

Before I do my actual reflection, I want to add that going into this project, I was originally alone and was going to a study with cookies and using food coloring and different temperatures, ingredients and time to see if the color was affected. But then Bob and Caitlin allowed me to participate in their group to do our research project on conventional brownies versus black bean brownies. So, Bob, Caitlin and I worked together on creating an experimental design, sensory evaluation test creating a new brownie formula, a podcast in both short and long form, and a video presentation about to help discuss our findings on substituting oil with black bean puree in brownies. Since Bob had the environment suited to run the experiment, he ran most of the hands-on aspects of the lab while I handled the data and results and Caitlin did the discussion and conclusion of our study. We set out with the objective of focusing on fat's role in baked goods but to be more exact the ability for it to provide tenderness, moisture and calorie density. But by exploring the alteration of the formula with black beans we wanted to research how it would affect the texture, wettability and the consumers ability to differentiate between the two using a triangle test. We hypothesized in general terms, that while the replacement would make the brownies rich in fiber and protein and lower in fat but still be comparable to the normal brownies even though it would have less calories which could help concept addressing the rise in obesity trends in America. Our methods included preparing a control brownie with vegetable oil and an experimental brownie with black beans with target bought brownie mix, assess the moisture content via a wettability test and conducting a blinded triangle sensory test with participants from Bob's community.

This hands-on research study helps us better understand the functionality of a simple yet effective recipe change, but we found that this approach can work but, in our study, there were differences in the two samples, but some were not statically significant. During our study, we

were able to take everything we learned throughout the course and implement it in our project. Some of the challenges we face at first was the wettability test, but Bob mentioned this during our presentation and being able to cut samples of brownies at exact weights can be difficult but using analytics this help us overcome this challenge. The other challenge was that this was a distance learning project, and with all of us having outside lives from school and different time zones we thought it would be difficult, but we made it work and got the project done. Overall, this project, help us incorporate what we learned throughout the course and realize the impact a simple ingredient change could have on a recipe both good and bad.