Malcolm Goldiner   Capital Passages - EasyRead

EasyRead is a tool for instructors working with low literacy adults who want the ability to simplify any text to the reading level of their students. When English teachers at elementary schools want to pick the next book to share with their class they have millions of books preapproved for kids to choose from, but an instructor at an adult literacy center only has two subpar choices. They can bring in material so complicated that it discourages their students or material so simple it makes their students feel incompetent for not understanding it. EasyRead looks to change that by making it possible to choose any text and simplify it.

EasyRead is a web application that allows the user to store, edit and view passages. The system has both Individual Accounts and Organization Accounts. Individual Accounts allow you add, edit, and view passages as well as use the system to generate suggestions for simplifying the language to the target grade level. The user can take the system-generated suggestions or ignore them. The passages will be auto-saved after the user makes that choice. Organization Accounts allow many users to create sub accounts each with the capabilities of an individual account and give them all access to one combined list of passages. Organizations can also integrate with another system which establishes a more conventional student-teacher learning platform dynamic. At its core, the system is based around dropping in text, giving its source and identifying information and letting the system identify problem areas.

The way our passage simplification algorithm works is dependent on the length of the passages and the data we have available. EasyRead stores data on age of acquisition, or the average age at which a person should learn a word and words that are insignificant to difficulty, like proper nouns and Stop Words. Stop Words are words like "a" and "the" that are used excessively and do not change how difficult it is to read something. For passages that are less than one hundred words in length, the grade level is reported as the average age of acquisition of all non stop words that are in both the passage and EasyRead's database. For passages larger than one hundred words, we turned to the de-facto standards for passage difficulty algorithms and average the results of the [Flesch-Kincaid Readability Tests](), [Automated Readability Index](), and [Coleman-Liau Index](). All three algorithms relate factors such as the number of characters, words, words per sentence and sentences per passage to give you an exact US grade level in which the average student can read the passage without difficulty. That grade level is then entered into the system.

Once a User has chosen to analyze their passages they can view the system's suggestions at any time. EasyRead's suggestion systems work by looking at all the words in the passage that we have data for and checking to see whether their age of acquisition is less than or equal to the age corresponding to the grade that the passage is being displayed at. These suggestions update dynamically as you reload the page at different grade levels. EasyRead is, necessarily, more than willing to admit that it made a mistake and users always have the option of manually accepting a word at their viewing grade level and we'll remember that choice for them.

Aside from the simplification aspects of the system, users within Organization accounts will have the option of creating questions to go with each passage and integrating with an external learning tool called ReMind. ReMind is a web application being developing by another team at George Washington University for assisting users in learning any content through asking questions and resurfacing questions the user does not quite know again at exactly the right time, based on leading research in how spaced repetition benefits learning. ReMind is a platform that differentiates between Instructors and Students with the Instructors assigning content and the students only being able to mark a problem with the questions or answer them.

EasyRead also features a tag based organizational system to help users keep track of their passages and aggregate pieces on similar subjects. Every Tag features a name, description, and type. EasyRead's search functionality groups passages based on their tag name. Users may use a tag that already exists in the system if they would like to. Tags are meant to be used for things like relevant search keywords and giving credit to sources. In addition to tags, The View All Passages page features a search bar that will let users filter by grade or by uploader as well.

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EasyRead is aiming to be the place that users turn to when they have to simplify text very quickly rather than a full-service passage repository. The app attempts to do simplification and organization really well, with room to get better at collaboration and other areas later. This is first and foremost a tool to help adult educators and all other goals are secondary.

The market for tools directed at illiterate adults is larger than you think. In the United States, we have stopped making progress towards full literacy and it is estimated that there are at least thirty-two million illiterate adults ([The U.S. Illiteracy Rate Hasn't Changed In 10 Years](#)). In order to increase exposure and ensure that EasyRead maximizes its utility, our individual accounts will be free to use. However, accounts for Organizations that tax the system in terms of memory required to store all their passages and number of passages to analyze will be charged according to usage as is typical with distributed Software as a Service Solutions.

In addition to the existence of a market for this product in general, user testing at Washington Literacy Center revealed that passage simplification was among the most requested services by adult educators. Adult Literacy instructors are looking for tools to streamline their workflow and automate as much as possible. It's an incredible amount of work to summarize even a single paragraph from a more complicated article yourself. That means that literacy centers are very responsive to individuals reaching out to them and trying to make their lives easier. Getting the word out about EasyRead would be as simple as inviting a couple programs into a beta program and telling them to spread the word.

While Existing standards generate static reports on a passage's reading level, EasyRead can be used on a minute-to-minute basis, inside the classroom, to simplify any text that an instructor wants to share. There are two areas where competition exists, one is from the Lexile measure and similar services, which send the aforementioned static reports on reading level and does not provide you with an interface to instantly make use of that information to edit down a passage. Then there are some technology companies that provide the infrastructure and programming interfaces for developers to incorporate some form of Natural Language Processing in order to give a rough estimate of text difficulty. EasyRead's edge is that neither of those solutions can be put to work by even the most technically inclined instructor in either K-12 or Adult Education.

As EasyRead grows, our suggestions will get better and better as we are able to incorporate user's feedback into our grade level determination algorithms. If a direct competitor emerges, we will have the benefit of experience and the ability to iterate quickly. That capability comes from our technology stack. EasyRead is based on the best of the best in terms of research. Stanford's Core Natural Language Processing parser and Microsoft N-Grams. CoreNLP is what is responsible for breaking down passages into their component sentences and words and the N-Grams are how the system determines which suggestions are more common than others. Without burdening this explanation with too many technical details, EasyRead's components are modular and updates to third party tools in your tech stack can be integrated immediately and integrating new standards will only require writing an additional module rather than becoming stagnant while we rebuild.

EasyRead will save instructors time with its intelligent editing suggestions and cost far less than searching out and buying books specific to a certain age group. The amount of money the government is willing to put into education may be an incredibly disappointing number, but additional savings is something that even the most obtuse of bureaucrats can get behind. EasyRead will turn a profit because we are the elusive cost saving mechanism in education. We will be the ones to succeed in proving that both because EasyRead is being built by a research group that has done the commensurate need finding research and due diligence. On top of that, we set our eyes on making things easier for the educator and not for ourselves.

Low Literacy adults are an underserved demographic in the field of education. Classes full of adults should be learning material that is far more complex than a child at the same reading level. EasyRead aims to give instructors serving those adults room to innovate by providing a way of bringing real world literature – newspaper articles, research papers, etc. – down to a reading level appropriate for the users while still preserving the original meaning. The students would get content appropriate for them instead of content appropriate for their children. Even in the traditional school setting, instructors would no longer have to limit their courses to books designed for children or young adult readers, but could bring in snippets from what their students have to look forward to in the real world. The passage simplification suggestions, as well as the ability to add comprehension questions, will allow EasyRead to give instructors working with low literacy adults the ability to teach at the same level as their early education

snippets from what their students have to look forward to in the real world. The passage simplification suggestions, as well as the ability to add comprehension questions, will allow EasyRead to give instructors working with low literacy adults the ability to teach at the same level as their early education counterparts.

Adult illiteracy seems like an isolated problem or something that we would have eradicated along with rabies and crusading, however, it is still very much a modern issue. Education is readily available today and some if it is even quality education. But we still have people whom that system is failing. Those people do not just cease to exist when they are forced to drop out of school or when their school moves them into middle school despite their reading at a second-grade level, they continue to develop until adults who are at a significant disadvantage. Illiteracy has two flavors, there are those who are fully illiterate and there are those who are functionally illiterate. Fully Illiterate means that you cannot read at all, whereas functionally illiterate means you might recognize some common words and phrases, but that is not because you are capable of reading a whole book but really just pattern recognition. EasyRead is targeted at those adults who are functionally illiterate and grade school children at the same level of reading skill.

Implementing a system like EasyRead at an adult literacy center would have an immediate positive effect in that it would undoubtedly increase student engagement and lower required additional work on the part of the instructors. Educating people is hard and made doubly difficult when the group you are trying to teach is so often derided and written off. Helping thirty-two million illiterate adults is much more immediate and pressing than helping your average consumer buy something unnecessary or letting another person postulate on how people should send emoticons on Facebook. Those tens of millions of adults can use this one skill as a springboard to break into a new profession or return to school, or even help teach others. The number of positive externalities that can be generated by making someone literate are almost endless and EasyRead is orders of magnitude cheaper than producing specialized textbooks just for adults or paying an extra teacher whose only job is to seek out appropriate material. These adults are an untapped resource and EasyRead can help them build a future where the world takes their potential seriously.