IN PROGRESS

Overview

EasyRead is a web application that allows teachers to take text from anywhere and simplify it to a desired reading level corresponding to a US grade from K - 12. The system is designed to serve both instructors and students. Instructors upload passages, create questions, and use the system's suggestions to strategically edit a passage to reduce its complexity without losing the original meaning. Students view the passages and answer questions about them.

Senarios

Instructor

Problem - An instructor working with low literacy adults encounters a newspaper article that they want to share with their class. Their average student reads around a 4th-grade level, but the New York times average reader comes with a Bachelor's Degree.

Solution - EasyRead provides a simple cut-and-paste tool that the instructor can use to save a passage and see some suggestions on which words are going to be problematic for a 4th-grade reader.

Student

Problem - An adult who reads at a 5th-grade level has decided to take a literacy class. While the class is generally helpful, none of the material their workbook provides is anything beyond childish stories with no real world content.

Solution - Using EasyRead, this adult can browse through a wide range of passages that their instructor has selected. The passages are tagged with their source and a description to make searching for complex topics such as a simplified explanation of the issues in the upcoming election or the problems in the middle east as easy as it is for an actual fifth grader to find a copy of Harry Potter.

Non-goals

This application is not an attempt to revolutionize every part of the classroom and will therefore not have any features aimed at storing course material other than passages and their associated meta-data.

Details

1. Signup Screen/Login Screen

EasyRead doesn't store any information about whether or not a user has been to our site before, so any user who enters the site will be directed to the login page. Whenever a user is entering the web app for the first time, they'll have to create a new account. The signup process starts with instructors making an account and students get access when an instructor adds them to a course. Every Instructor who wishes to sign up will be asked to provide a name, email address, and password. The form cannot be submitted without all the information and the email address must be a valid email address that the user can access to respond to the confirmation email that completes the signup process. For students, the sign up process begins with that confirmation email, an instructor will have already been required to input a name and email address for them when giving access. For both types of users, clicking a link in the confirmation email sends them back to the login page where they can type in their email and password. When the user clicks login the system checks to see whether or not their email address and password correspond with any stored account information, if not, an error message is displayed and the user has to try again. If their credentials are correct, they are redirected to the Manage Passages Screen.

2. Manage Passages Screen

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The Manage Passages screen will show, in list form, all the passages a user has access to. The actions that a user is allowed to take on those passages depend on what type of user they are.

As an Instructor, from here the user can view a list of passages, searchable by keyword or passage tag, add a passage, edit or analyze existing passages. Analyzing a passage generates suggestions and an approximation of the reading level of all passages. Before pressing the analysis button, the grade level and passage simplification suggestions are unavailable.

For students, this page allows viewing that same searchable list of passages, but the only action that they can take is to answer questions on an existing passage for which their instructor has made questions available.

3. Add Passage Screen (Instructors only)

This screen allows users to simply cut-and-paste any text that they want into the Create Passage form and have it saved to the system along with a Title and Source. The Instructor can also add a uniquely named passage tag to the system. A passage tag consists of a name, description, and type. The tag name must be unique and not already in use for this passage. These tags are designed to help facilitate searching and should be as specific as possible. Aside from checking that the passage tag is unique, the entirety of the rest of the passage data is not validated and can be whatever the user inputs. Eventually, there will be terms of service given to reflect that EasyRead is not responsible for the user failing to add correct attributions to their material or using copyrighted text.

4. Analyze Passages Button on Manage Passages Page

An Instructor who clicks the Analyze Passages button will trigger a dialog that obscures the screen and asks if the user is sure they want to continue and warns them that it could take a couple of minutes. Analyzing passages happens in the background and the instructor is free to use the rest of the site while the process goes on. When Analysis is finished, the instructor is redirected to the Manage Passages page where the system calculated grade level for each passage is now available and can continue on to the view passages screen to see suggestions for simplifying those passages.

5. View Passage Screen

If either a Student or an Instructor clicks on a passage in the list of passages, they'll be brought to this screen. The view for Students only includes the passage text, passage tag, and a button to view/answer questions that their instructor has made available.

As an instructor, the options that are displayed depend on whether or not the system has analyzed the passages already or not. If the passages haven't been analyzed yet, the instructor can edit the passage and add or edit questions for that passage. If the passages have been analyzed, the instructor can perform all those actions and can opt to turn on suggestions and view the passage at a target grade level. Turning on suggestions will bring you to a version of this page where words that are above the current viewing grade level are underlined and clicking on them will result in one of two things. Either a pop up saying "This word is too difficult, but we don't have any suggestions for it yet" or a black label will appear above the passage title with a list of words that the system has determined are both synonyms of the word the instructor clicked and that make sense as part of the given sentence. Sentences are validated by checking the frequency with which a collection of n words appears together in a certain order in search engine (Bing) queries. For example, given the original sentence, "Ophidians on a plane", the system would underline "Ophidians" as an overly complicated word and look for synonyms. Given a list of synonyms, the system will choose the one that is the least complicated based on factors like number of syllables, commonality, and length. "Snakes" is likely the least complicated synonym of "Ophidians" and in collections of n, in this case, four, words "Snakes on a Plane" is searched for with exceptional frequency. Frequency above a predetermined threshold would trigger "Snakes" to be included on this page as a suggested replacement. Clicking a suggested word results in the original word being replaced and the passage being saved. The entire passage is editable while viewing suggestions and the instructor may click on a word that's underlined and manually "accept" the word at the current passage grade level. Any changes made on this screen will be saved automatically.

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Open Issues

EasyRead brings something entirely new to the field of education in its near real-time ability to provide suggestions for any text and get it in the hands of students. One of the reasons why this is new is providing meaningful suggestions for a word is a huge challenge. Research indicates that a mixture of commonality, length, the number of syllables, number of characters, number of words in a sentence, and many other factors can go into whether or not a word is "difficult". There are many ways to tabulate those things but no established way for combining them into a meaningful metric. The two biggest issues with EasyRead's current methodology are how "common" must a search for a certain number of words be before it can be considered a "valid" sentence and is there a point at which a word is already too "simple" to give a suggestion for replacing it. These issues will be solved later in the development process as the algorithms behind the simplified simplification process detailed above are iterated upon and improved.