioned item), Tetra packs, Saran wrap, chop sticks, wrappers, carry-out trays for coffee cups, and soft plastics. This list could be used to guide the creation of new symbols to help increase proper waste sorting at stations.

The last question in the survey gave participants an opportunity to express any other concerns or suggestions they had towards waste management on campus, due to the wide range of responses the answers have been placed in **Appendix C.** There were several respondents who pointed out that the size, shape, and mechanism of the opening to the waste bins was prohibitive to the user, for both ease of disposal and sanitary reasons. This could lead to users underutilizing the bins, or placing all waste in one bin in an attempt to reduce contact with the bin openings.

4.2. Online Survey

Contrary to the in-person survey, when asked what participants would do if there was no waste station nearby (question one of the online survey, **Appendix A**) the majority of participants (70%) said they would bring their waste inside; however 37% of these participants stipulated they would take this action only if it was convenient, with the alternative being to find the next closest waste receptacle, as seen in Figure 4 below. Only 22% of participants stated they would rather find the closest garbage can over bringing their waste inside to sort.

In discussing the location of the current waste sorting stations, question two of the online survey, only 10% of participants (17 out of 178 responses) think there are enough waste sorting stations on campus, with 32% of respondents stating that in most places there are enough sorting stations.

There was a 58% (103 responses) negative response rate to question two, with 35 respondents identifying areas that are lacking appropriate waste sorting station locations, as seen in Table 1, **Appendix C.**

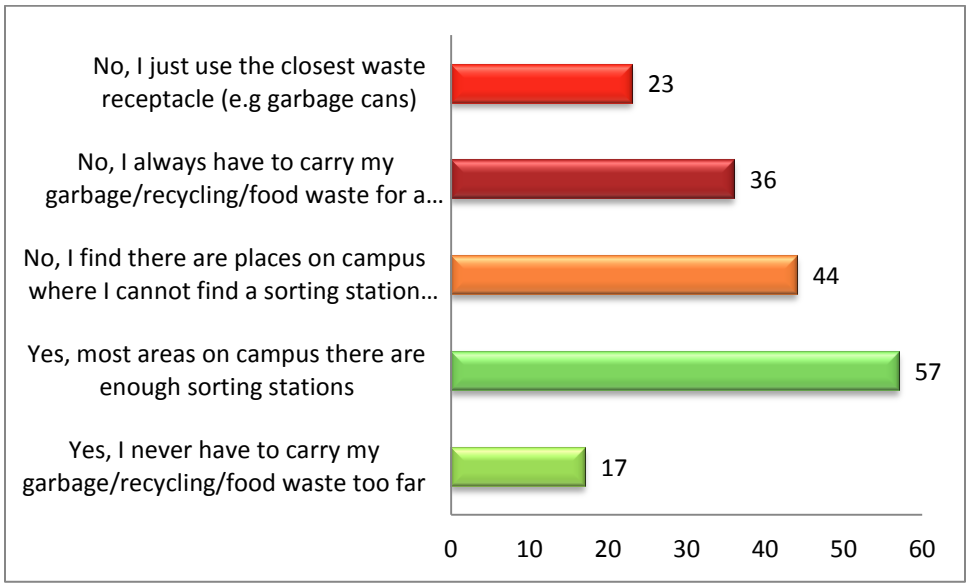

Figure 5: Do you feel there are enough outdoor waste sorting stations when walking on campus?

Similar to the in-person survey, question 3 of the online survey found that the majority of participants (55%) stated the last time they used a waste sorting station they were able to sort their waste correctly, following with 38% of respondents stating they were able to sort most of it. For the respondents that were unable to sort all of their waste question 4 allowed them to explain their reasoning, with uncertainty of item placement being the main reason for misplacement of items. Other reasons stated include: bin opening size being too small for certain waste products like plastic soup bowls; a lack of compost options outdoors; and the type of waste did not fit the sorting options.

Figure 5 shows that 50% (88 responses) of the online respondents think that both a food scraps and a paper recycling bin would be most useful outdoors. Following this, 30% (54 responses) favour a food scraps bin over a paper recycling bin.

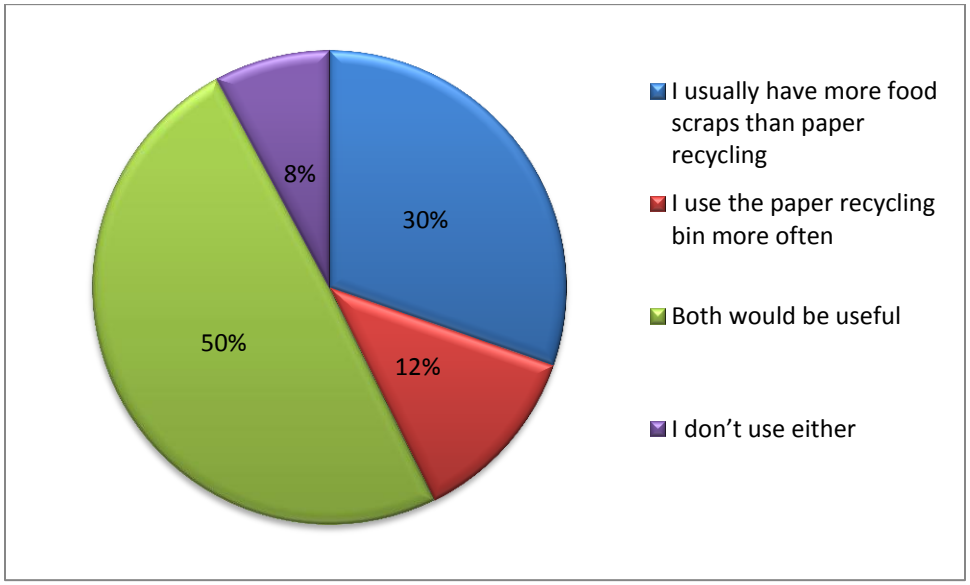

Figure 6: Would an outdoor food scraps bin or a paper-recycling bin be more useful to you when walking on campus

In order to understand the language demographic of the respondents, question 6 asked whether the participant spoke a primary language other than English. While 68% of respondents stated English was the first primary language, there were also many other primary languages spoken, as seen in figure 6.

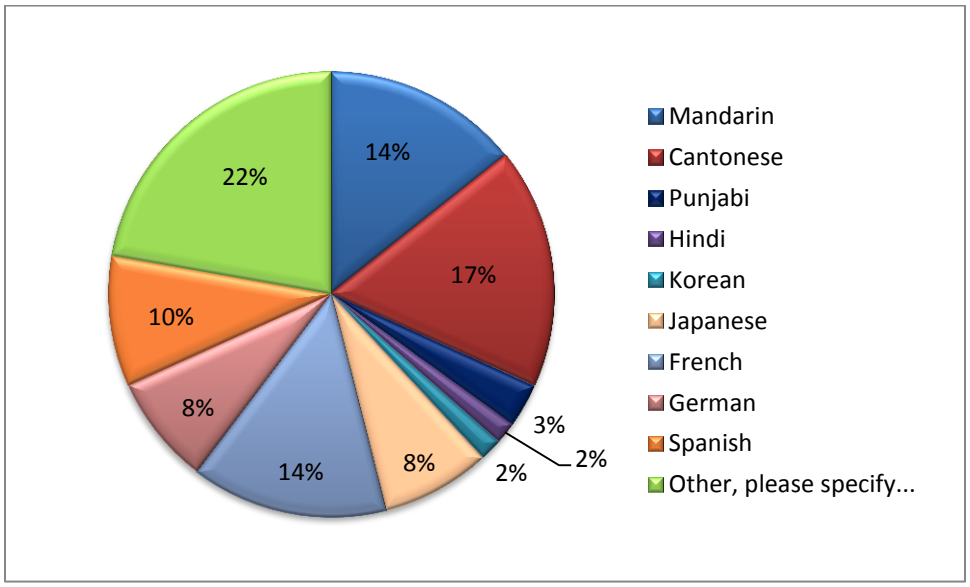

Figure 7: Do you speak a primary language other than English?

There were 65 responses to the open-ended question "Do you have any suggestions to improve waste management on your campus?", these results can be seen in **Appendix C.** Some of the more pertinent student responses are listed below:

- More relevant signage on recycling station bins (i.e. using examples of items typically disposed of on campus). I'm pretty sure that most people don't know that coffee cups from different locations on campus can or cannot be composted.
- Increased number of recycling stations + make sure that all four bins are together (or, if not, a sign saying where the closest compost bin is, for instance).
- I'm tired of walking around campus with compostable garbage and feeling guilty about not finding a station! I obviously care about where my garbage goes, but I'm pretty sure most people don't. As far as I can tell, all the new recycling stations do is make me feel guilty about throwing items away in the "garbage" bin. How about they explain why #6 soft plastics cannot be recycled! I'm still not sure why that is...
- UBC's recycling stations need to, and present a unique opportunity for, becoming a hands-on space for education, but they need to be standardized across all buildings + outdoor locations, and they need to be specific to the items typically disposed of on campus
- Start at the source and reduce waste creation. The food establishments on campus create a superfluous amount of waste in my opinion
- More places specifically for food waste would be nice, I'm always looking for one, and usually have to throw food scraps in the garbage
- Add more waste bins and make the signs for sorting more clear. Also, don't use 'negatives' to help with sorting; ie don't write signs that say 'Don't put this in here' because it can be confusing if you're in a rush. Instead just use 'positives' like 'Put this here'
- Maybe make it easier to understand where things go. for example, have a brochure online or put beside sorting stations with a LONG list of what goes where.
- Make insert holes of the waste sorting stations bigger and cleaner. Like the picture above, it's so dirty, who would want to touch it.
- Uniform signage because it gets confusing when you have to figure out what goes where each time you want to throw something out.
- Orientation workshops on how to recycle and what items can be recycled could be useful
- Images on signs telling us what goes where too small to see
- Sometimes having to sort garbage into too many different bins is too time consuming, too confusing and to be honest, I'm pretty lazy most of the time. If people want us to sort our garbage, it needs to be made easier for us i.e. one recycling bin, one compost bin and one garbage bin. It's way too difficult sorting out all the different types of recyclables and I usually just throw the entire item into one bin (for example, all parts of the paper cup are recyclable...I'm too lazy to sort the plastic lid from the paper and the sleeve)

- The idea of making it multi-lingual is very useful because we're so international as a campus. Also, it would be great if the pictures could be bigger because they really clarify what can or cannot work. Giving out free compost bags would be really great as well.

5.0 Discussion and Future Steps

Based on the findings of this survey there are several areas of improvement that have become apparent. The first area that is apparent is the representation of coffee cup/lid/sleeve is a major barrier to correct waste disposal. To overcome this it would be helpful to increase the size of the coffee cup icon and label the components for clarity. In addition to this, it could be helpful to users to include a deconstructed coffee cup image with arrows pointing to the different bins each component is placed. This would assist with ease of understanding, as well as allowing the user to quickly recognize where each component is supposed to go. To further increase user recognition it is recommended that all of the waste icons be increased in size. Utilizing the list of commonly mistaken items is advised in the creation of new station icons. Adding icons to the garbage receptacle could reduce the contamination of other waste streams by clearly identifying items that are not recyclable or compostable. In taking this action proper waste sorting behaviour would become more attainable to more people by reducing barriers of understanding and comprehension of waste system signage.

Increasing the brightness of colour, or the variance of colour used on the outdoor waste stations would allow for quick sorting by making each bin distinguishable from the next. This would also reduce barriers for users with colour vision deficiency. Streamlining the colour selection for all waste sorting stations and receptacles on campus would increase user comprehension and ease of use. This would also utilize the CBSM method of creating a strong, consistent brand to increase social diffusion of waste systems utilization on campus.

To overcome the language barrier it could be beneficial to have multilingual signage and labels on the containers, this would increase user comprehension, and bridge cultural gaps in knowledge and understanding of the waste sorting system. As seen in the online survey, Chinese languages were the most selected primary languages (Figure 6), followed by Japanese and European languages such as Spanish, French, and German. To further reduce this knowledge gap it would be advisable to hold educational outreach events to create community norms of waste diversion on campus. This suggestion is supported by the responses to question 7 of the online survey; with 14 respondents (22%) suggesting an increase in educational campaigns or workshops would help inform the student body of proper waste sorting habits. Holding educational workshops would reduce the knowledge barrier, as well as offer an opportunity to gain more feedback and insight into user comprehension. To ensure the education outreach is

effective at instilling a behavioural change in participants workshops must adopt an approach that targets specific undesired or desired behaviours and provides participants with tangible solutions to undesired behaviours. In addition to this participants must be encouraged to sign a pledge stating that they will adopt the desired behaviour, a technique that has been proven to promote lasting behavioural change (McKenzie-Mohr, 2013).

To support a campaign to increase user comprehension, it was suggested by several participants that Zero Waste initiative provides additional online information and tools to increase user comprehension. To be effective, this information would have to be easily accessible, user friendly, and promoted in locations that would be conducive to onsite learning and user interaction. This could include having a smart phone friendly QR code linking the user to additional online information. Having an online education tool would also give Zero Waste the platform to increase user understanding of life cycle of the waste system on campus, including information such as where the different waste streams end up, what happens to the food scraps, and how the aerated composting systems work. Making this information readily available would improve user comprehension by allowing them to become aware of the entire waste cycle, engaging the user further than the short interactions they have when using the waste sorting stations. In addition to this, having a better understanding of the waste systems on campus allows the user to feel like they are a part of a bigger sustainable movement, increasing the feeling of social responsibility, and in-turn increasing their participation in the initiative.

In both surveys, participants stated that having both a paper-recycling and food scraps bin would be most useful, however, if there had to be a choice in having one or the other available, it seems participants would have more usage for a food scraps bin at waste sorting stations. One online survey participant offered an answer for this choice, stating that food waste is less convenient to carry with you than paper waste, from this we can infer that by replacing paper recycling containers with food scraps containers would increase the user experience, offering more locations to dispose of inconvenient waste. Revising the shape, size, and mechanism of the outdoor bin openings could increase utilization of the outdoor stations, and increase user comfort. This would be another way of reducing the barriers to proper utilization of the waste station bins, enabling users to feel more comfortable in taking the time to properly sort their waste without feeling unsanitary. This would also address the issue of certain waste products found on campus not fitting within the container slots.

6.0 Concluding Statements

This project has been effective in outlining the current state of waste sorting stations on campus, gathering information from a variety of sources to identify barriers facing waste station users and utilizing user input to synthesize suggestions for improvement. As outlined in this project,

understanding user behaviour is crucial to effecting change within communities, it is for this reason that a CBSM method is suggested for this initiative. Building on this information, the UBC Zero Waste Initiative can adopt a CBSM approach to implement a more effective and user friendly waste diversion system. This approach should include actions that reduce the barriers to desired waste sorting behaviour, such as increasing user comprehension through clearer signage, bigger symbols, brighter colours, and more effective labelling. Additionally, this approach should attempt to curb undesired behaviours by reducing the amount of garbage cans on campus and promoting campus wide education initiatives. Given the amount of participant interest seen in the surveys, as well as the number of students willing to take the time to complete the surveys (208 within the short time span of this project), it is clear that UBC students want to contribute to a sustainable campus, by taking small steps to eliminate the barriers to doing so a Zero Waste goal will become achievable.

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Appendix A.Waste Station Surveys

In Person Survey

1) Was this sorting station easy to find?
   - Yes it was conveniently located
   - Yes but I had to look for it
   - No, I had to go out of my way to find it

2) If you were not able to find an outdoor sorting station would you bring your waste to sort inside?
   - Yes, I always try to sort my garbage
   - Yes, if it's convenient
   - No, I would just find the closest garbage can
   - No, I would wait to find the next outdoor sorting station

3) Do you know what goes in each of three bins?
   - Yes, I know what goes in each bin
   - I have a pretty good idea of what is supposed to go in each bin
   - I am a little unsure of what goes in each bin
   - I do not know what goes in each bin

4) Were you able to completely sort the garbage? (to your knowledge)
   - Yes
   - Most of it
   - Some of it
   - No, I put everything in one bin (please specify which bin _____)
   - I am unsure if I sorted the waste correctly

5) If you were unable to completely sort the waste what was the reason? (check all that apply)
   - I was unsure of where some items went:_____
   - I was in a hurry
   - I didn't know I was supposed to sort the waste
   - Sorting waste is not important to me
   - Other reasons: _____

6) Did you find the signage helpful in sorting the waste into the correct bins?

- Yes it was helpful
- Is was helpful but there are still items I am unsure about: _____
- I don't find the signage helpful for most waste
- I didn't look at the signage

7) What did you find most helpful about the signage? (check all that apply)
   - The colours
   - The icons
   - The language used
   - The placement of the labels
   - Other:_____

8) What do you find difficult or confusing about the sorting bins?
   - I did not find the sorting bins confusing (skip to Q9)
   - I have some difficulty sorting all of my waste correctly

   a. What do you find difficult or confusing about the sorting station signage?
      Open Ended

   b. What do you find difficult or confusing about the sorting station colours?
      Open Ended

   c. What do you find difficult or confusing about the sorting station icons?
      Open Ended

   d. Is there anything else difficult or confusing about this sorting station?
      Open Ended

9) Would a food scraps bin or a paper-recycling bin be more useful to you at this station?
   - I usually have more food scraps than paper recycling
   - I use the paper recycling bin more often
   - Both would be useful
   - I don't use either

10) Are there items you find you are not able to sort into the recycling or food scraps bins?
    Open Ended

11) Any other suggestions to improve waste management on your campus?
    Open Ended

Online Survey

1. When walking on campus, if you are not able to find an outdoor sorting station do you bring your waste to sort inside?
    a. Yes, I always try to sort my waste
    b. Yes, if it's convenient
    c. No, I would just find the closest garbage can
    d. No, I would wait to find the next sorting station
    e. Other- please specify in the box below

2. Do you feel there are enough sorting stations when walking around campus?
    a. Yes, I never have to carry my garbage/recycling/food waste too far
    b. Yes, most areas on campus there are enough sorting stations
    c. No, I find there are places on campus where I cannot find a sorting station *Please Specify*
    d. No, I always have to carry my garbage/recycling/food waste for a long time before finding a sorting station
    e. No, I just use the closest waste receptacle (e.g garbage cans)

3. The last time you used a waste sorting station were you able to sort your waste properly?
    a. Yes
    b. Most of it
    c. Some of it
    d. No, I put everything in one bin
    e. I am unsure

4. If you were unable to completely sort your waste what was the reason?
    a. I was unsure of where some items went
    b. I was in a hurry
    c. I didn't know I was supposed to sort my waste/garbage
    d. Sorting waste is not important to me
    e. Other, please specify *Open Ended*

5. Would an outdoor food scraps bin or a paper-recycling bin be more useful to you when walking on campus?
    a. I usually have more food scraps than paper recycling
    b. I use the paper recycling bin more often
    c. Both would be useful
    d. I don't use either

6. Do you speak a primary language other than English?
    a. No
    b. Mandarin
    c. Cantonese
    d. Punjabi
    e. Hindi
    f. Korean
    g. Japanese
    h. French
    i. German
    j. Spanish
    k. Other, please specify... *Open Ended*

7. Do you have any suggestions to improve waste management on your campus? *Open Ended*

Appendix B. Images

Image 1: An outdoor waste station

Image 2: The "example" garbage used during the survey

Appendix C. Open Ended Questions

In Person Survey, Question Eleven

- More stations outdoors and recycle bins in dorms!! Plus putting air hand driers in the dorm washrooms to reduce paper waste!
- Making the actual containers with a see-through material so that it's easier to see the actual garbage. It might help to see how much it is actually working and how much it isn't. Another thing that could help is having actual samples of what trash goes into which bin because visual aid might help.
- More recycle centers and easier to understand sorting colors. Also the container openings can be prohibitive to stuff that belongs in them.
- More bin around campus
- Bring back the totem cafe boxes with the examples of trash above the respective bins.
- More bins on campus
- Signs on the top of the bins rather than on the bottom/front
- Perhaps put a multilingual blurb on the bins explaining the sorting and why it is important to sort waste
- Improve the icons and labels, food scraps bins are more useful indoors
- Organics bin is dope!
- It easier to put garbage through the hole, the flaps cause a cleanliness issue
- Hole on the bin not big enough, open hole outside, closed inside
- Bigger slots Open holes
- Organics at every waste station, and more waste sorting bins around campus, they are just on main mall so they miss a lot of the population, perhaps they could go in front of each building
- Include food scraps bins
- More organics bins
- More organics bins
- There seems to be lots of stations conveniently located
- Food scraps and organics are confusing, perhaps write "any food" or "all food"
- Keep the stations cleaner, the dirt makes it hard to see!

Online Survey, Question Two

- Around Hennings bld.
- Around main mall/ university blv.?
- SUB!!
- I find it far too difficult to find compost waste sorting options outdoors.
- There are no compost stations near the Kenny Building
- On main mall where there is a long stretch of road, sorting station are few and far in between.
- Around the SUB
- Near geography building
- Main campus is fine. Athletics facilities need sorting stations.
- From the bus loop, along agriculture
- Mainly outdoors, in the common areas
- Walking in Main mall
- Compost bins are generally harder to find, though that's improving.
- generally around the Arts area Main Mall and West Mall
- around agronomy road and west mall; around the Ponderosa buildings
- route from Bus loops to West Mall.
- Upstairs of the Student Union Building
- Mainly issue is for compostable items outside
- Westbrook Mall other than the bus loop
- There are few organics bins outside of buildings
- It may be that I do not know where they are located.
- Main mall, or in the bus loop
- Between the trolly bus loop and AERL
- I don't tend to find them outside of buildings.
- Nowhere. From the Alison Rd bus stop all the way down University Blvd, there are none. I don't believe I've ever seen one outside and they are very much needed.
- west mall
- Both bus loop areas, the Sasamat station, in front of the SUB
- Between main mall and west mall on agronomy road
- By BUCH, along main mall
- Near food spaces like the inside of Buchanan courtyard, outside of the SUB, outside of Sauder and the Vanier Cafe
- North Campus
- Along main mall, and along West Mall
- patch of grass outside geog building could use one!

- The outdoor bins do not have a compost bin, so I am forced to throw out compostable items

Online Survey, Question Seven

- More relevant signage on recycling station bins (i.e. using examples of items typically disposed of on campus). I'm pretty sure that most people don't know that coffee cups from different locations on campus can or cannot be composted.
- Increased number of recycling stations + make sure that all four bins are together (or, if not, a sign saying where the closest compost bin (for instance) is.
- I'm tired of walking around campus with compostable garbage and feeling guilty about not finding a station! I obviously care about where my garbage goes, but I'm pretty sure most people don't. As far as I can tell, all the new recycling stations do is make me feel guilty about throwing items away in the "garbage" bin. How about they explain why #6 soft plastics cannot be recycled! I'm still not sure why that is... in sum:
- UBC's recycling stations need to, and present a unique opportunity for, becoming a hands-on space for education, but they need to be standardized across all buildings + outdoor locations, and they need to be specific to the items typically disposed of on campus. I'm sure there's more, but that's all I can think of off the top of my head.
- Sure, start at the source and reduce waste creation. The food establishments on campus create a superfluous amount of waste in my opinion - for example.
- More places specifically for food waste would be nice, I'm always looking for one, and usually have to throw food scraps in the garbage.
- I don't know if this counts but can you please put some water fountains in Kenny??? That building is so primeval, if we're thirsty we end up buying bottled water blah.
- More organic waste bins!!!
- More sorting stations
- add more waste bins and make the signs for sorting more clear.
- Also, don't use 'negatives' to help with sorting; ie don't write signs that say 'Don't put this in here' because it can be confusing if you're in a rush. Instead just use 'positives' like 'Put this here'
- Maybe make it easier to understand where things go, for example, have a brochure online or put beside sorting stations with a LONG list of what goes where.
- More paper recycling bin. I can only recycle the paper in my lab.
- Aside from what was previously mentioned (compost outdoors), maybe more "plastics" options.
- Install more of the Dyson hand-dryers, they seem to cut down on paper towel waste a bunch. Also, do more public promotions of sustainability!! Encourage people to use less waste and recycle more...maybe run some campaigns around UBC or whatever, but just make the message more loud and salient that there are many options to reducing waste and making people aware of the options and that it is important to cut down our waste!

- Offer increased discounts at stores for using reusable containers, i.e. 30% discount for bringing one's own coffee cup, etc. This reduces waste!
- I couldn't locate a newspaper disposal bin while walking from 2200 block bus stop to bookstore and back. Otherwise, keep up the good work. I love the food scrap sorter! :D
- While there certainly are waste sort stations within the main buildings, but some buildings either have no recycle stations or are not noticeable. There is no food scrap bins in the Kenny psychology building as far as I know.
- Make insert holes of the waste sorting stations bigger and cleaner. Like the picture above, it's so dirty, who would wanna touch it.
- Uniform signage because it gets confusing when you have to figure out what goes where each time you want to throw something out.
- Small sessions on how to sort
- People seem to throw whatever they want into the larger blue bins, but will take more time to sort into smaller bins.
- Waste management is improving, as I have seen more sorting stations available. I feel the majority of the problem now lies in reducing waste in the first place.
- Have more food waste compost bins around campus! Including outside!
- I am impressed by the waste management on campus. Our department runs an internal compost system which takes a lot of waste out of the trash - it would mean 4 flights of stairs to the nearest UBC bin otherwise, a trip I doubt most people would make. But when I have been elsewhere on campus, I know to look and then usually find the bin I need for the waste I have.
- Orientation workshops on how to recycle and what items can be recycled could be useful
- Work with food packaging on campus to make sorting choices simpler. Coffee cups for example are extremely confusing. Also, Athletics fields and facilities need sorting stations.
- The residences could be a bit better. At Marine drive they provide a composting bucket, but the disposal bins are outside and far away from most of the buildings. More convenient composting would be an area I would love to see.
- Sometimes having to sort garbage into too many different bins is too time consuming, too confusing and to be honest, I'm pretty lazy most of the time. If people want us to sort our garbage, it needs to be made easier for us i.e. one recycling bin, one compost bin and one garbage bin. It's way too difficult sorting out all the different types of recyclables and I usually just throw the entire item into one bin (for example, all parts of the paper cup are recyclable...I'm too lazy to sort the plastic lid from the paper and the sleeve)
- We need more indoor food waste bins!
- smaller units, more frequently placed with all sorting options
- An option for e-waste would be great too!
- Although both paper and food scrap bins would be useful, it would be better to have additional food scrap bins because 1) Food scraps are less convenient to carry with you until you find a proper bin and 2) there are currently less of them on campus.

- State more clearly on the bins what goes in them with examples of most common waste that is produced on campus
- Use composting toilets to create fertiliser for UBC farm and gardens
- In Japan, kids are educated to bring back garbages to their home, and there are only a few garbage cans and recycle stations outside (I remember most of garbage cans were removed because of avoiding terror attacks). Reducing the number of garbage cans and recycle stations with providing appropriate education (bring garbage back) might work not only to enhance appropriate recycle but also to reduce the amount of waste (most of people are annoyed to carry garbage, then they may try to reduce the amount of garbage itself).
- I think most waste is disposed of indoors and also less of a concern with pests for organic waste indoors so I would prefer more emphasis on increasing/improving sorting indoors than on adding outdoor sorting to more places on campus.
- More food waste bins would be effective outdoors.
- More recycling facilities everywhere. it seems there are a lot of garbage cans that could be converted into more convenient recycling stations.
- Washrooms should have a bin for paper towel composting since I recall the SUB use to do that until it became too laborious with rising associated costs.
- I suggest more dissemination of information. And, good signage at the waste sorting stations to discourage people from using them as a garbage bin.
- To foster REDUCE consumption of unnecessary plastics, cans and others, more than promoting recycling
- Question 5 is kind of leading - I wouldn't use either because i would bring it inside. I don't want to stand outside in front of everyone or in the rain and sort my papers. Also there are a lot of critters around for a food waste system outside. There are plenty of convenient sorting bins inside. I would rather my tax money go into public transport as I don't feel it would provide the best return on investment.
- Where do I recycle Styrofoam? Batteries? Electronics?
- Make clear where compostable packaging can go. Introduce composting/food scrap bins.
- I attempted this questionnaire in good faith, but most of it passes me by. I do not walk and eat on campus, nor slurp the contents of disposable coffee cups while afoot. Rather than decorate the campus with recycling stations, might we induce a culture change to become more like France where eating/drinking and walking at the same time is considered a somewhat distasteful habit.
- I know that sorting waste can be confusing at times, maybe adding a universal colour scheme for each type would help. And maybe items available on campus (for example utensils or ware) could have the appropriate waste colour type on them somewhere. Just a thought.
- Just more bins. The new sorting stations are a wonderful addition to my building, I'm quite happy to see them. But as one wander through campus, down any of the main blvds, there are very few places to put waste, let alone sort it.

- More sorting stations throughout and better positioned: for example in front of Kaiser building where so many people hang out on the benches having Starbucks, the one at Sauder is kind of hidden and only convenient for those going down toward Ponderosa, it should be more along the walking promenade. Also around the EOS there are new benches and seating area but no receptacles and lots of people leave waste behind, especially when they have school trip excursions.
- The stations could have better signage as well - more clear what goes in which area and maybe even more appealing looking (ex. sometimes there's moisture that gets in between the signage or since the slits are so thin it can be messy from spillage and people stuffing things in)
- Though, no doubt, a complex issue and unrelated, the use of 4-stroke motors for lawn and surfaces maintenance seems like it would be a large waste issue for UBC. Could hand rakes be a more suitable method for surface maintenance, helping to reduce worker health issues, noise pollution and fuel consumption?
- I think the facilities are much better now, so the next step seems to be to educate people to use them.
- Ideally, every trash can would have associated recycle-bins & Thanks for all your efforts. They're much appreciated.
- Make sure everywhere you would be able to properly dispose of coffee cups
- The idea of making it multi-lingual is very useful because we're so international as a campus. Also, it would be great if the pictures could be bigger because they really clarify what can or cannot work. The first floor of Buchanan A by the cafe is really confusing because the bins are hidden by the stairs and the old bins are still in use so I'm not sure what to use. Giving out free compost bags would be really great as well.
- Get rid of most garbage bin and add more 4 bin system which would force people to keep their garbage with them rather than dispose of it at the closest garbage bin
- Food services on campus should make it clear how to dispose of their items (coffee cups, paper bags, takeout containers), even non-UBC affiliated ones. More outdoor composting options. Smaller composting bins in each lounge area.
- I would like to see more compost bins, and more restaurants using recyclable packaging (The deli, honour roll, the moon)
- More sorting stations for sure, it sometimes takes me awhile to find any.
- Images on signs telling us what goes where too small to see
- A more explicit list of items that can go in each bin (put this online?). For instance, I am unsure if juice boxes can be recycled (tetrapaks). Also, can soft plastics be put in the recycling bin (shrink wrap from textbooks or saran wrap)? CREATE MORE AWARENESS ABOUT SORTING! A quick video to show people how easy it is and how it only takes a few extra seconds. Then talk about where the waste is going - UBC composting facilities etc. so people understand the impact of sorting incorrectly.

- increase items to include all materials that are sold on campus. See the list available for recycling at a centre in North Vancouver: http://www.wcsrecycling.com/redbag.asp
- I can never tell whether to put my empty tim hortons cup into the mixed paper recycling or trash.
- Internet guide about sorting waste...sometimes the pictures are confusing!
- Further instruction about which items to recycle.
- Food scrap sorting outdoors would have to be carefully controlled - I've seen the four-legged rats near Buchanan!
- Having an occasional food waste sorting location would be very helpful.