



# Help! What Should I say Next?: An Interface for Predictive Text in Plains Cree

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# Introduction

- Plains Cree is a low-resource language with limited language technologies (D. Teodorescu, personal communication, July 26, 2021)
  - ◆ For example: machine translation, spell and grammar check, optical Character Recognition, and predictive text.
- This means that it is hard for people to develop their Cree language skills.
  - ◆ The Plains Cree language is an integral part of Aboriginal culture and identity and it is a priority to preserve it.



# What is Predictive Text?

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- Predictive text guesses what a person is going to type based on what they have typed so far. (C. Demmans Epp, personal communication, July 7, 2021)
- Predictive text has been shown to improve the efficiency and quality of typing and text creation, especially for children with learning difficulties. (Newell, A. F., Booth, L., & Beattie, W., 1991)

# Problem Statement: Why Create an Interface?

- We need a place where we can test the predictive text model and no such interface exists presently.
- This model helps us understand to what extent of predictive modeling is the most effective for Plains Cree users.

# Problem Statement: Why Create an Interface?

- In other words, is character level prediction more helpful than sub-word level (e.g., suffix) prediction for Plains Cree users?
- This will assist us to implement this feature in predictive keyboards to enhance the end-user's experience.

# What is the Difference Between Character Level and Sub-word Level Prediction?

- Character Level prediction shows the next letter of the word the user wants to type.(D. Teodorescu, personal communication, July 26, 2021)
- In contrast, sub-word level displays the next part of a word that the user wishes to type.(D. Teodorescu, personal communication, July 26, 2021)

# Character Level vs Sub-word Level (Visuals):

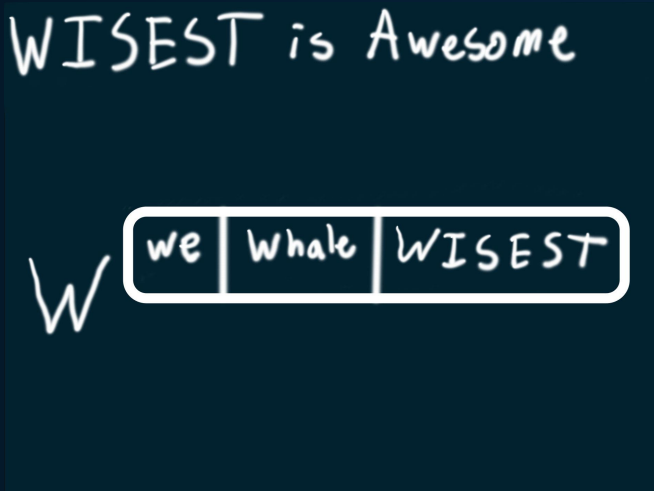


Fig. 1.0: This is an example of sub-word level prediction. The user want to type the sentence "WISEST is Awesome" and when they type the first letter, the options appear. Since the user sees the word they want to complete, they would choose it.



Fig. 2.0: This is an example of character level prediction. When the user types in the first letter, the options show as characters. Since the user does not see the letter they wish, they would continue to type.

# WHAT WE ARE WORKING ON

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## INTERACTIVE

Using a model, the system will create an interactive platform for users to input information.



## EDUCATION

Predictive text aids text creation and sentence construction for users.



## ACCESSIBLE

Helps more people learn and use sentences in Plains Cree.





# Methods

**How to Create an  
Interface?**

# Part 1: Sketches

- First, I created several different interface design sketches on paper.
  - ◆ Inspired by Google's smart compose design
- After, we selected the one that seemed to be intuitive based on feedback from the research group

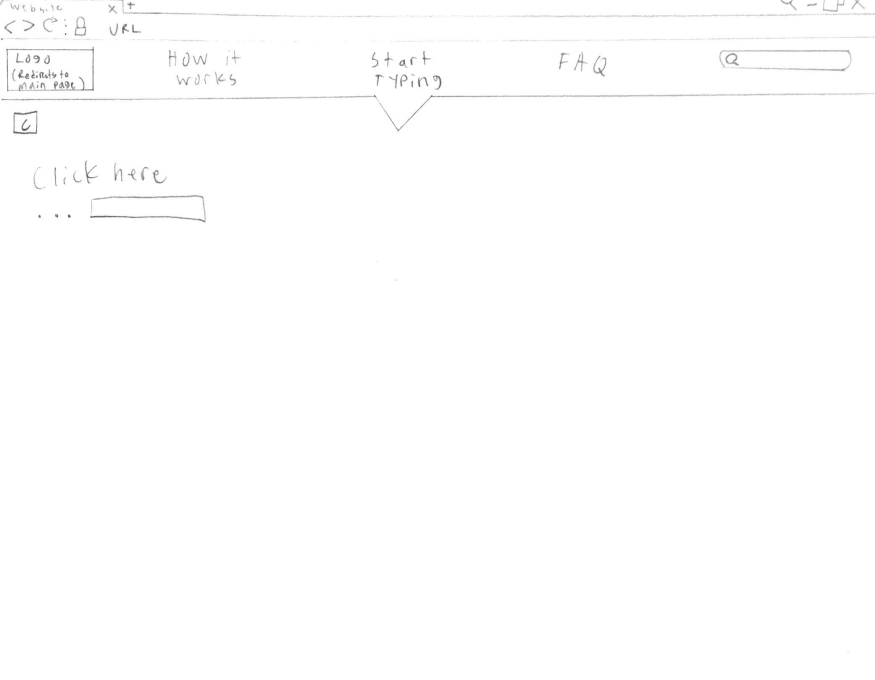


Fig. 3.0: This design relied on pressing the tab button to complete the sentence but it did not give options to choose from.

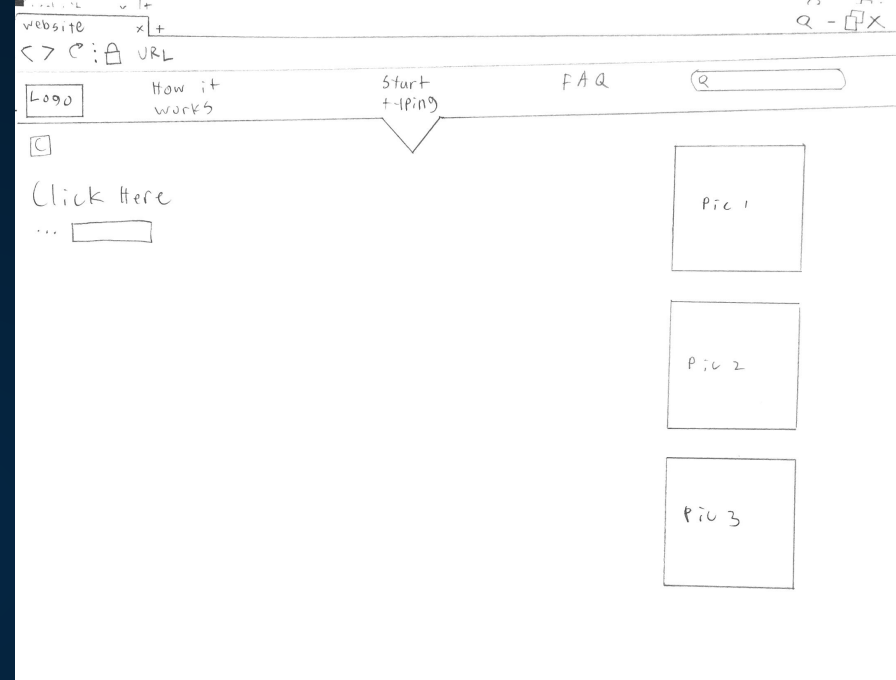


Fig. 4.0: This design had pictures that would display on the right side that would show when the user would type.

**Design Process:** These sketches were inadequate for our purposes

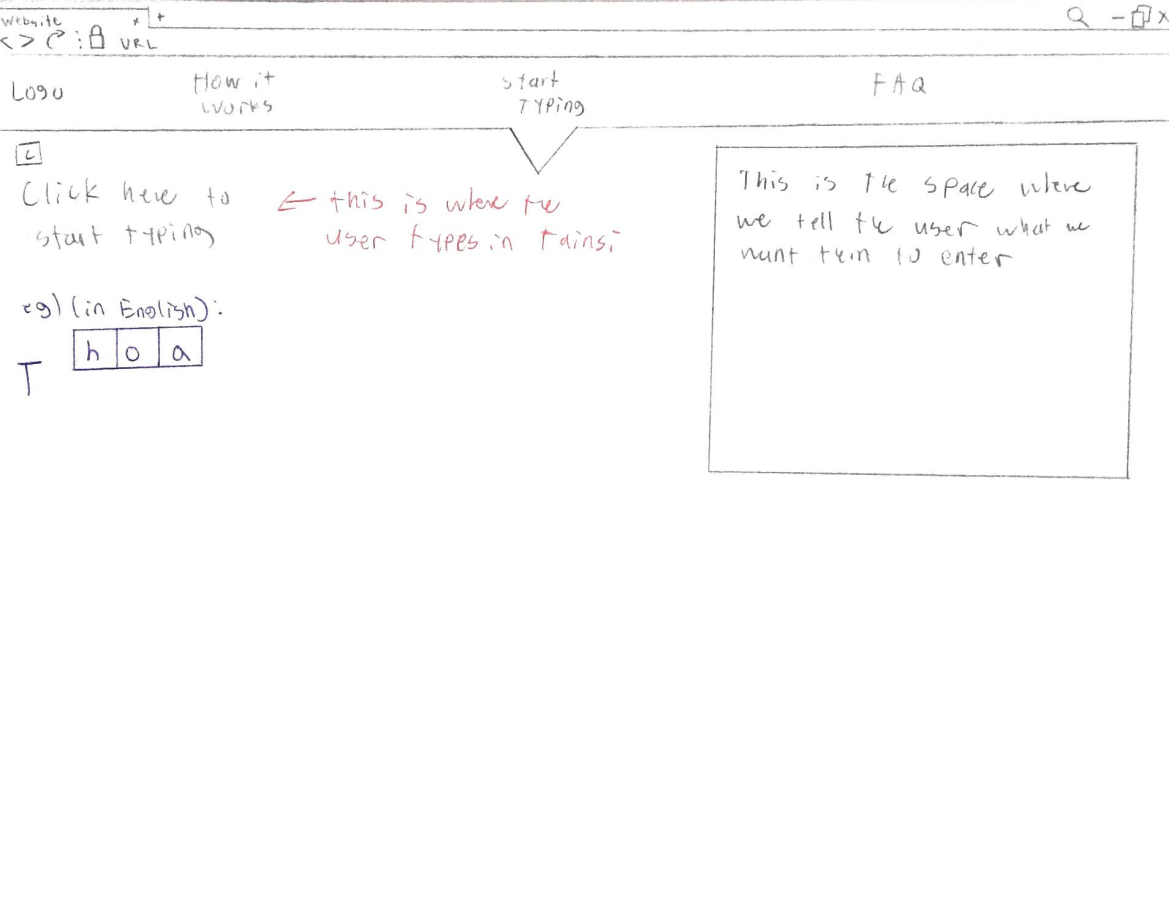


Fig. 5.0: This design is the one that got chosen. It has an instruction field to the right and the user types on the left. It also gives the multiple options for the predictive model to work and the user to choose from.

**The Final One:** This sketch is the one that got selected



## Part 2: Coding

- Next, I used a code writing platform called [replit.com](https://replit.com) to write and run the code.
  - ◆ The coding languages used were HTML, CSS, and JavaScript.
- The interface is using outputs from several different predictive text models for text creation.
  - ◆ Character level and sub-word level



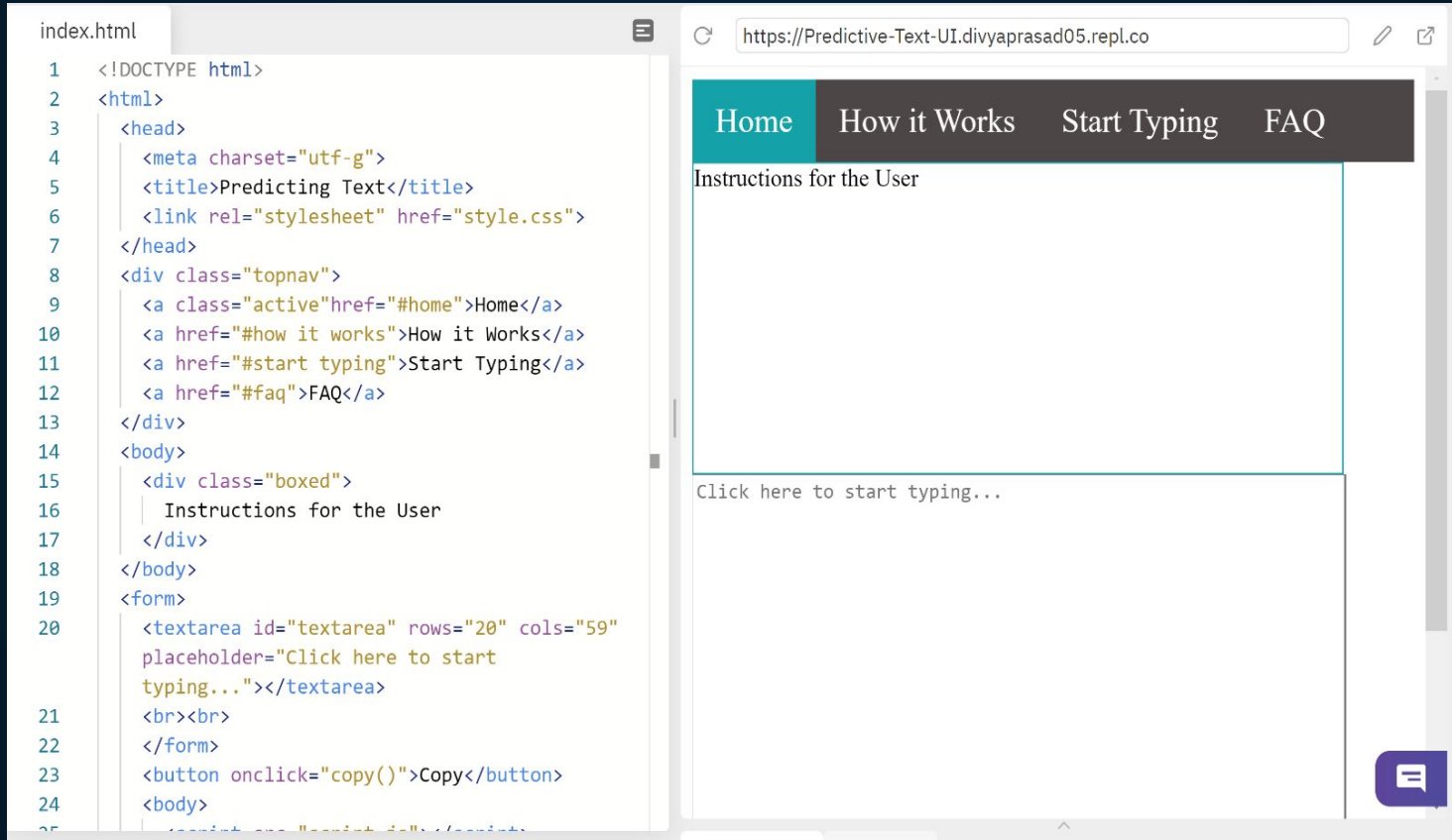
# System Design

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What does the interface look like?

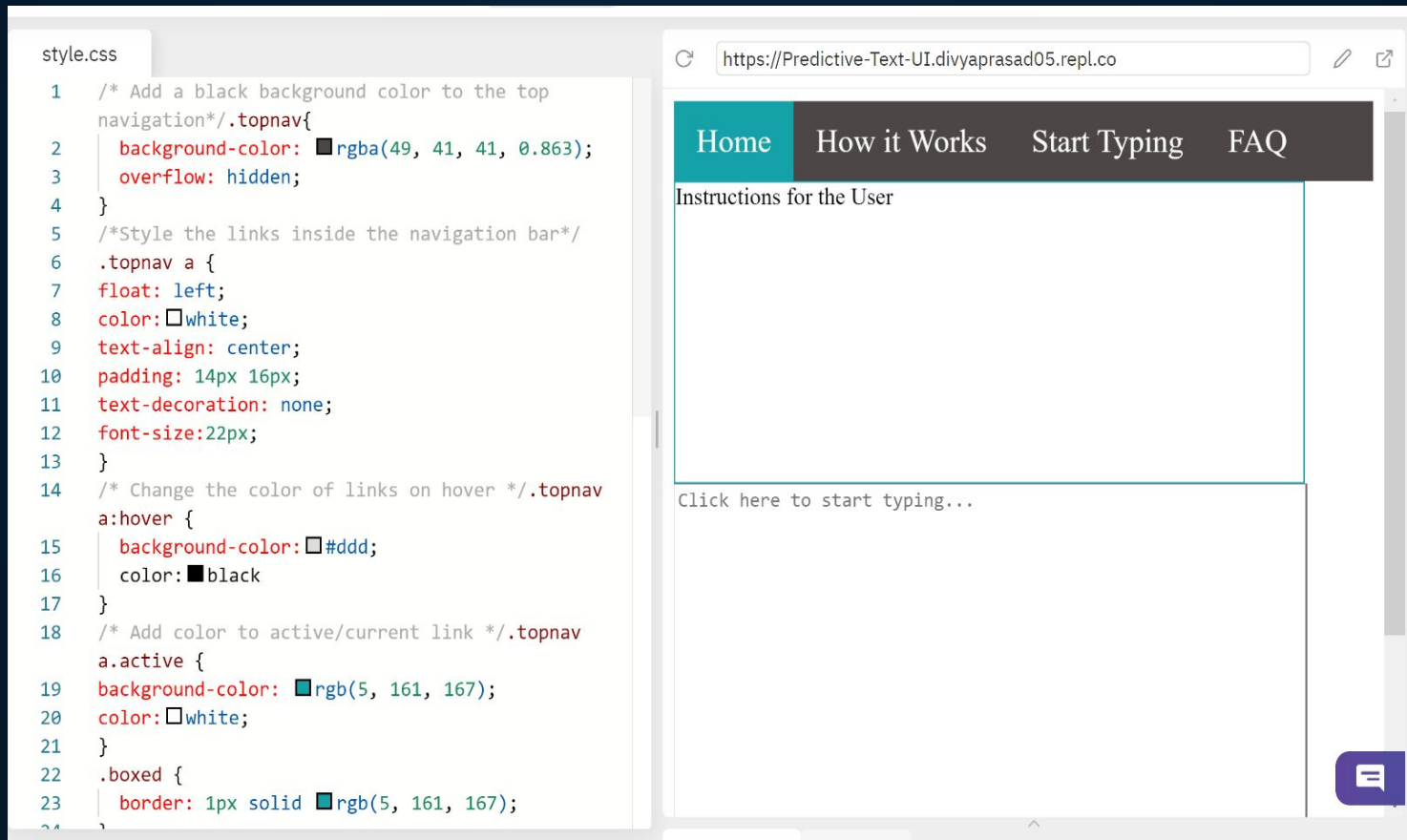
# Screenshot 1: HTML

Fig. 6.0:  
HTML code  
screenshot



# Screenshot 2: CSS

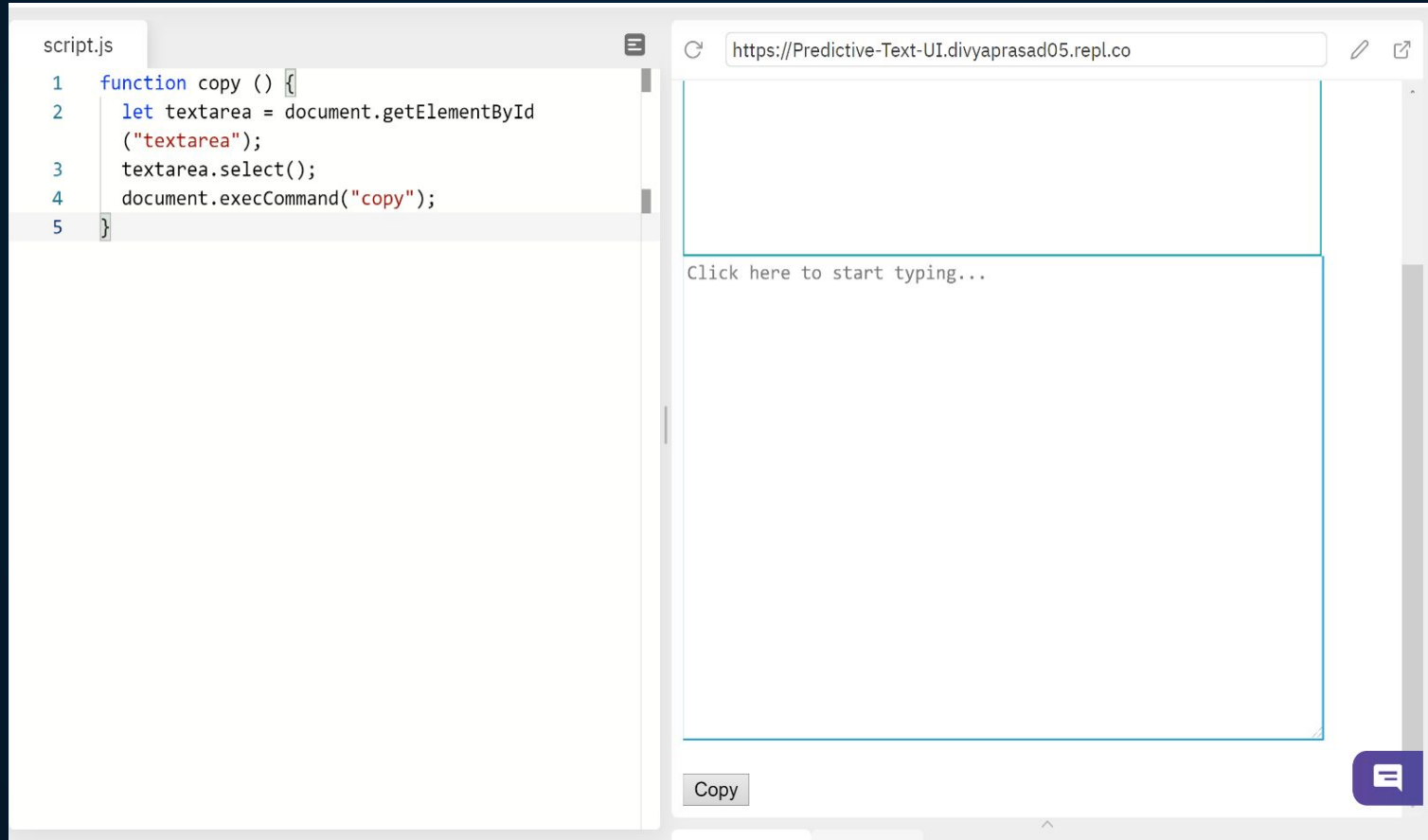
Fig. 7.0:  
CSS code  
screenshot





# Screenshot 3: Javascript

Fig 8.0:  
Javascript  
code  
screenshot



# Explanation

- Instructions for the user is on the top
  - ◆ This is so that the the user can read the instructions and get familiar with the model before inputting any characters
- Below the instructions box is the place where the user types and where the model works
- There is also a copy button for the user to press so they can copy the text they have written to their clipboard and they would be able to paste it anywhere.
  - ◆ This makes it easier for the user to copy all the information they have written using the predictive text model instead of highlighting everything and then right-clicking and selecting the option.



# Future Work

**What can we use the interface  
design in the near future?**

# 1. Various Units of Predictive Text

- Currently, the character level predictive text only shows options for one character at a time
  - ◆ Proposed designs include two or three units to appear at a time
- If we decide to expand on the sub-word level predictive text model, it may give as much as two or three word parts at a time and even common phrases.
- There is also a possibility for full sentence prediction in which the model gives sentences as the user is typing.
  - ◆ This may aid the end-users to construct essays and other extended work.

## 2. Additional Languages

- In the future, there is a possibility that the interface can be made for several different predictive text models for various languages.
  - ◆ For example: the interface could house character level, sub-word level, and sentence level prediction across several languages making it a universal tool
  - ◆ This instrument could be used across a wide variety of school and universities across the world to aid students for learning new languages

# 3. Mobile Support

- With the increasing reliance on portable handheld devices, there is a possibility to extend the predictive text model and the interactive interface platform for mobile devices.
  - ◆ Creating an accessible app for a multitude of users on a widespread platform such as Apple's iOS Appstore or Google Play Store.
  - ◆ This would allow the predictive text model to be accessible to more users as many use these devices on a daily basis.

# Acknowledgements

## EdTeKLA Team

I would like to extend my deepest gratitude everyone in the EdTeKLA team, particularly Dr. Carrie Demmans Epp, Ms. Daniela Teodorescu, Ms. Josie Matalski, Mr. Nhan Nguyen, and Ms. Delaney Lothian for providing me with assistance with my projects and overall an amazing environment to be around.

## SRP Students

I very much appreciate all the SRP students this year. You all are amazing people to be around and made the program exceptional.



## WISEST Coordinators

I am extremely grateful to the WISEST coordinators: Bridget, AJ, Hannah, Deb, Fervone, and Helen. They have provided invaluable support throughout the entire program.

## Sponsors

I would like to thank Motorola Solutions Foundations and Canada Summer Jobs for funding WISEST.

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# CREDITS

This is where you give credit to the ones who are part of this project.

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