

ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)



WELCOME

Hello. I'm Aryee, a biochemistry student at Minnesota State University Mankato. I've grown my mental, academic, extracurricular involvement and communication skills while being a part of the Honors program.

Mission Statement

My mission represents learning as much as I can about the world so I can apply that knowledge to research, interpersonal communication, and intercultural engagement.



ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)



ABOUT ME

I was born in Liberia and I came to the United States when I was around seven years old. Throughout my time in college, I have gained far more than academic knowledge. Being part of the honors program allowed me to make connections with other like-minded students. I have also learned more about my strengths and areas I want to continue to grow in. Outside of classes, I enjoy reading, playing soccer, and learning about computers.

CONTACT ME



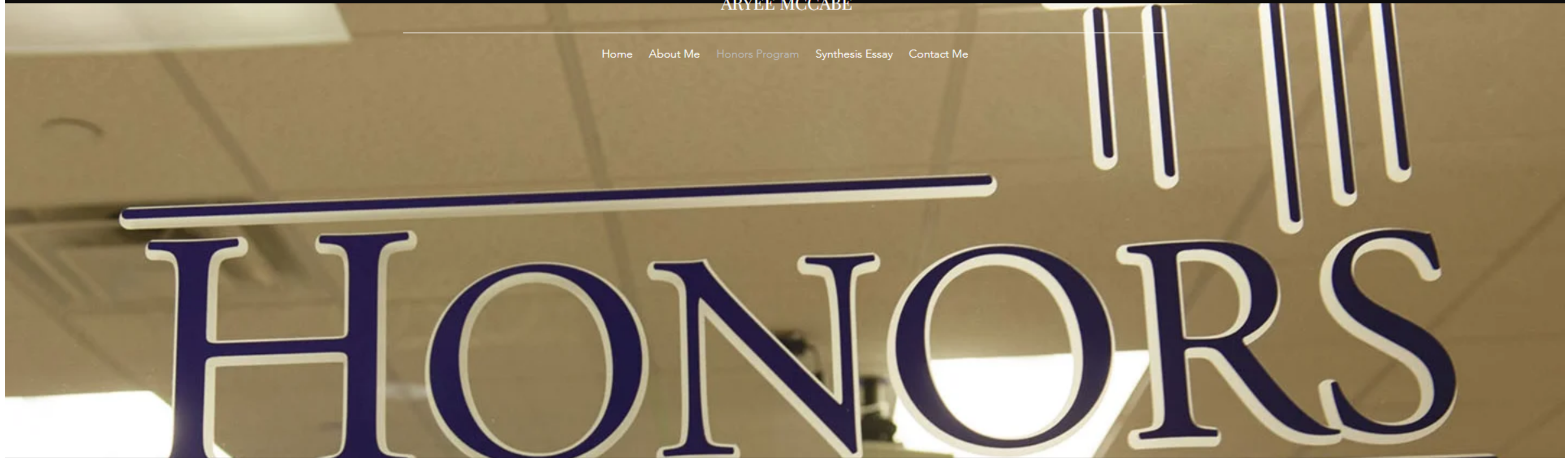
GET IN TOUCH

Interested in learning more about me? Feel free to reach out anytime, I would be more than happy to chat.

Name	Email
Subject	
Type your message here...	
Submit	

ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)



HONORS PROGRAM MISSION STATEMENT

The mission of the Honors Program at Minnesota State University, Mankato is to create future leaders, researchers and global citizens by providing high ability and motivated students with exceptional learning opportunities, mentoring relationships, and a community of scholars that fosters their development as future leaders in a global society.

HONORS PROGRAM COMPETENCIES

Why Honors Essay

The Why Honors Essay explains my initial motivation for wanting to join the honors program.

[Why Honors Essay](#)

Honors Synthesis Essay

The Honors Synthesis Essay connects all the competency-related experiences I have had while in honors.

[Honors Synthesis Essay](#)

LEADERSHIP

Upon graduation, honors students will have demonstrated the ability to utilize personal leadership values and guide groups toward a common goal.

[Leadership Development](#)

[Leadership Application](#)

RESEARCH

Upon graduation, honors students will have demonstrated the ability to exhibit information literacy skills, synthesize and integrate ideas, produce original research or creative works, and contribute to knowledge.

[Research Development](#)

[Research Application](#)

Intercultural Engagement

Upon graduation, honors students will have demonstrated the ability to exhibit second language and communication competencies and exhibit cultural competency and awareness.

[Intercultural Engagement Development](#)

[Intercultural Engagement Application](#)

ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)

TRiO Support Services Tutor

TRiO was my first formal experience teaching students 1-on-1.



During the 2022 fall semester, I was employed as a tutor for the federal TRIO program on campus. I was assigned to teach students mathematics, chemistry, and biology. The TRIO programs were started by the government in 1965. Students in middle school, high school or college can apply for TRIO assistance.¹ TRIO is intended to help first-generation college students, students who demonstrate academic and financial need, and/or students with disabilities.

As a tutor, I got to sit one-on-one with students to help them study for their classes. Study sessions were weekly and lasted an hour. Students and I met in person to study, but there was one scenario at the end of the semester where I had to virtually teach a student. At the start of each study session, I would ask my tutees what they wanted to study for the day. Then, me and my tutee would go over specific homework or assignment problems they had about their class. While solving problems, I rephrased explanations so my tutees would have ample opportunities to understand the material. After finishing a problem, my tutee and I would work on another question or end the session if they didn't have any more questions. After our sessions, I would walk out with my tutee and talk about what they were going to do the rest of their week/day.

I became a TRIO tutor because a friend of mine suggested the position to me. I applied because I wanted to have teaching experience. Reflecting on the position, I would say I enjoy being a tutor because it's intellectually stimulating. I get to review coursework and consider how I will teach students with different learning styles.

During one session, my supervisor evaluated my tutoring skills and emailed me my evaluation. The evaluation said I did a great job of being friendly to my tutees and allowed them to problem solve on their own.

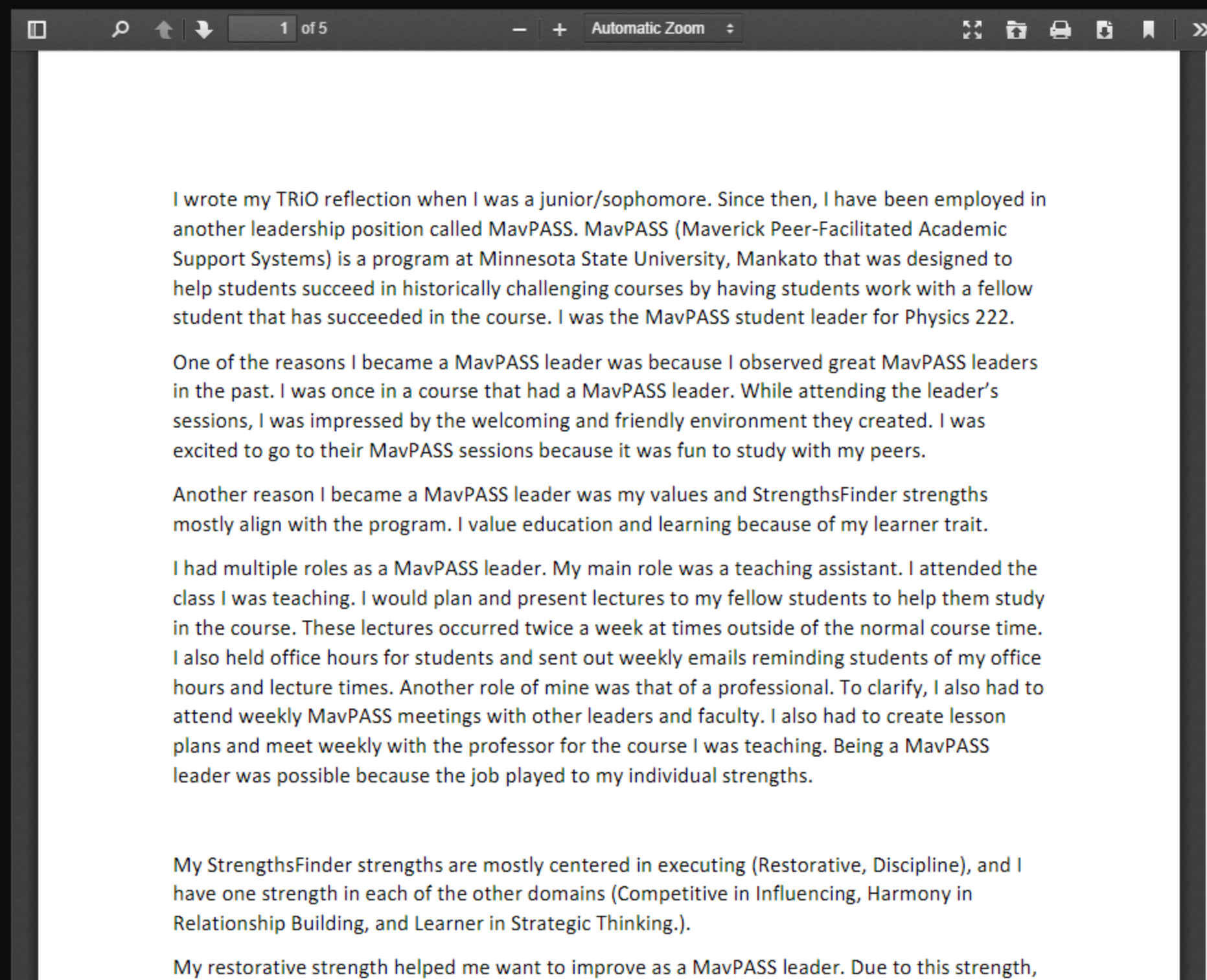
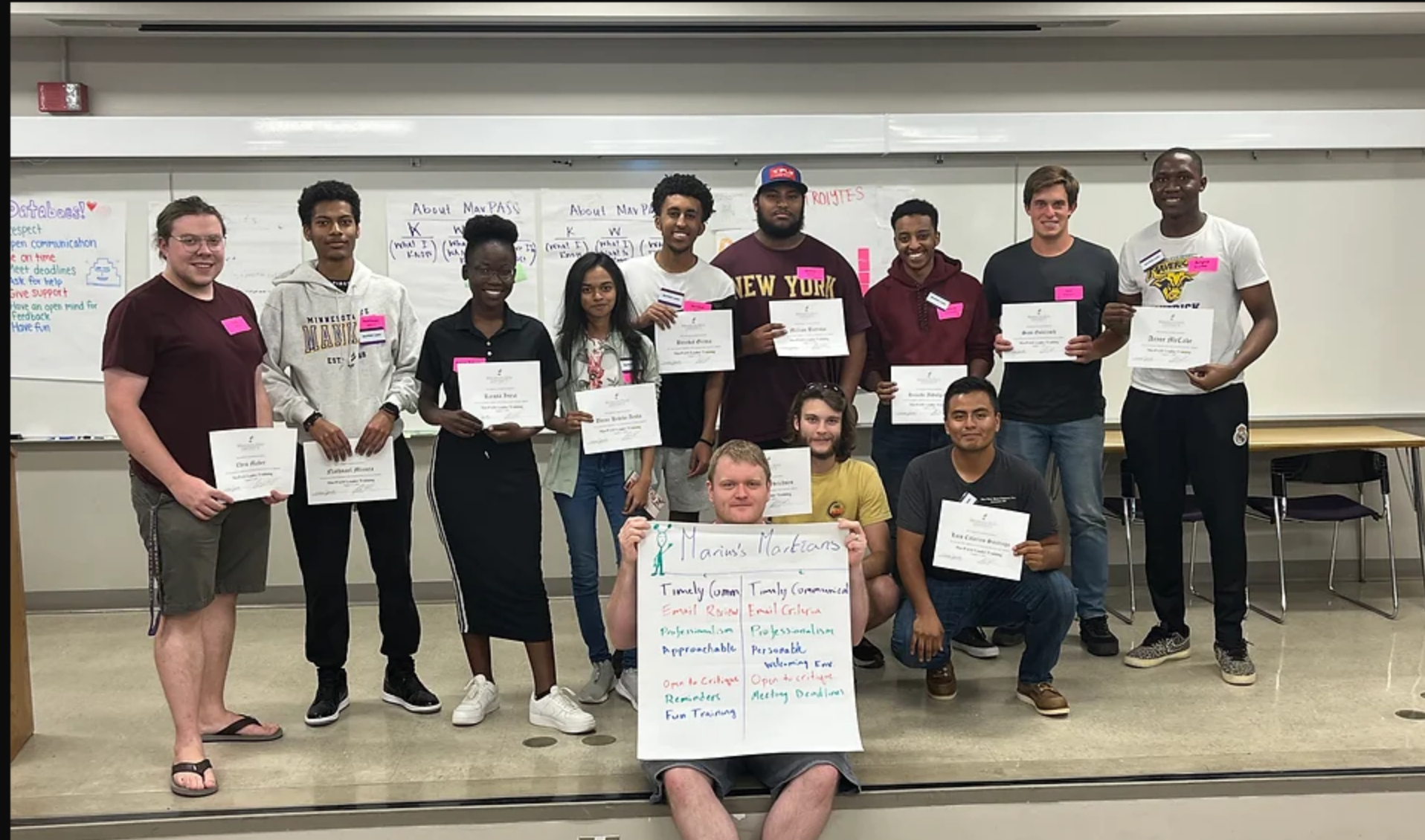
Roles were formed while I was a tutor, but I don't think they were important during my tutoring sessions. The formed roles were that I, as the tutor, was there to teach the tutee. And

ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)

MavPASS Teaching Assistant

My first formal experience teaching multiple students simultaneously.

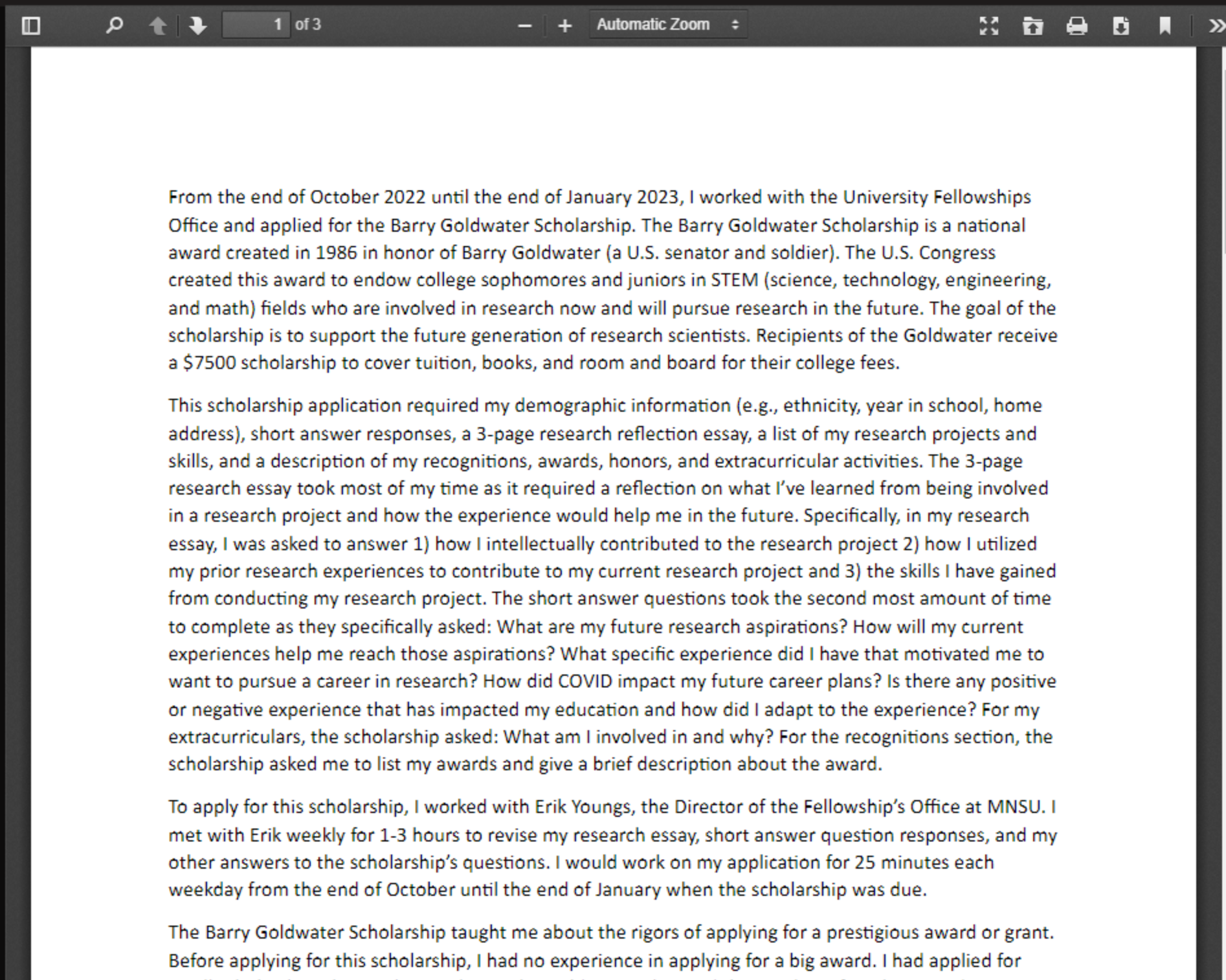


ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)

Barry Goldwater Scholarship & Fulbright Fellowship

For my research development experience, I will reflect on applying for the Barry Goldwater Scholarship and how this prepared me to apply for the Fulbright.



January 25, 2024



Dear Aryee McCabe,

We are pleased to inform you that you have been recommended as a semi-finalist by the National Screening Committee (NSC) of the Institute of International Education (IIE) for the 2024-25 Fulbright U.S. Student Program. Your application has been forwarded to the supervising agency abroad for the next stage of the review process. In addition, your application will be forwarded to the program sponsor, the Bureau of Educational and Cultural Affairs (ECA) of the United States Department of State, for transmittal to the presidentially appointed Fulbright Foreign Scholarship Board (FFSB). The FFSB makes final decisions on Fulbright awards.

Congratulations on your success in the preliminary stages of the competition.

Sincerely,

Dan Kramer
Director, Fulbright U.S. Student Program
Institute of International Education

ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)

Oak Tree Research

For my research application experience, I will reflect on my time conducting research with Dr. Kaproth.



Dr. Kaproth and I are studying the concentration of certain substances secreted by plants when they are in drought conditions. We meet each week to keep me accountable and working on our research project. I'm also working on completing a presentation with Dr. Kaproth and I will keep in mind that my first draft of the presentation will only get better the more I work on it and receive feedback on it. Lastly, while working with this faculty member I have continued to break my work into chunks by working on our research project for half an hour each day. Working on the research project for a little bit each day will pay off when I eventually do have to present our research. I should continue to implement the strengths I practiced will applying for the Goldwater in my current and future research projects. These strengths are consistently working on a project every day, meeting with faculty or colleagues to keep me accountable and continuing to revise and receive feedback on my work.

I conducted research with Dr. Kaproth for the fall 2022, spring 2023, and summer 2023 semesters. Our research focused on the production of certain chemicals (osmolytes) oak trees synthesize when they are in dry conditions. This research question mostly stems from prior research investigating the drought strategies of trees under drought. Working with this question for several semesters helped me realize a research hypothesis is malleable and changes over time.

During the fall 2022 semester, I was working in a lab with a graduate student. We would make solutions in a test tube, grind leaves from various oak trees, and use the solution we created to measure the absorbance of these solutions in a machine. This process helped us quantify the concentration of our chemical of interest (proline). The oaks were grown in the greenhouse at MNSU for 4 years prior to being experimented on. These oaks came from different states and regions in Mexico.

During the spring 2023 semester, I was performing computer analyses with Dr. Kaproth to analyse the results we had obtained from the previous semester. This type of research required the most amount of work because I wasn't just following steps anymore. I actually had to conduct statistical tests and use mathematics to interpret out results. I also did this same thing during the summer 2023 term (I analysed our results further and helped Dr. Kaproth write a manuscript.)

The way I collected data was interpreting the results we got from the machine in excel and JMP (a statistical program similar to excel).

Here is our research poster.

Introduction

- Water impacts plant growth, development, and structure.
- Drought stress induces plant acclimation to avoid tissue loss or death (Figure 1).
- One way plants acclimate to drought is by accumulating more osmolytes (e.g., sugars, sugar-alcohols, proline).
- Osmolytes act to increase drought tolerance in plants by increasing the uptake of water by plant tissues (Figure 2).
- Oak species are widespread and adapted to a wide range of mesic, well-watered, and xeric or drought conditions.
- The objective of our research is to investigate the diversity and amount of osmolytes, particularly nitrogen-intensive proline, produced by oak species using a common gene.

There exists a tradeoff between energy storage and drought tolerance.

Method

- Eleven oak and chestnut species were grown under either mesic (well-watered) or xeric (drought) conditions (Figure 3).
- After 2 years of experimental conditions, oak leaves were harvested, ground and osmolytes were quantified via high-performance liquid chromatography (HPLC). Fructose, sucrose, glucose, sucrose were successfully produced.
- Proline colorimetric assay was utilized to determine the concentration of proline in matching leaf tissue (Figure 4).
- Species mean climate and soil conditions were assessed via R. Principal component analysis was used to differentiate factors related to species environmental niche and their osmolyte responses (Figure 5).

Results

- Under drought, species adapted to environments with more precipitation variance and higher soil organic contents increased their osmolyte concentrations (Figure 2a).
- Under drought, species adapted to arid/semi-arid soils and drought-prone environments synthesized elevated amounts of proline (Figure 2c).
- Under mesic conditions, species synthesized approximately 15% less total osmolytes (Figure 2b).
- Species chemical profiles vary, and chemical biosynthesis is modified by water conditions (Figure 7).
- On average, sucrose accounted for 22% and sucrose accounted for 27% of all osmolytes we tested in mesic and xeric conditions. Mannitol is upregulated both proline in drought conditions to aid in drought tolerance. Sucrose, used for energy storage, and proline have a negative relationship in mesic conditions.

Conclusions/Future Work

- Native environment has a greater influence on drought tolerance strategies than phylogenetic patterns. Phylogenetic patterns have more of an influence in mesic conditions.
- Drought tolerance strategies vary by species and native environment, as observed in previous studies.⁴
- In the future, we plan on increasing the number of species to get a wider geographical representation of oak drought tolerance strategies.
- Future questions to explore are: Why do principal components 2 and 3 have a significant difference between osmolytes and proline concentrations? Why are proline synthesis downregulated in certain species under drought conditions? What other osmolytes are being synthesized?

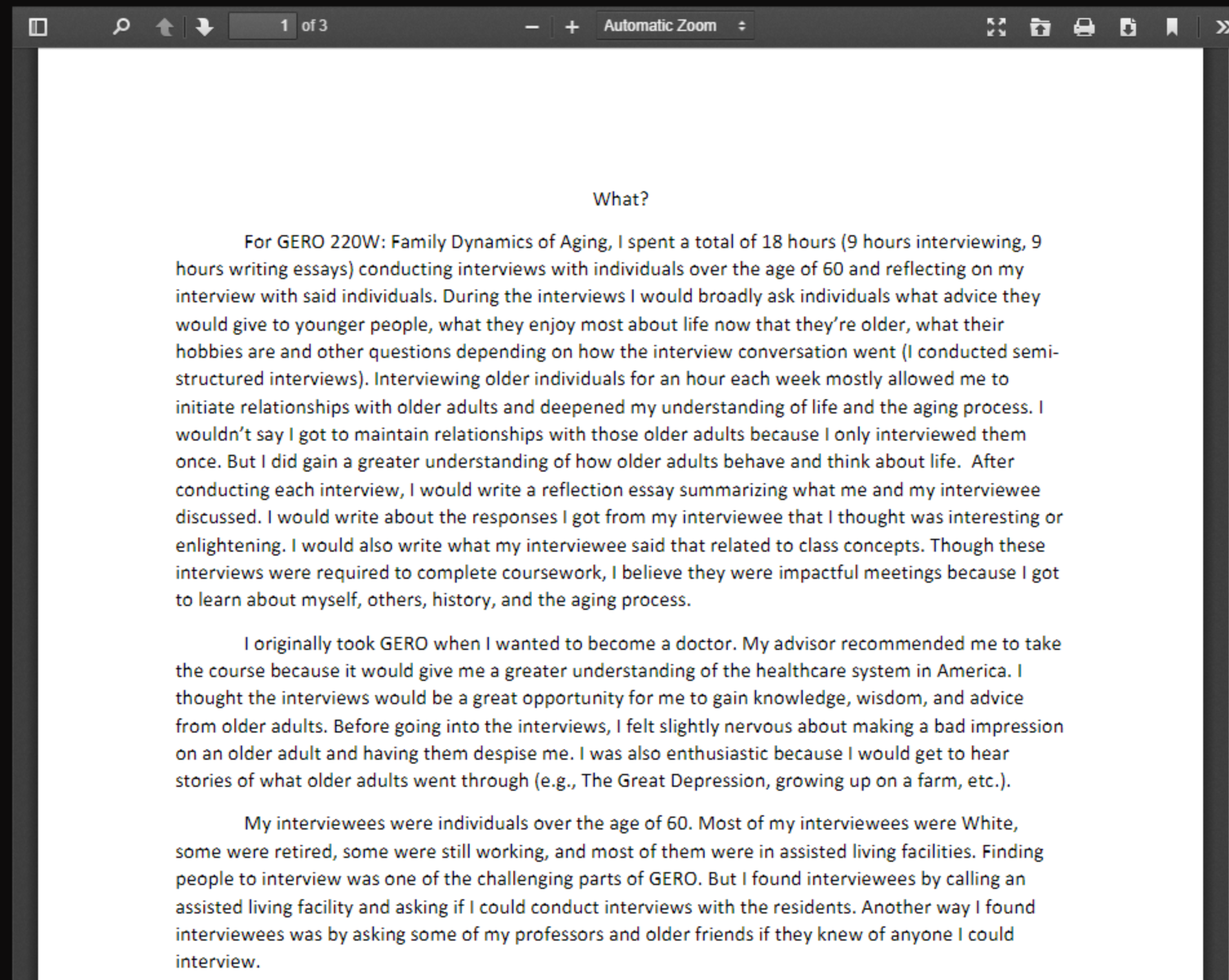
References & Acknowledgements

ARYEE MCCABE

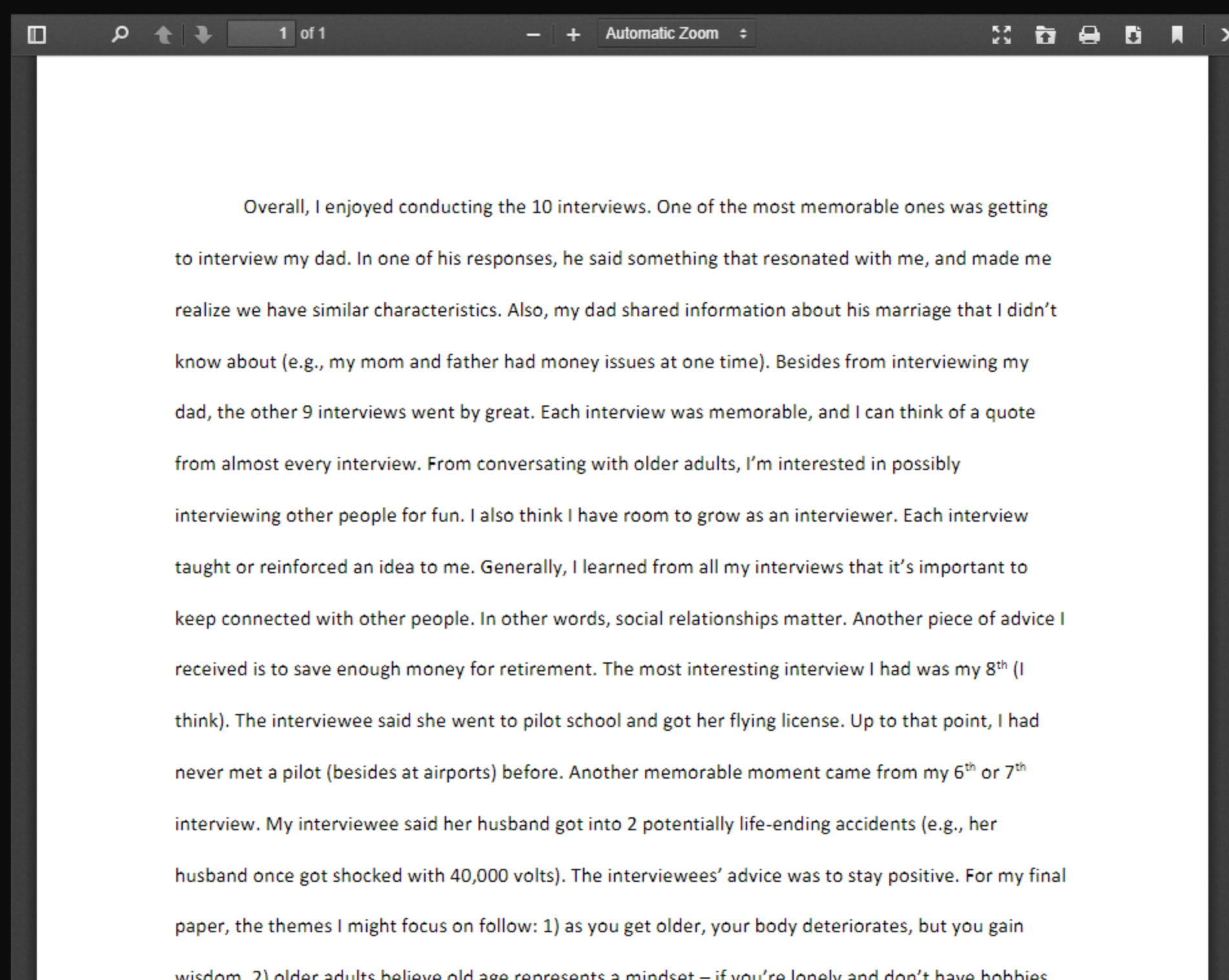
[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)

GERO220W: Family Dynamics of Aging

My developmental intercultural engagement experience is when I took GERO 220W: Family Dynamics of Aging.



Artifact From GERO 220W

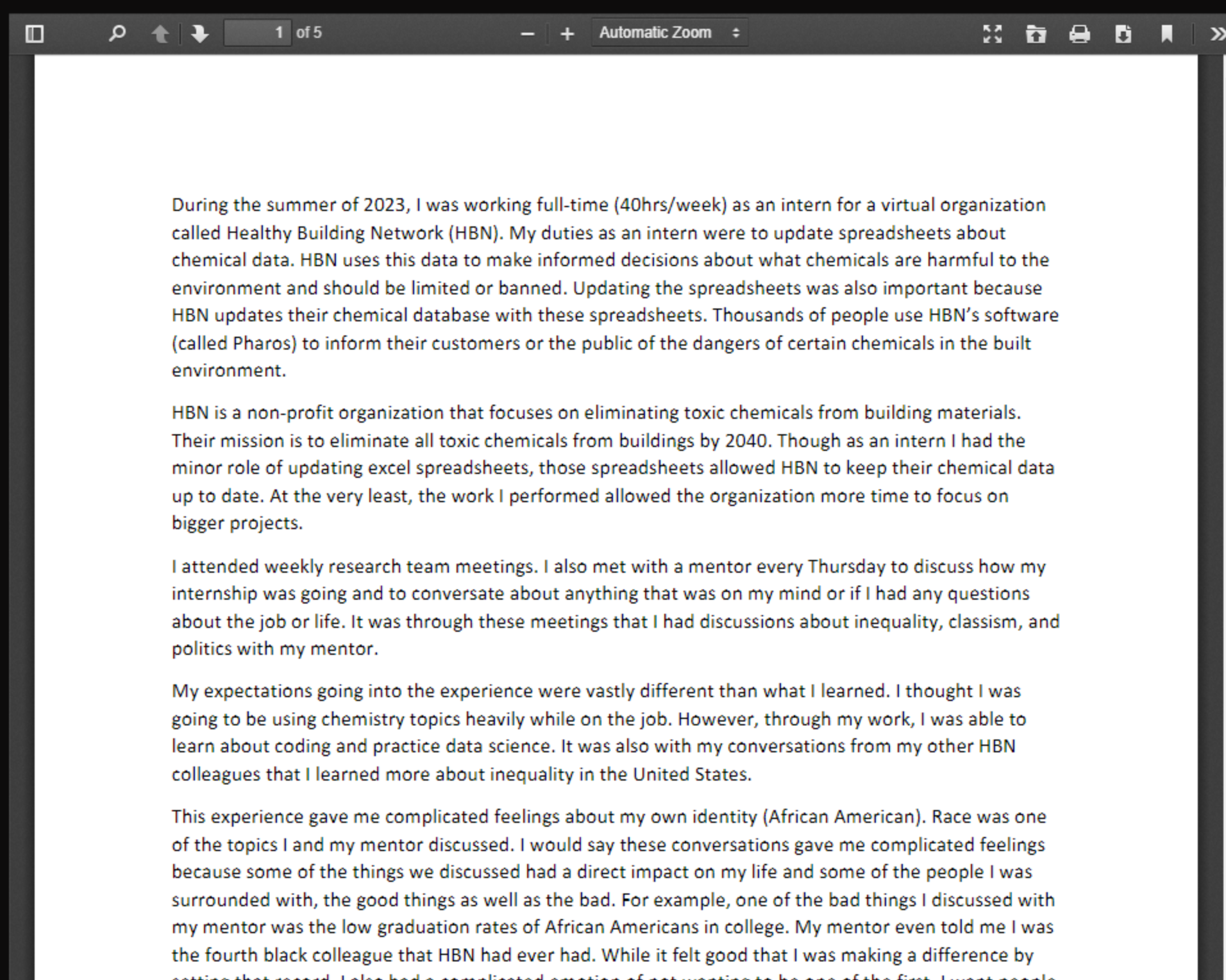


ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)

Green Chemistry Internship

My applied intercultural engagement experience is when I worked as a green chemistry intern for a non-profit organization.



Aryee McCabe

Green Chemistry Intern

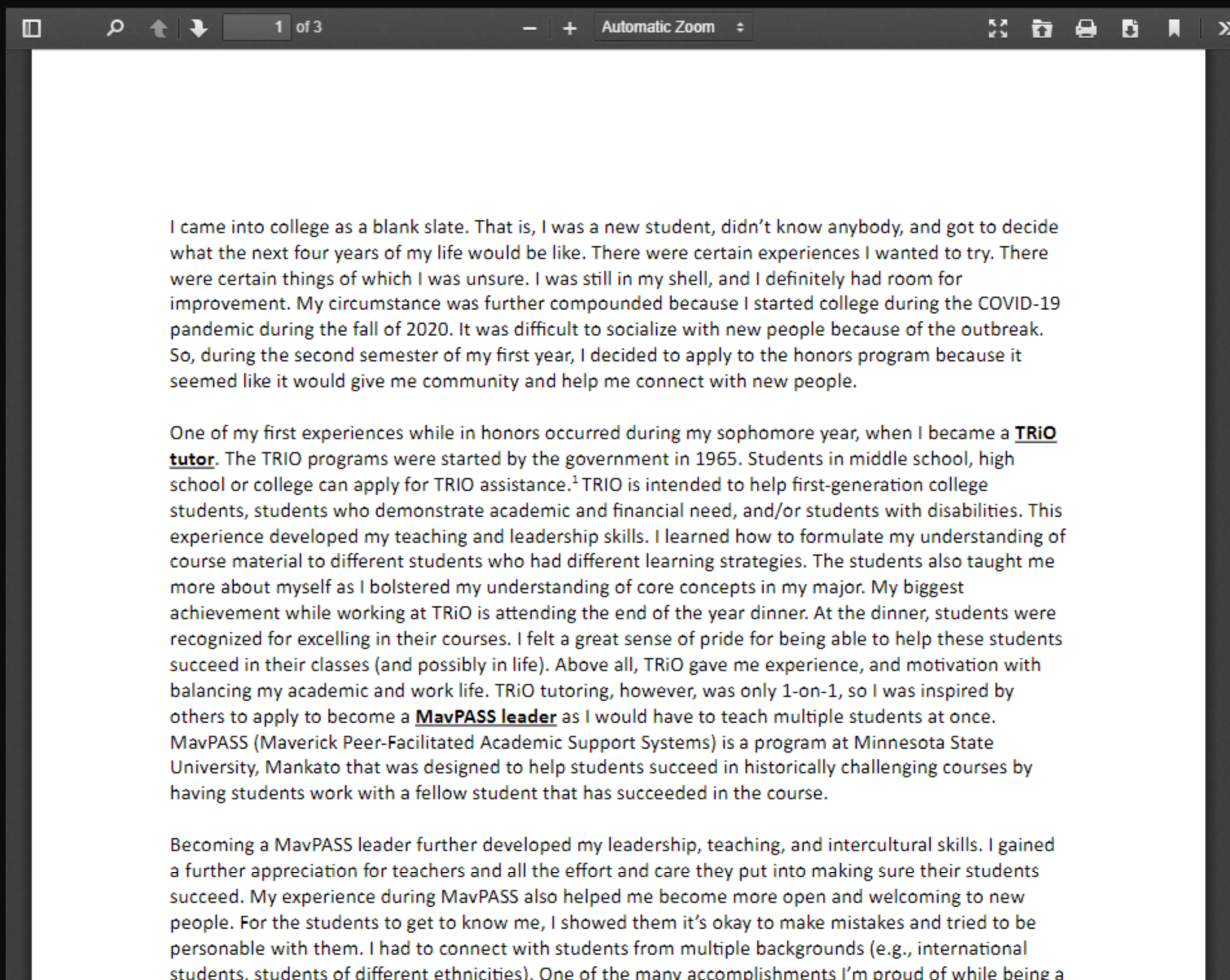


ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)

Synthesis Essay

This essay is a cumulative reflection of my intercultural engagement, leadership, and research experiences during my time in the Honors program.



I came into college as a blank slate. That is, I was a new student, didn't know anybody, and got to decide what the next four years of my life would be like. There were certain experiences I wanted to try. There were certain things of which I was unsure. I was still in my shell, and I definitely had room for improvement. My circumstance was further compounded because I started college during the COVID-19 pandemic during the fall of 2020. It was difficult to socialize with new people because of the outbreak. So, during the second semester of my first year, I decided to apply to the honors program because it seemed like it would give me community and help me connect with new people.

One of my first experiences while in honors occurred during my sophomore year, when I became a **TRIO tutor**. The TRIO programs were started by the government in 1965. Students in middle school, high school or college can apply for TRIO assistance.¹ TRIO is intended to help first-generation college students, students who demonstrate academic and financial need, and/or students with disabilities. This experience developed my teaching and leadership skills. I learned how to formulate my understanding of course material to different students who had different learning strategies. The students also taught me more about myself as I bolstered my understanding of core concepts in my major. My biggest achievement while working at TRIO is attending the end of the year dinner. At the dinner, students were recognized for excelling in their courses. I felt a great sense of pride for being able to help these students succeed in their classes (and possibly in life). Above all, TRIO gave me experience, and motivation with balancing my academic and work life. TRIO tutoring, however, was only 1-on-1, so I was inspired by others to apply to become a **MavPASS leader** as I would have to teach multiple students at once. MavPASS (Maverick Peer-Facilitated Academic Support Systems) is a program at Minnesota State University, Mankato that was designed to help students succeed in historically challenging courses by having students work with a fellow student that has succeeded in the course.

Becoming a MavPASS leader further developed my leadership, teaching, and intercultural skills. I gained a further appreciation for teachers and all the effort and care they put into making sure their students succeed. My experience during MavPASS also helped me become more open and welcoming to new people. For the students to get to know me, I showed them it's okay to make mistakes and tried to be personable with them. I had to connect with students from multiple backgrounds (e.g., international students, students of different ethnicities). One of the many accomplishments I'm proud of while being a

ARYEE MCCABE

[Home](#) [About Me](#) [Honors Program](#) [Synthesis Essay](#) [Contact Me](#)



GET IN TOUCH

Name

Email

Subject

Type your message here...

Submit