Chatbot Report

https://www.facebook.com/Green-101198962340372/

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CCT461H5F Speculative Design III

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Summary

The primary goal behind the design of our chatbot “Green” was to create a chatbot that could answer people's questions about how to live a more sustainable lifestyle in a speculative future where maintaining the environment has become a key part of society. In our hypothetical future 10-15 years from now, the impacts of global warming and climate change on the natural environment have significantly worsened, forcing the Canadian government to mandate new public laws and regulations. Our objectives were centered around creating a simple and user-friendly chatbot assistant by utilizing a user-centric approach to design that would allow users to inform themselves about environmental sustainability and the new laws around it. The final result was a chatbot that was able to effectively engage with the user while providing them with valuable information regarding sustainability. Overall, our chatbot “Green” showed promising signs of being a viable prototype for future AI.

Signals Indicating this Future

It is no news that society has been facing environmental issues over the past couple of decades. Despite rigorous rules and regulations, environmental sustainability has always been rather overlooked with waste management being one of the biggest contributing factors. As stated by Ontario Waste Management Association (2020), “Residential waste for disposal increased by 276,000 tons to 3,980,665 tons per year, or a 7.5% increase from 2016… Ontario residents are now sending three-quarters of a million (750,000) more tons of waste per year to landfills, compared to 2008, an increase of 23%.”. With more and more residents not being able to follow waste management protocols, it is evident that people either have a lack of interest or knowledge in the matter. However, if new laws and regulations are created 10-15 years from

now to promote more sustainable lifestyles for Canadian citizens, there would need to be an approach that will allow information regarding sustainability to be easily perceived and understood. With prior practices proven to be ineffective, our chatbot "Green" would be able to provide people with the guidance they would need. Not only would it provide a unique way for Canadian citizens to seek answers regarding sustainable practices, but it would also help streamline the whole process of transitioning society into an eco-friendlier future.

Our AI Solution

With the country transitioning toward a rather unfamiliar direction, people will have questions. While information is abundant and readily available all over the internet, finding exactly what one needs is a hassle. This is where our chatbot "Green" comes in. Chatbot "Green" is a simple and user-friendly chatbot assistant that allows users to ask questions regarding sustainability and the new laws around it. Chatbot assistants, according to experts.ai (2020), are known to improve customer experience by streamlining interactions between individuals and services. Our goal was to take forth a user-centric approach with designing and arranging our chatbot that would make interacting with our assistant second nature. Chatbot "Green" provides the user with a set of options that they can choose from or type in short queries regarding whatever questions they might have, as long as it is within the scope of sustainability and the city's green regulations. The assistant can then provide the user with a possible answer most specific to the user's interest. Users can either ask further questions getting into the specifics or interact with other options of the assistant such as signing up for weekly notifications/newsletter, watching a video to better understand dense information, donating to our nonprofit "GreenLife" that maintains the chatbot, or providing us with feedback as to what improvements we can

implement. The idea behind the chatbot is that a user is only presented with the information that they desire to get and nothing more. This not only helps with understanding better but eliminates the notion of ‘analysis paralysis, which occurs when a user is bombarded with information. In simple words, interacting with Chatbot Green would be as natural and simple as asking a question from a friend. The design process and research findings are further elaborated in the report below.

Research and Testing

Once we defined the context behind our speculative design and how it will benefit users, we had to figure out the various needs that users would have. After brainstorming, we decided to focus our research on (1) the questions that users would want to ask, (2) the information needed to answer those questions, and (3) additional resources that the user would be interested in. Since the chatbot is oriented towards the general public, we determined that the best course of action was to provide answers to general questions such as "How does recycling help the environment?”, “How can I live a more sustainable lifestyle?”, and “How can I save water in my household?”. To answer these questions, we investigated various environmental groups and nonprofits that provided information regarding sustainability practices and ways to live more environmentally friendly. Initially, we designed the chatbot to provide a detailed explanation for each of these questions. However, after testing our chatbot with other groups in one of the workshops, we decided it was best if we reduce the amount of information shown and provide the user with a brief response. Additionally, we found from the workshop that the use of emojis improved the user experience as it made the conversation between the user and chatbot more likable and engaging. Through various iterations and internal testing regarding ways to make the

dialogue between the user and the chatbot more intriguing, our team managed to create a final version that is both user-friendly and can provide value to its users.

Design and Building Process

As Figure 1 shows, our design process starts with a mood board. Our mood board displays pictures depicting concepts such as eco-friendliness and sustainability. With the mood board, we initialize that our chatbot will be informative and aimed to teach Canadians how to live sustainably.

Figure 1. Brainstorm mood board

However, our final chatbot flow was significantly different from our initial brainstorm chatbot flow. First, in our flow version 1 (Figure 2), we designed a very simple flow about how our chatbot will present information to our users. We decided to provide users with several choices, allowing them to select what they want to learn about sustainability.

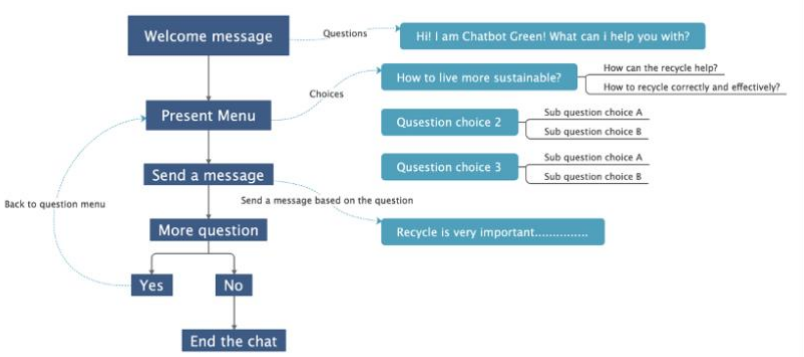

Figure 2. Chatbot flow version 1

Our second version flow (Figure 3) demonstrated that we added a new branch with the function: sign up for the newsletter to our chatbot. Also, after the brainstorming, we adjusted our flow to become more feasible. For example, we changed the flow "back to question menu" from version 1 to "start over triggered and back to question menu." After exploring the flow XO, we found that the "back to question menu" action would be complicated to realize since it is a consistent flow that the actions in flow will happen one by one and cannot back to a specific action. Therefore, every time users ask a question and choose "Yes" to represent they have more questions, we need to add a flow action to present the question menu for the user to ask more questions. However, in the second version flow, we adjust the flow to trigger "start over," which means we only need to put in the action once and choose the correct filter to allow users to start over from the beginning of the flow. In this way, the flow will be more straightforward and easier to understand. Moreover, we brainstorm more possible questions that will be present in the chatbot.

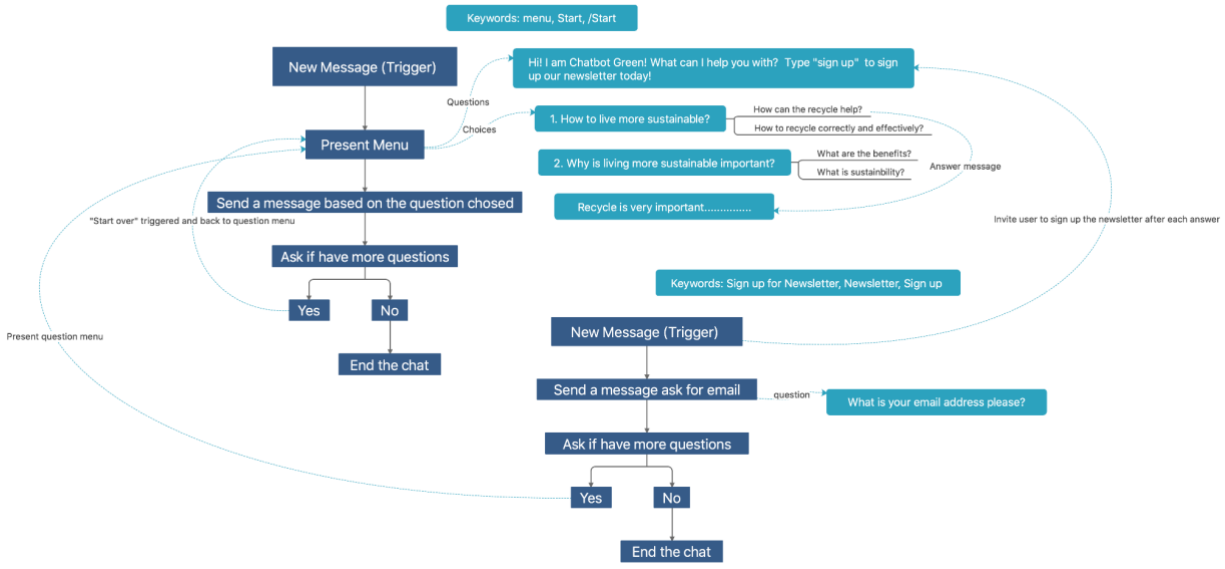

Figure 3. Chatbot flow version 2

Lastly, our final version flow adds in more branches and is more actionable for users to use. First of all, we add the main trigger menu with keywords "start/hello/hi" to activate the chatbot and present a choices menu for the other six branches. With this main trigger flow, the process of chatting will be more straightforward if the user chooses "Yes" as a response to "if they have more questions" the main choices trigger the menu to the users, and the chatbot will trigger the particular flow based on the choices users' choose. And it will be the same for all the branches as indicated with the solid blue arrow. Moreover, after brainstorming, despite being an informative chatbot, we also add more functions like "sign up for weekly waste notification" "sign up for the newsletter." Also, we add in "support us" and provide a donation link for users and "feedback" to let users leave comments to us. These two functions will allow us to improve our work better. Add-on provides our target users with some knowledge about sustainability, and we add a branch to present some "laws" that might have in the future to be more informative.

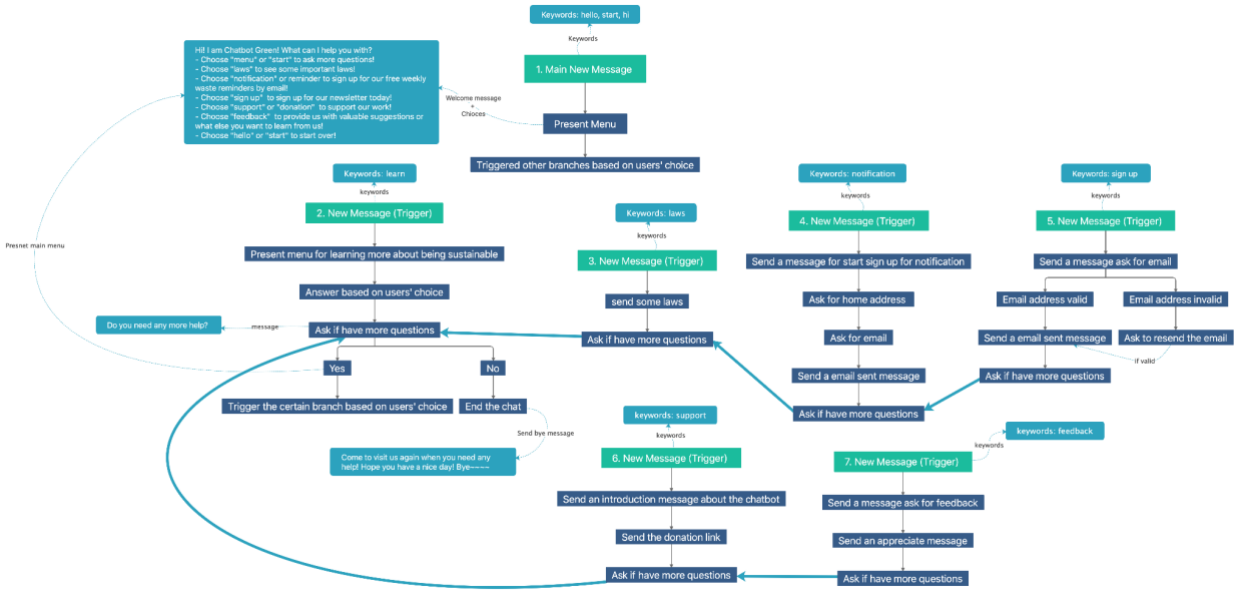

Figure 4. Chatbot flow final version

While we designed the message sent in the main trigger flow (Figure 5), we used emojis (purple box) before every choice to make the message easy to read. Also, we provide options (blue box) for users to choose from instead of typing in specific keywords, which can help to improve the user experience. Moreover, we add a feature that the chatbot will automatically get the users' first names (red box), which will let the users feel they are being respected. Also, we add a start trigger (red box) for users to start over, as shown in Figure 6.

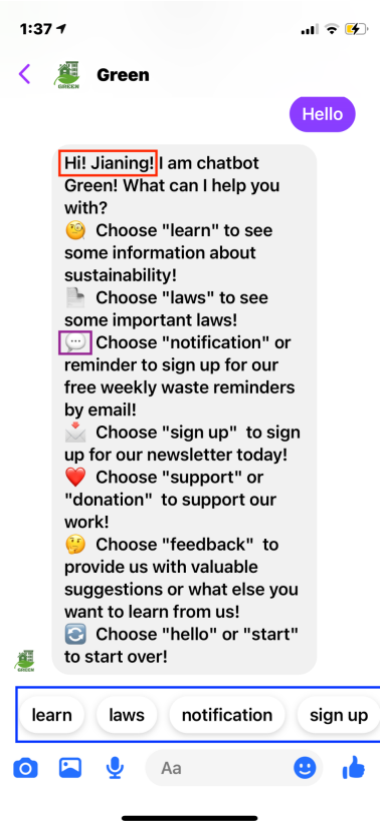

Figure 5. Main trigger flow user interface

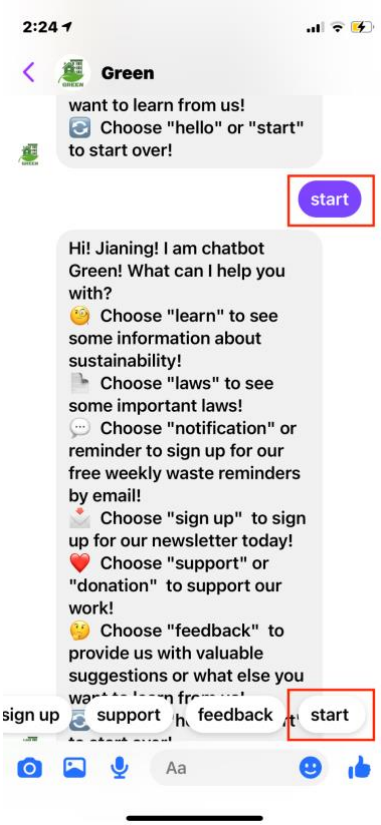

Figure 6. Start over feature

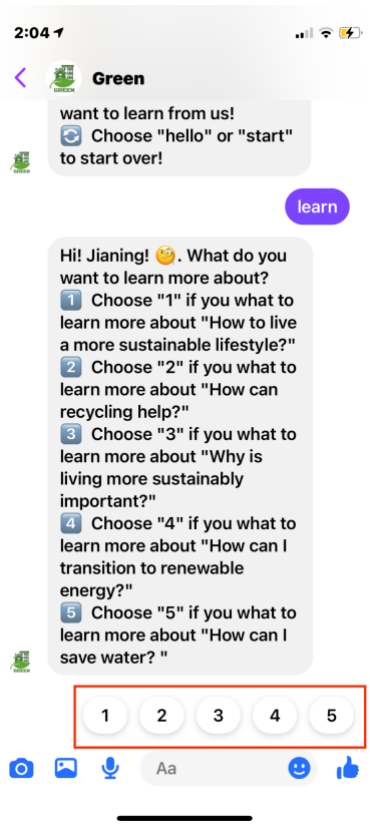

Figure 7. Choices button

In the branch, "learn more about sustainability," (Figure 7), we designed a choice button as shown in the red box. Also, in this informative branch, we developed the chatbot to send some relevant article links to users, as Figure 8 red box showed. Moreover, we allowed the chatbot to send videos for users to learn about sustainability as well. However, our choices of using messenger as our chatbot server and Facebook messenger cannot send the YouTube link we chose directly. Therefore, we decided to send a link instead of a video, as Figure 9 shows (red box: link, blue box: video). And the YouTube video could be sent in the test console (Figure 10 red box). For the image chosen in the video link (Figure 11), we decided to use the same screenshot of the YouTube cover with the play button (red box) to notify users that this link is a video.

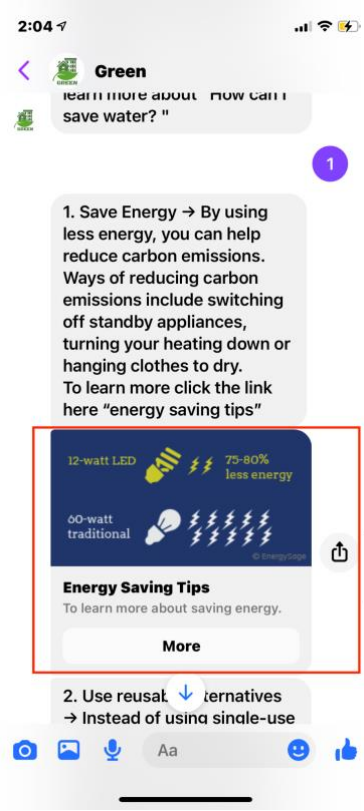

Figure 8. External link

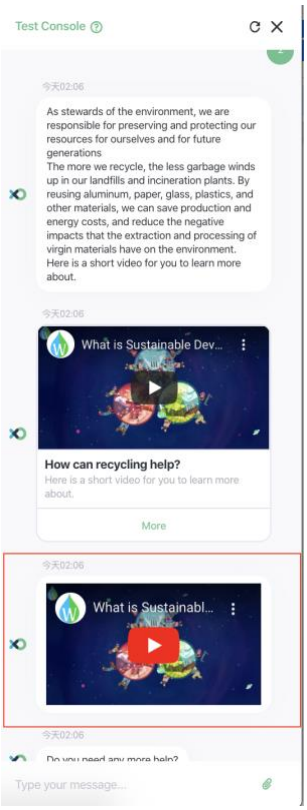

Figure 10. Video link in Flow XO

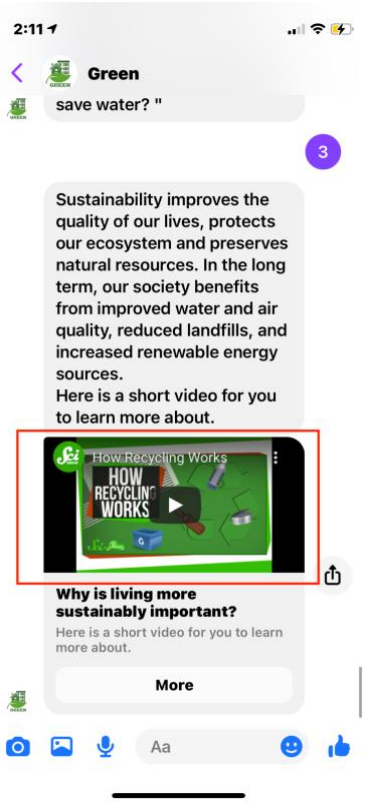

Figure 11. Link image

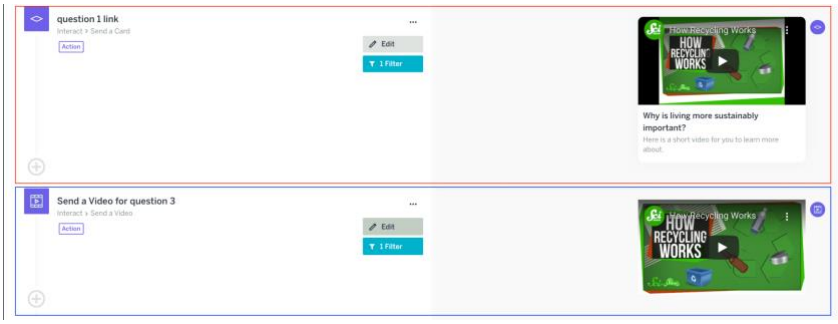

Figure 9. Two ways of sending the video in Flow XO

For the sign-up for the weekly waste notification branch, we designed a "bye" feature for users to end the sign-up process (Figure 12 red box). Also, we developed a step to check whether users' input of email addresses is valid or not (Figure 13). And Figure 14 shows the email the user will receive from the chatbot.

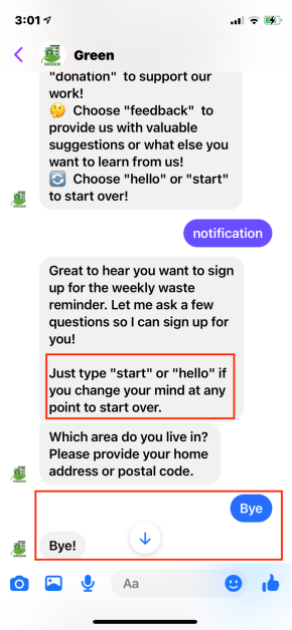

Figure 12. Bye feature

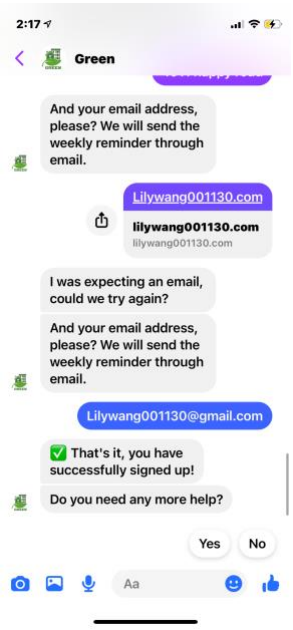

Figure 13. Detecting email error

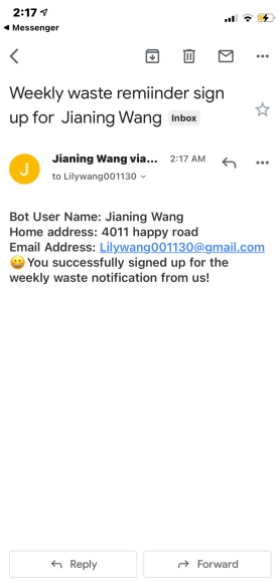

Figure 14. Email send to users

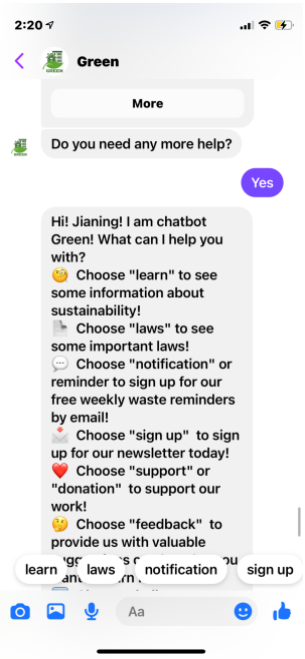

Figure 15. Yes feature

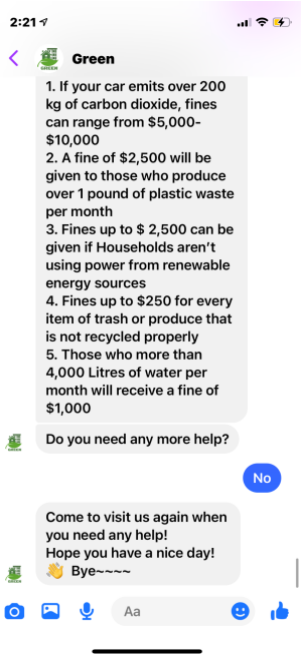

Figure 16. End Chat

Finally, the "ask for any more help" feature will lead the users to the main trigger choice menu (Figure 15) or end the chat (Figure 16).

Figure 17. Logo designed for the chatbot “Green”

Conclusion: Final Result and Reflection

Our Chatbot “Green”" is an informative AI service that the nonprofit “GreenLife” will provide on their various social media platforms for individuals wanting to learn how to live a more sustainable lifestyle. We project that “Green” could be implemented 10-15 years from now because of the growing concerns regarding the environment and the rising need to be more eco-friendly. Our chatbot is meant to provide clear and concise answers to users’ questions while being simple, user-friendly, and easy to use. The chatbot begins by introducing itself to the user, then provides a menu of options to choose from. The menu includes a wide range of functions such as answering the user's questions, describing the future environmental laws that have been implemented, the option to sign up for notifications and newsletters promoting sustainable practices, as well as the ability for users to provide feedback. Depending on the questions that users are asking, the chatbot will provide a brief response, followed by a link to a related resource if the user wishes to learn more.

Internal and external testing highlighted several strengths that the chatbot “Green” has. We found that the chatbot was successful at being conversational, given that we designed the chatbot “Green” to appear as human as possible through the use of suitable dialogue. We also found that the chatbot was able to engage more effectively with the user through the use of

emojis. For instance, when the user is presented with the options menu, they would follow the instructions saying “ Choose "learn" to see some information about sustainability!”. Furthermore, the main weakness that testing also highlighted was the chatbot’s limited ability to answer questions. With sustainability being a broad concept that encapsulates a wide range of different subtopics such as power usage, waste management, and many more, the chatbot is limited regarding the questions it can answer. If given more time, this issue might have been rectified and chatbot “Green” would have been able to answer a wider range of questions.

From designing and building out our chatbot “Green”, we learned a lot about the thought process behind the construction of chatbots. We had to put ourselves into the mind of our users to not only understand the kind of questions they would ask in the future but how they would want to engage with the chatbot. Overall, our team believes that if the future we described does come to fruition, our chatbot “Green” may act as a potential prototype for future AI in the circumstance that Canadian citizens need to learn how to live more sustainably.

Demo video link

https://drive.google.com/file/d/1lAWkYtdEvPluN0dzlOSAA8ejUjFJMKnn/view?usp=sharing

Background sound is from the Jianying video editor (Tiktok's sub company) music library

Prototype link

1. Main trigger flow: https://flowxo.com/share/computers-intuitive-8087
2. Learn about sustainably flow: https://flowxo.com/share/centralized-lycanthropes-6413
3. Laws flow: https://flowxo.com/share/horizontal-source-8738
4. Sign up for weekly waste notification: https://flowxo.com/share/hour-value-added-9665
5. Sign up for newsletter flow: https://flowxo.com/share/function-dynamic-9053
6. Support flow: https://flowxo.com/share/public-rock-4655
7. Feedback flow: https://flowxo.com/share/ghosts-scalable-1402

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