Thesis Project Portfolio

Web Design: Software Engineers Publishing Children's Books?
(Technical Report)

**Right to Repair: A Historical Analysis of How the Movement Got Its Name and Its
Implications Today**
(STS Research Paper)

An Undergraduate Thesis

Presented to the Faculty of the School of Engineering and Applied Science
University of Virginia • Charlottesville, Virginia

In Fulfillment of the Requirements for the Degree
Bachelor of Science, School of Engineering

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Sociotechnical Synthesis
(Executive Summary)

Investigating the Dispersion of Knowledge

"The more that you read, the more things you will know. The more that you learn, the more places you'll go."
- Dr. Seuss, *I Can Read With My Eyes Shut!*

I chose my STS topic due to personal relevance. When I broke the screen on my iphone I found it incredibly frustrating trying to source a reasonably priced replacement part but also finding the proper documentation required to pull apart and fix my own device. As someone with a passion for cars it was confusing to me how cars are able to be maintained and serviced at 3rd party businesses but electronics such as laptops and cellphones are often required to be repaired directly by manufacturers. Roughly 50 million tons of e-waste globally gets thrown out every year. The Executive Order signed in July 2021 by President Biden included a section to "increase consumers' ability to repair equipment on their own" causing recent popularity of the right to repair in the media to surge. Right to repair is proposed government legislation that provides consumers with the ability to repair their own products. My STS research investigates how the public connotation behind the phrase has adapted throughout time and the societal issues the phrase encompasses. Over time, the illiteracy rates in the US have remained stagnant with not much being done to improve areas repeatedly falling short. My technical project was a website for an initiative with a mission to improve literacy rates in Florida. Both these topics are regarding the distribution of knowledge, one focuses on bringing new information to communities while the other brings light to the restrictions in place that prevent the spread of information necessary for technical innovation in certain industries.

Percent of adults with below basic prose literacy skills

All data are estimates among English-speaking adults developed using statistical models and have a large margin of error.
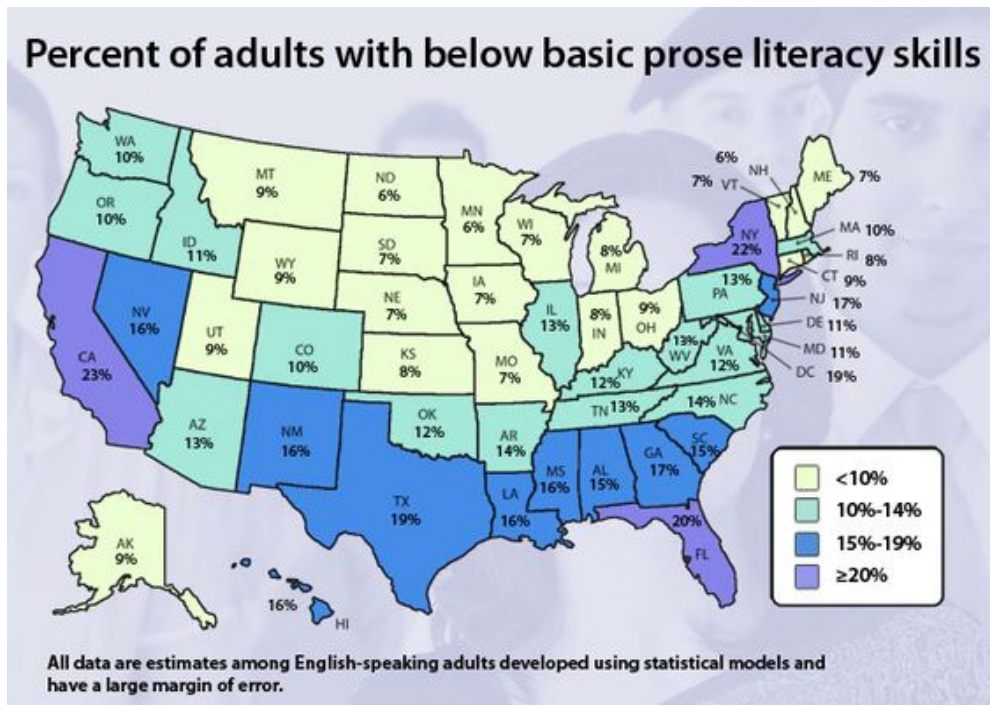
Fig. 1 - National Assessment of Adult Literacy (NAAL) done by National Center for Education Statistics (NCES)

The technical portion of my thesis is attributed to my time at Scholastic where I worked as a front end software engineer, but unfortunately did not write the next Clifford the Big Red Dog novel. One of the projects I actually contributed to was an initiative to deliver free books to kids living in Florida, which as depicted in Figure 1 is one of the states with the lowest literacy rates in America. I worked on the enrollment form which requested rudimentary personal information like name, race and address but also included a section to get to know the children themselves better. This included inquiring about the kids' hobbies and interests. As the website goes live, the aim is to successfully launch these kids' reading skills while also fostering a long term love for reading based on their personalized interests.

In my STS research, I aim to provide a better understanding of the right to repair political movement. This entails a historical analysis of the phrase from when it was first coined to its repeated emergence and impact on society throughout time. The paper references technological determinism and draws on how the significance behind the movement has shifted. The paper also

provides an outlook into what possible changes have made its introduction into legislation finally a reality. This research can be used to see if the movement is on the right track and what policies can possibly be enacted to help with all the issues surrounding the movement.

Together my STS research and technical project provided me with a different perspective of technology being used as a means for the spread of knowledge. My STS research highlighted that the main communities impacted by the lack of proper information are underprivileged. This relates to my technical project because the program aims to provide kids with books to improve literacy rates which will most likely be targeted towards underprivileged communities as well. While these topics are not entirely influential, they have a lot to do with each other. With improved literacy, there comes better opportunities for individuals to get into higher education and break into the better paying professions of the middle class. My technical project was an effort to increase general information while my research exhibited the ways information gets restricted from consumers. When designing the website at my internship I used a variety of online sources to aid my development process. With React being open source there was a lot of information available on the internet, especially regarding how to handle specific errors. Physical technology on the other hand is headed in the opposite direction which I would not have known without having completed this research. Documentation surrounding devices like our phones is not made public, making it difficult for businesses to repair consumer electronics. Being as expensive and wasteful as this is, it shows our ethical responsibility to not artificially restrict access to knowledge and to always consider the rippling effects of what we create.