

PicDefine

Introduction

The problem we are aiming to solve is helping non-native English speakers understand material they read online. When reading articles online, people often run into words that they don't understand. For native speakers, this is usually not an issue, as most browsers have built-in word definition utilities. These allow the user to easily access the definition of words.

The problem with this approach is that definitions alone may not be that useful for non-native speakers, as non-native speakers may not be able to understand terms used in the definitions. The goal of PicDefine is to make these definition tools more universal, so they can better serve non-native speakers.

User and Context

The intended users of our technology are non-native English speakers who actively consume English content online. These users are people who know bits and pieces of English, but may not be able to fully understand everything in the majority of articles that they read. Because of this user profile, PicDefine takes the form of a Chrome extension. This allows anyone to install PicDefine straight into Chrome, without them needing to modify the tools they use to browse the web.

UDL Principles

The design of PicDefine was heavily influenced by the UDL principles. Our group's initial idea was to make a better definition tool that allowed users to hover over text that they didn't understand, and have definitions and relevant links pop up for the user's reference. We realized that the problem with this approach is that adding relevant links and additional definitions will not necessarily help non-native speakers, as it's still possible that they don't understand words in the comprehensive definition or the provided links. This is akin to the Braille Rubik's cubes from

the readings; not all people with visual impairments will know braille, which makes them not as useful as they could be.

After observing this, our group realized that pictures are the one form of communication that is universal across people who speak different languages. This is similar to the Rubik's cubes with shape imprints from the readings, in that anyone can understand which shapes correspond to what, regardless of whether they have visual impairments or not.

Learning Objectives

The design of our product supports student learning by providing an immersive tool that is easily drawn upon by users to define terms that they don't understand. The learning objective is for users, native English speakers or not, to be able to easily access definitions to terms that they don't understand in online readings. This would allow these users to slowly but surely improve their vocabulary to a point where using PicDefine is no longer necessary.

In addition, although this is not included in our current prototype, PicDefine would allow the collection of data on what terms speakers get confused on the most, which could be used by educators in the classroom to better enrich student learning.

Justification of Technology

We developed a chrome extension as the first implementation of PicDefine. We chose to write an extension because this results in the minimum amount of disruption to how users normally do things - they can use their web browser in the same way that they always have, but additionally have this tool available to them to use whenever they want. We chose to write this extension as a chrome extension because Chrome is the most popular browser to date, with the richest ecosystem of third-party plugins, which makes it the most probably browser that our users will use. It is possible to port PicDefine to different browsers in the future.

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