

Research Changed More than a Classroom Grade

My name is Rachel Hayes and I am applying for the Freshman Individual Award in the Kirmser Undergraduate Research Award series. During the fall semester of 2013, I was enrolled in History 251 with Dr. M.J. Morgan which was a first year seminar class. For our final paper, we had to choose an invention, pre-Civil War, and research how this invention pushed technology forward by having a direct effect on society today. When we were given this assignment, I immediately saw the connection between the assignment and the KSBN book of the year, *Ready Player One*. The technological advances from the current year to the time period portrayed, the year 2045, is astounding! You can practically live in video games! So, that week, I searched for viable inventions that had a similar advancement with the way of life as the video games do in the novel. Once I saw vulcanized rubber, my mechanical engineering side came out. I instantly thought about how rubber drove the automobile industry into the wonder it is today; I knew I could find many resources to explain the technological expansions.

When we all decided upon our topics, we were given a tour of Hale Library and were taught how to use the databases that K-State Libraries provides; they contributed massively to the research portion of the assignment. Through the databases, we could find and have access to books, magazine articles, journals, etc. that Hale had in their inventory or through an Interlibrary Loan. Dr. Morgan is the one who first introduced me to Interlibrary Loans. I had no idea that K-State had the capabilities of requesting materials from other libraries in a tangible form for their students. Everything I needed for my paper was within my grasp!

Nonetheless, there were difficulties while researching my topic. As I've mentioned, vulcanization changed the automobile industries as a whole. At first, I thought my paper should

cover said topic. However, as I started searching for papers and books over vulcanized rubber, I found a strong amount in all the specialized databases such as America: History & Life.

Therefore, instead of fully covering the development of the automobile, I could intensively cover the processes, original finding, and development of vulcanized rubber while touching on the effects. One of the main outcomes specified would be the widespread automobile industry.

While looking through different documents and books about vulcanization, I found that I would need resources from many times periods. Articles from 1839, when vulcanized rubber was founded, or in 2013, the current year in which I was studying the industrial changes, would not be enough. I needed many sources so I could follow the timeline and changes of the rubber industry. However, as I was writing the paper, I found that one source informed me of the invention process and followed through with the effects on today's society. This book was *Redefining Vulcanization: Charles Goodyear, Patents, and Industrial Control* by Cai Guise-Richardson. This book wrote about Goodyear's struggles while searching for the stable state of rubber and continued to how it transformed the ways in which American's travel. This book kept feeding me information which was extremely valuable to my paper.

The information I learned while researching this subject astonished me. While reading history books, you read about the wooden wheels on the carriages, but you never really see the long term perspective. Our ancestors were using wooden wheels and iron wheels as transportation for over 5,000 years. Then, Goodyear found a steady form of rubber and the automobile industry took off! In less than 300 years, we go from a standstill of a steam engine with iron wheels, to electric cars. The rubber was able to absorb the shock from the road thus making the wear and tear lighter on the engine.

This research paper helped me in ways other than learning the history of vulcanized rubber; it gave me the boost I needed to confidently switch my major. When I entered college, I knew engineering would be the right path for me to take. However, the engineering path I would walk was not set in stone. While choosing vulcanized rubber really shows the mechanical engineering side of me, this paper was a great influence on switching my major to industrial engineering. Industrial engineering is defined as a branch of engineering dealing with the optimization of complex processes. Charles Goodyear spent many years optimizing his product; I believe that I belong in the industry where optimization is also key.

The catalog, *America: History & Life* was especially useful while attempting to find pieces that optimized the information given on the topic. As I look back at the investigating stages of my research paper, I see that if it weren't for the extensive databases available to the K-state students, then the difficulty level would have been substantially higher while writing this paper. Being raised in the age of technology, I have always had the opportunities to easily look up information instead of memorizing the Dewy Decimal System and knowing where to look on library shelves. Now that I know how to operate the databases and search materials correctly, I will remember all the information I have access to and use it to my advantage especially the nice summarization of each database that explains what you would be using. For example, I knew not to use *Historical Abstracts*, because it excluded American and Canadian history.

Researching extensively as a freshman in my first semester in college did prove to be a great challenge, but it paid off in the end. I learned so much from this essay, and it brought to light my career goals and what I wanted out of life. A research opportunity would prove to be helpful to many freshman still finding their way in college. If they researched a topic they were passionate about, they too, may have an epiphany that changes their life for the better.