

SIGNATURE HONORS THESIS – HEALTHY PALS

by

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Abstract

In an initiative to improve the health of children in Pitt County, an 8-week nutritional curriculum was administered to elementary aged children at Grady White Boats Boys and Girls Club. With the first and last week being dedicated to the pre and post-test, the middle 6 weeks contained interactive learning activities meant to increase the participants' knowledge of what constitutes healthy foods. An improvement in score on the post-test would indicate an increase in knowledge of nutrition. Out of six participants, four improved on their score, while one maintained their score, and one decreased in their score. It is determined that while there is an average increase in test scores, the sample of the study is too small to draw conclusions.

Table of Contents

Abstract	p. 2
Initial Honors 2000 Experience	p. 4
Honors 3000: Pivot to Food Deserts	p. 6
Honors 4500: The Development of Healthy Pals	p. 8
Honors 4550: Move from Third Street to Boys and Girls Club	p. 11
Implementation	p. 12
References	p. 16
Appendix	p.17

Initial Honors 2000 Experience

I started the beginning of this process in the fall semester of 2017. I read, *Designing Your Life*, by Bill Burnett and Dave Evans - a book curated by designers to help guide in planning a fulfilling and meaningful life. Burnett and Evans use design-styled tactics like wayfinding, prototyping, and experimentation, to direct the reader towards building a successful and joyful life. This approach shaped my way of thinking about human-centered design and geared my mind towards problem-solving in this way. By learning how to navigate through my own life's problems and challenges, I was able to begin to tackle "wicked problems" in the community. A wicked problem, as defined by "Wicked Problems: Problems Worth Solving" by Jon Kolko is a "social or cultural problem that is difficult or impossible to solve for as many as four reasons: incomplete or contradictory knowledge, the number of people and opinions involved, the large economic burden, and the interconnected nature of these problems with other problems" (2012). Typical wicked problems, like poverty, famine, terrorism, and sustainability were problems that crossed my mind immediately. My small group and I used the human-centered design tactics to brainstorm ways in which these problems were wicked in nature, and how they overlapped with other major problems. As the semester progressed, we continued in this way until we decided upon a wicked problem in the Greenville, North Carolina community that we deemed solvable, or at least approachable. This problem was sexual violence and assault. My group recognized the high volume of sexual assault cases on college campuses, and after talking, realized that we had all known at least one person who was sexually assaulted since attending a university (n.d., 2015). This realization spoke volumes to us, and we determined that it was a wicked problem by delving into the nature of it. Sexual assault not only affects the victim, but also their friends and family, and the community which it occurred in (Dworkin, Pittenger, & Allen, 2016). It can also

involve several different types of institutions, like the university, the city and campus police, the court of law, and medical professionals. Due to these reasons, we deemed sexual assault a wicked problem, and therefore continued with our process of solving it. To begin with, we focused on the North Carolina law that centers around not being able to rescind consent. We had a successful interview with a Greenville detective, where he shared with us the extensive legal process that victims go through. After completing more research, we spoke with an official at the ECU Police Department and were able to gain insight on the inevitable unsuccessfulness of prosecuting perpetrators due to the difficulty in proving that there was force used. Further research into the tricky legal aspects and the limitations of sexual assault kits proved there to be many complications (Cybulska, 2007). We had hopes of either working with legal officials to modify the law or raising awareness to support victims and attempt to erase the stigma that follows when they decide to reveal what happened to them. However, at the time, we were unable to work with officials on such a matter that we had minimal knowledge of. Furthermore, we understood that sexual assault is a serious offense, and being a victim of it is extremely traumatizing (Potter, Howard, Murphy, & Moynihan, 2018). This would have made it difficult to find victims on campus that were willing to talk about their experience and work with us to help raise awareness. With all of this in mind, and because we lacked a true foundation for action, we decided to change paths and bring our attention to the medical aspect of sexual assault cases. I interviewed Dr. Steven Moye, an emergency medicine physician at Wayne Memorial Hospital, and received useful information about sexual assault kits, how they are used, and how the timing of when they are used on a victim greatly affects the results. While this was beneficial, the group was unsure of how to work with it, and in the end, it was decided that there was not enough time

or appropriate direction to change such a wicked problem. As the semester came to an end, we decided to close one chapter and open the next one, as we all moved on to new problems.

Honors 3000: Pivot to Food Deserts

I collaborated with a group that was previously working on solving the wicked problem of food deserts, which is defined by the USDA as, “parts of the community void of fresh fruit, vegetables, and other healthful whole foods, usually found in impoverished areas” (“American Nutrition Association”, n.d.). I was interested in working with this group because the topic was one I was not very familiar with, and the idea of promoting community wellness was appealing to me. During this semester, the Lean LaunchPad initiative was implemented into our curriculum. We used business model canvases to organize and present our progress to the class each week. By holding on to the human-centered design techniques, we were able to incorporate the findings and new ideas that we received from our interviews, prototypes, and tested hypotheses into our business model canvases. To begin the semester, interviews were conducted each week with community members. They were asked questions about the logistics concerning their groceries, including the location from which they came from and how far the source was from them. These interviews confirmed that there were many areas in Greenville that would be considered food deserts. The major focus was securing a central location in the community where a free food drive could be implemented for citizens in need. To do this, we contacted grocery stores that would potentially be willing to donate healthy foods, like fruits and vegetables, to the food drive. We found that while most grocery stores were willing to donate, there were no available community sites to hold the program. Furthermore, there was difficulty in finding a resolution to the liability issues of hosting an event that served food. After approaching these issues, myself and the rest of the group members came to a pivotal point. We

reflected on what information and progress we had thus far and brainstormed ways to use it to still make a positive change in the nutritional status of community citizens. Conducting more interviews with key community leaders allowed us to approach the issue in a different light, and we eventually decided on a more preventative strategy. We developed the idea of going into elementary or middle school classes in Pitt County and providing healthy snacks while educating the students on nutrition. We wanted to encourage healthy eating habits at a young and impressionable age, with the hopes that they would continue into adulthood. Our first course of action was to educate ourselves on nutrition so that we would be able to provide a lesson, and then to contact schools in Greenville. Wanting to get more information on the nutritional aspect, I spoke with Dr. Melanie Duffrin, a professor at East Carolina University who is in the nutrition science department. She created a nutrition curriculum for elementary and middle school students called FoodMASTER, which was made to be implemented into already existing curriculums in the schools' education system. Dr. Duffrin explained how the group could apply it to our initiatives by using the lessons that we found most applicable. It could also be used as a tool to educate ourselves before we started the process. The next course of action was finding the school to host our program.

An interview with Michael Denning, the leader of an after-school program called Pirate P.A.L.S., became a promising lead. The program allows ECU students to volunteer as mentors to elementary age children in Pitt County (n.d., 2019). Pirate P.A.L.S. was willing to allow our group to serve healthy snacks as well as give brief nutritional lessons to the students. While the FoodMASTERS lessons were being analyzed and selected, we were able to go to Third Street Academy to volunteer with the Pirate P.A.L.S. program and form meaningful relationships with the students. It was decided that the best way get acquainted with the kids was to play a game at

our first meeting. The game was thought to promote inclusivity and group bonding. It included the presentation of a mixture of fruits and vegetables. The students were then asked to decide if the item being presented was a fruit or vegetable. While there was no determined way of measuring success prior to the activity, the children seemed to enjoy the game based on their laughter and attentiveness during the session. While the first meeting with the children went well, it was by no means a true curriculum yet, and as the semester came to an end, it seemed like the focus on implementing the curriculum did as well. Following the minor reduction in productivity, the intentions were to reconvene with Third Street to clarify the goals of the project. One of the lessons learned during this semester was how important the planning stage is in being able to successfully implement. It became evident that the lack of communicating and transcribing a plan of action significantly hindered the overall success of the project for the semester.

Following this realization, more steps were taken to ensure order and structure. The group name was created and eventually became Healthy Pals. Furthermore, formal roles and titles were assigned to each member. I took charge as Community Outreach Coordinator, which involved connecting with potential community partners and locations, reaching out to surrounding communities, and working with the marketing team to develop personal connections with Greenville citizens. A tentative schedule was designed for the fall semester, which included every key activity needed to implement our goals.

Honors 4500: The Development of Healthy Pals

To begin, a comprehensive summary of the project and the learning objectives for the curriculum was created. The official goal of Healthy Pals became to study the effectiveness of the implementation of an educational intervention focused on healthy snack choices. Using a

curriculum meant for elementary aged students in grades third through fifth would allow for engaging, interactive lessons that excite them to want to eat healthier. The goal is to find a way to make learning about and eating nutritious foods something that elementary school children enjoy and continue throughout the rest of their lives.

Having a schedule and a clear direction, the implementation process was attempted again. The first trial was an activity that involved bringing pretzels and bananas to give to the students during the afterschool activity time. With the finalized lessons from the FoodMASTER book still underway, the true curriculum could not yet be implemented, however, consistency was the main concern, and it was decided it was best to continue interacting with the students. After continuously reading and analyzing the lessons in the book and speaking with more community partners, it was concluded that the content was based too heavily around math and science. Since the lessons were going to be presented during an after-school program and not in the actual classroom, the material was deemed too dense for the children. Furthermore, there was uncertainty in the ability of group members to teach a curriculum actually meant for implementation in public schools since no one was qualified with a teaching degree. Following this pivot, the Director of Curriculum, Sydney P. Johnson, began creating a curriculum from scratch, based off research and faculty advise. In order to gain more insight on nutrition and the way it impacts today's society, I watched the documentary, *Fed Up*, by Stephanie Soechtig, and shared it with the group. It developed our thinking by expanding our knowledge on the food industry and the cause of obesity in America. At the same time, we began working with faculty member Dr. Alleah Crawford to discuss the idea of submitting our project to the International Review Board at East Carolina University. This was necessary, based on the fact that we were going to be conducting human-based research to gather information. This ensured that all parties

would be protected. Our Director of Liability and Student Engagement, Sydney Johnson, began researching ways to measure student engagement, and other members completed a large literature review in order to ensure that our ideas were novel, and to also gain some insight for our own project.

During the process of writing the IRB, we remained in contact with Third Street Academy, because they were to be the primary location for our project once the IRB was completed and the curriculum was in order. In order to stay involved, a Halloween themed activity was designed to be implemented around the week of Halloween. This included activities set up in a station format and were as follows: freeze dance, eating an apple slice with no hands, the hot potato game, naming 5 fruits/vegetables or doing 5 pushups. For each of the stations, a prize was given on the completion of the task. They were a Capri Sun®, a Halloween eraser, grapes, and half of a banana, respectively. In order to get funding for all of these items, I contacted Fresh Vibes®, a smoothie store that focuses on healthy living by using all-natural ingredients straight from local farms in the community. Since our project aligned with Fresh Vibes'® mission of promoting nutrition and healthy habits, they wanted to support us by allowing us to host a fundraising day there. The proceeds were used to purchase all of the items for the Halloween activity. After implementing it, however, we noticed that the children did not seem to handle the multiple stations well, and they were unable to be controlled. It was assumed that a lack of structure in our activities from visit to visit contributed to children's inability to cope with them. Furthermore, there was miscommunication about what the general goal was with the students of Third Street from the beginning of the partnership. Also, the children had already been exposed to some instructional activities, which would have affected our measure of

success. Again, our implementation was unable to be completed due to a lack of good design in the planning process.

Honors 4550: Move from Third Street to Boys and Girls Club

After the decision to move away from Third Street, the rest of the semester was spent researching and perfecting the IRB. We finished creating an interactive-based curriculum, which was determined to be the best way to teach elementary to aged kids according to the success of previous similar studies. In order to abide by the original research design of an after-school program, we began contacting different Boys and Girls Clubs. I got in contact with the Vice President of Program Initiatives for the Boys and Girls Clubs of the Coastal Plain, Mrs. Julie Cary. She was more than willing to work with Healthy Pals and would connect us to an available Boys and Girls Club provided we submitted the IRB and got it approved.

One of the major aspects of the IRB was creating a consent form. There were also lengthy tasks of creating a viable pre and post-test that would measure the success of the research. In the meantime, however, it was confirmed that the Grady White Boats Boys & Girls Club had decided to work with us. From there, I reached out to the club director, Mrs. Shonda Morris, to set up a meeting to discuss the overall plan and logistics of our project. Once the IRB was submitted and the review was underway, we decided to go in to the Grady White Boats location and begin volunteering with the children. This way, we could establish trust and form connections. This was thought to have a positive impact on the implementation of our curriculum. Upon meeting with the Grady White Boats Boys and Girls Club, we were informed that we needed to use their Healthy Habits initiative, which is an interactive based nutritional curriculum similar to ours. While the Healthy Habits lessons were used during the three visits we made during this semester, it was agreed upon that when the new semester began, and the IRB

was ready, we would be using Healthy Pals' specific curriculum, provided that it was aligned with the general learning outcomes of Healthy Habits. Furthermore, it was made aware that we would need to work with a new set of students that had not been exposed to the Healthy Habits initiative, so that the pre and post testing method would yield accurate results.

Implementing Healthy Habits for a short period enabled us to gain confidence and experience in teaching nutritional-based lessons with elementary aged children. Furthermore, we successfully presented our project at the Research & Creative Achievement Week at East Carolina University. Although it had not been carried out yet, the IRB was approved, and the final details were finished, so we were able to accurately represent what we intended to do within the next semester. We presented in both the research and creative portions of the event and were therefore able to receive unique and helpful feedback from reviewers from each one.

Implementation

The final curriculum was created and implemented at the Grady White Boats Boys and Girls Club. 13 elementary aged children were selected by the facility leaders, based upon who would be most available to participate in the study every week. Participants were arbitrarily assigned a number so that the results of the study could be analyzed confidentially, and attendance was recorded for each session. During the first week, the pre-test was administered to the participants. The test was created using the principle of "Go, Slow, Woah", where healthy foods were considered 'Go' foods, foods that are moderately healthy and should not be eaten every day are labeled as 'Slow' and the least healthy food are considered 'Whoa' foods. Following the pre-test, which is shown in **Table 1**, the participants were given lessons that centered around learning the difference between Go, Slow, and Whoa foods, as well as learning the benefits of eating healthy foods. **Table 2** outlines the curriculum.

Table 1. Pre/Post-Test

Go	Slow	Whoa
1.	1.	1.
2.	2.	2.
3.	3.	3.
4.	4.	4.

Word Bank:

Chicken	Baked potato chips	Sweet tea	Beans
Low-fat ice cream	Granola	Whole-wheat bread	French fries
Cheese	Frozen fruit	Orange Juice	Whole milk

Table 2. Curriculum Overview

Week	Activity
1	Pre-test
2	Get To Know You Event – Participants will participate in an ice-breaker type game that involves introducing themselves and participating in a watermelon eating contest.
3	Fruit Salad Station – Participants will create a fruit salad while be allowed to choose which fruits they want to add or omit. They will learn about the benefits of eating fruits.
4	Granola Making Station – Participants will be presented with granola, raisins, coconut flakes, sunflower seeds, and dried cranberries. Participants will learn about the health benefits of each component

Table 2. (continued)

5	Comparing Ice Cream – Participants will be allowed to try a serving of regular ice cream (flavor of choice) and a serving of frozen yogurt without being led to believe there is a difference between the two. They will then be asked to rate which one they liked better and then will be provided with the nutritional value of both.
6	Healthy vs Junk Food Basketball – Participants will be presented with cards that represent healthy or junk food and asked to distinguish between the two. This will be followed by shooting a basketball. Points will be allotted for picking the right answer as well as making the shot (1 point for choosing the right card; 3 points for each basketball goal made).
7	Draw Your Healthy Future – Participants will be asked to draw themselves living healthy lifestyles in the future
8	Post-test

During the last week of the program, participants were administered the same test from the first week. Due to some participants being absent for various sessions of the curriculum, only results from the participants that completed both the pre and post-tests were considered. The results of these six participants were analyzed. The average pre-test score for all 6 six participants was 5.2 out of 12. The average post test score for all 6 participants following the intervention was 6.2 out of 12. Participants 1-4 improved on their score, while Participant 5 maintained their score, and Participant 6 decreased in their score. Out of the four participants whose scores improved, three or more classes were attended out of the six instructional days. Participant 6 was in attendance for four of the days, however, by observation was not actively

participating and was inattentive during most sessions. The study was largely limited by the low number of participants and the lack of consistent attendance due to unexpected unavailability. The lack of attendance eliminated the control of having each participant exposed to the same conditions. Furthermore, these results are concluded as not significant since the size of the population is too small to consider the findings generalizable.

Although the study is not generalizable, and it can therefore not be said that children will increase their awareness and knowledge of healthy foods upon completion of the Healthy Pals curriculum, it is encouraging that there was an overall increase in test scores when taken on average. If anything, the small group of children that we were able to work with have at least a minimal increase in awareness of what foods are considered healthy. With the hopes that they will carry the knowledge into adulthood, this is one small step towards increasing the well-being and health of a future generation of adults.

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Appendix

East Carolina University – University and Medical Center IRB – Healthy Pals

ID Number - UMCIRB 18-002485

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