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Embracing Food Literacy at David Livingstone Elementary

LFS 350 | Final Community Project Report | Group 20

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Introduction

According to the World Health Organization, 31.7% of adolescent Canadians are classified as overweight (Roberts, Shields, de Groh, Aziz, & Gilbert, 2012). In addition, 1 out of 6 Canadian children are food insecure (Proof, 2016). Factors contributing to this rising statistic include eating habits, level of physical activity, and extraneous social, environmental, and biological factors (Roberts et al., 2012). Populations with higher incidence of childhood obesity and insecurity possess a higher chance of developing chronic diet-related diseases including type 2 diabetes and cardiovascular disease (CVD) (Nowak, Kolouch, Schneyer, & Roberts, 2012).To address a fraction of this larger issue, findings show that an increased consumption of fruits and vegetables, which has been seen to lower the risk of these diseases, has been strongly correlated to increased food literacy seen in students participating in garden-based nutrition workshops (Harvard, 2016; McAleese and Rankin, 2007). This suggests that food literacy and food security can play a role in influencing the factors mentioned above affecting childhood obesity and vice versa.

Food literacy is defined as awareness of the impact food choices have not only on health, but also the environment, and our economy (Food Literacy Center, 2015). Food literacy contributes to the utilization of food, which is the ability to use food “to reach a state of nutritional well-being”. This has been identified as one of the four main pillars of food security, which is when all people having consistent “physical and economic access to sufficient, safe and nutritious foods” (FAO, 2006).

The purpose of this project was to improve food literacy among Ms. Paris’ grade 1/2 class of 22 students at David Livingstone Elementary School. Located in the Mount Pleasant neighbourhood, this school is home to approximately 340 students of various cultural backgrounds who belong mostly to middle-class families (David Livingstone Elementary, 2015; J. Paris, personal communication, September 21, 2016). This project was implemented through food literacy oriented garden- and nutrition-based workshops that made use of the extensive garden available at the school. The significance behind addressing food literacy among this class of students is that it will hopefully provide food utilization skills to the students, thereby contributing to the development of food security and prevention of childhood obesity.

Objectives

Our project had two main objectives. The first was to evaluate the effectiveness of the garden-based workshops on improving the student’s knowledge on the reason and process behind putting the garden to bed for the winter, the different stages of composting, and the life cycle of plants. The second objective was to evaluate the effectiveness of the nutrition-based workshops on improving the student’s knowledge on identifying and categorizing food based on the four food groups, identifying and choosing a healthy meal versus an unhealthy meal, and making healthy snacks and meals.

Inquiry Questions

1. What percentage of the groups of students were able to correctly identify the life cycle of plants and the stages of composting in chronological order? How does this compare to before the workshops?
2. What percentage of the groups of students were able to curate a hypothetical dinner or meal that includes all of the food groups? How does this compare to before the workshops?

Methodology

Our case study project design implemented a garden- and nutrition-based intervention. Four workshops were hosted with two on garden literacy (composting and plant life cycles) and two on nutrition incorporating Canada's Food Guide. We used quantitative and qualitative methods of data collection to measure the impact of our workshops (Table 1).

For quantitative data, pre- and post-tests were conducted on the students for each set of workshops to compare their knowledge on each topic before and after. For the gardening component, students were asked to match stages of composting and plant life cycles to the correct season (Appendix, Figure 1). For nutrition literacy, students were given pictures of food and asked to assemble healthy meal plates by placing photographs of 4 food items on their plate (Appendix, Figure 4). For qualitative data, we interviewed the teacher following the completion of our workshop series to discuss her thoughts on the effectiveness of our workshops for her class (Appendix, Qualitative Interview). We also made observations of the specific food group changes to each group's create-a-plate during the quantitative test.

Data Collection and Descriptive Analysis

If both sets of data are in agreement, our workshop intervention may be effective and associated with increased food literacy.

Table 1: Activities and Analysis Guide

Workshop Topics	**Quantitative (descriptive statistics)**	**Qualitative (observations)**
1) Putting the Garden to Bed *2 sessions* • **Composting** • **Plant life cycles**	**Matching (*individual activity*)** **Evaluation: (out of 7 marks)** 1 point per correct pairing. Measure the percentage of groups who answer correctly	**Interview** **Evaluation:** Discuss thoughts and feedback on the effectiveness of our workshops

2) Canada's Food Guide to Healthy Eating *2 sessions* • **4 food groups** • **Healthy, balanced meal**	**Create-a-plate (*group activity*)** **Evaluation: (out of 1 mark)** Correct if includes all 4 food groups Measure the percentage of groups who answer correctly	**1) Create-a-plate (*group activity)*** **Evaluation:** Discuss observations of the specific changes the students make on their plates based on quantitative tests **2) Interview** **Evaluation:** Discuss thoughts and feedback on the effectiveness of our workshops

Ethical Considerations

Children are considered a vulnerable population and precautions must be taken when working with them. As we were invited by the principal and teacher into this classroom, we followed Ms. Paris' guidance and feedback by teaching the children as she suggested. We provided her with a copy of the consent form that included the details of our proposal. In addition, due to the media release policies, we did not include names or photographs that might identify any of the students. We blurred out any identifying information in the photos we have chosen to use on the blog and/or reports.

Results

For quantitative results, the percentage of students able to correctly identify the life cycle of plants and the stages of composting in chronological order was 44.6% before our garden-based workshop and 81.1% after (Appendix Figure 2). Through the qualitative interview with Ms. Paris, she expressed she was pleased with the "time spent in the garden" and the connection to knowledge already known to students as well as the life cycle concepts that will be taught "in the springtime" (J. Paris, personal communication, November 22, 2016). Also mentioned was the limited time for the lessons that may have contributed to not "all of the kids [...] 'get[ing]' the concept[s]" (J. Paris, personal communication, November 22, 2016).

Furthermore, quantitative data the nutrition based workshops shows the percentage of the 4 groups of students able to curate a hypothetical meal including all of the four food groups was 50% before our nutrition-based workshop and 100% after (Appendix Figure 4 & 5). Through personal observations, it was demonstrated that during the post-assessment the students displayed thoughtful and progressive changes to their plate when compared to the pre-assessment (Appendix Figure 4 & 5). Through our qualitative interview, Ms. Paris expressed the use of visuals and "preparation of snack and discussion of what food groups they belong to [were] well done" (J. Paris, personal communication, November 22, 2016).

Discussion

As per our inquiry questions, we determined the differences in the class' average percentage for pre- and post-tests, in which we identified a 36.5% increase in the gardening post-test scores and a 50% increase in the nutrition post-test scores. In terms of our qualitative results, Ms. Paris' comments place emphasis on the hands-on components of our workshops, as she believes it is more effective to have students learn through active participation to "internalize the concept[s] by doing" which indicates she found our workshops to be successful (J. Paris, personal communication, November 22, 2016). Additionally, the thoughtfulness of the students changes during the create-a-plate post-assessment indicated a deep understanding of the food groups. The results indicate that the workshops were effective in developing understanding of some of the processes involved in the garden, as well as developing food group knowledge.

We focused heavily on increasing food literacy because it can contribute to the development of food security among the students. As cited by Dixon (2014), Pollan highlights that consumers should be encouraged to eat "real" food, and stay away from anything with hard to pronounce ingredients. This implies that changing the diet is simple and by increasing students' awareness and knowledge, they can make informed dietary decisions, such as those Pollan recommends (Dixon, 2014). Better relationships with food and healthier food consumption are direct results of increased food literacy. Therefore, improvements in food literacy can be introduced as a preventative measure to reduce these chronic diseases and lower the costs of health care.

The two types of workshops effectively increased food knowledge by reinforcing the concepts of each other. Possessing garden-based knowledge and understanding where food comes from enforces theories on nutrition to promote healthier eating. We hypothesize that the higher increase in food group knowledge may be correlated with prior exposure to the garden-based workshops, providing a foundation of knowledge to build upon.

Our project was also designed to encourage community involvement, which could potentially influence the surrounding community as a whole. The workshops were developed according to Asset-Based Community Development (ABCD) to encourage the use of the resources available at the school (Mathie & Cunningham, 2010). Additionally, we ensured our project was executed with our community partner's best interest in mind, as per Sirolli's (2012) TEDTalk. It was ensured our community partner had an integral role in the implementation of our workshops through continuous feedback and suggestions from them that allowed for their involvement.

Furthermore, the consideration of limitations surrounding this project is also critical. Firstly, the create-a-plate assessment was conducted in groups due to resource and time limitations. Some groups had members who took initiative for the group with choosing which food items belonged on the plate. This may have led to unequal group member contributions and, therefore, did not accurately assess individual knowledge. Second, the introduction of new concepts at this age group is ideally completed gradually over an extended period of time to ensure the majority of the students are able to fully comprehend material (J. Paris, personal communication, November 22, 2016). However, given the time constraints fulfilling the objectives in four workshops, gradual progression of introduced topics was not achieved. Thus, our workshops were not representative

of long-term understanding, nor could we test how much of this knowledge was retained and utilized by the students.

Conclusion

Our garden-based nutrition workshop intervention resulted in short-term contributions in developing food literacy. Our findings are consistent with many other studies done on similar types of workshops (McAleese & Rankin, 2007; Nowak et al., 2012). Due to our short time with the students, the long-term impact of our intervention on their food literacy and health are unknown. Elementary school-aged children would benefit from garden- and nutrition-based learning being incorporated into school curricula or regular afterschool programs. We believe that an opportunity exists for implementing ongoing workshops that could be advantageous for continuous food literacy development.

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Appendix

Figure 1 - Workshop #2: Matching Assessment Activity

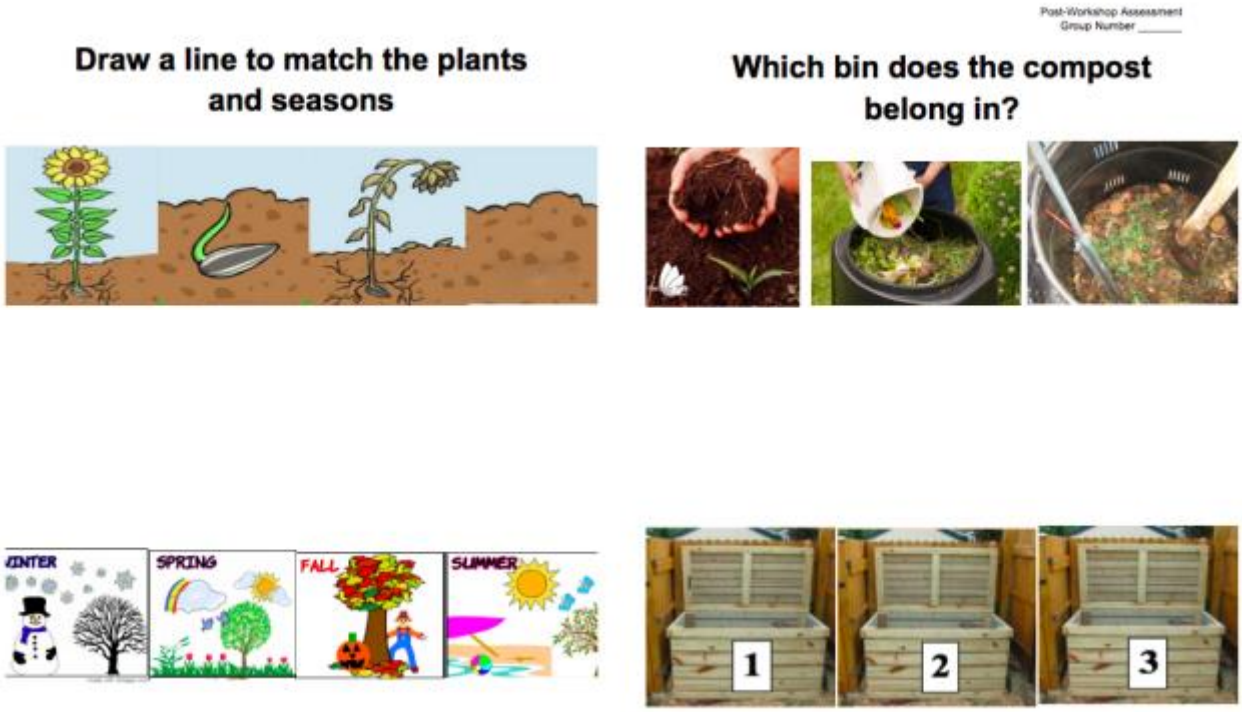

Figure 2 - Workshop #2: Pre-test Results (Life cycles / composting)

Group #	1	2	3	4	5	6	Average
1 John	2/7	4/7	4/7	5/7	2/7	7/7	4/7
2 Jimmy	7/7	3/7	0/7	2/7	2/7	--	2.8/7
3 Emma	0/7	5/7	3/7	3/7	2/7	2/7	2.5/7
4 Katie C	3/7	5/7	4/7	2/7	2/7	--	3.2/7
CLASS MEAN							3.125/7

Figure 3 - Workshop #2: Post-test Results (Life cycles / composting)

Group #	1	2	3	4	5	6	Average
1 John	7/7	7/7	5/7	7/7	7/7	N/A	6.6/7
2 Jimmy	7/7	5/7	7/7	N/A	N/A	--	6.3/7
3 Emma	3/7	3/7	1/7	4/7	7/7	N/A	3.6/7
4 Katie C	7/7	5/7	7/7	5/7	7/7	--	6.2/7
CLASS MEAN							5.675/7

Figure 4 - Workshop #3: Pre and Post test Results (Create-a-plate Activity- Qualitative)

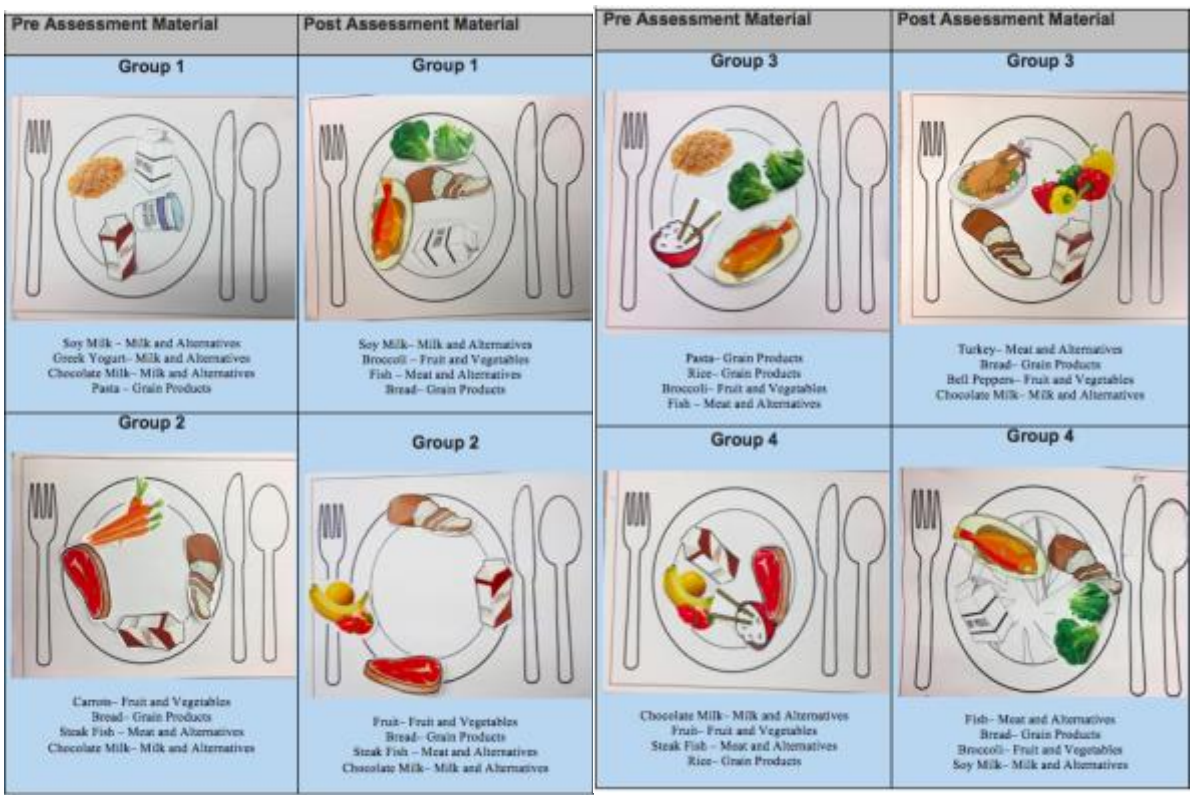

Figure 5 - Workshop #3: Pre and Post test Results (Create-a-plate Activity- Quantitative)

Group	Pre-test					Post Test				
	Fruits and Vegetables	Grains	Dairy & Alt.	Meats Alt.	Correct	Fruits and Vegetables	Grains	Dairy Alt.	Meats Alt.	Correct
1		✔	✔✔✔		No	✔	✔	✔	✔	Yes
2	✔	✔	✔	✔	Yes	✔	✔	✔	✔	Yes
3	✔	✔✔		✔	No	✔	✔	✔	✔	Yes
4	✔	✔	✔	✔	Yes	✔	✔	✔	✔	Yes

Qualitative Interview and Feedback from Ms. Paris

<u>Workshop 1 and 2: Composting and Life Cycle</u>

1. **What do you think was done well by our group in terms of teaching your students the concepts of plant life cycles and composting?**

The best part of the life cycles and composting was the time spent in the garden. It was great having such a big group of adults to keep the kids focused. The kids loved the interaction in the garden with all you big guys! We will be talking much more in depth about life cycles in the springtime, but it was great just to get out in the garden in the fall and review some of what they already know.

2. **Based on your interaction with your students outside of our workshops, do you feel that the students' understanding of these two concepts has improved since we've completed these two workshops? If you brought up any of the concepts that we covered again without us, did you feel like the students had a certain level of understanding on these two topics?**

The kids didn't know much about composting, so that was probably new to some of them. I think that you introduced some good vocabulary, but the amount of time that you had for the lessons isn't enough for all of the kids to "get" the concept.

3. **Based on our workshops, do you feel that holding garden-based workshops is beneficial in teaching the concepts of life cycles and composting? Are there benefits of teaching these concepts through use of garden-based workshops versus teaching these concepts in the classroom setting alone?**

Garden based learning, along will classroom lessons are the way to go. Children need to be active and will internalize the concept by doing.

4. **What were some limitations of our teaching style or things that we could have improved upon during these two lessons?**

I wasn't taking notes at the time, but I do recall that some of your explanations were a bit vague, particularly with the composting. It really takes time to cover a topic well and many different types of lessons and activities to reach and the different types of learners.

Workshop 3 and 4: Nutrition and Canada's Food Guide

1. **What do you think was done well by our group in terms of teaching your students about the four food groups? Was it effective?**

The use of visuals was great. The preparation of snacks and discussion of what food groups they belong to was well done.

2. **Based on your interaction with your students outside of our workshops, do you feel that the students' ability to identify and provide examples of the four food groups has improved?**

I think that most of the kids had some prior knowledge of the food groups. Some kids were still unsure of the grains category and they need more work on meat alternatives.

3. **Based on our workshops, do you think its beneficial to teach nutrition concepts in combination with a gardening component?**

Yes, I think that it was a great way to help them realize the importance of gardening and farming.

4. **Do you feel that it was beneficial for us to conduct the cooking demo to provide that students with real-life, hands-on examples of the four food groups and healthy snacks?**

Yes!

5. **What were some limitations of our teaching style or things that we could have improved upon during these two lessons?**

Considering your limited experience with kids in the classroom, I thought that you did great! I think that a couple of times there were concepts that some of you were a little unclear on, and it was evident to the kids. When teaching, one has to be quite certain of the concepts being covered and have a clear understanding of what one is trying to convey.

I was generally very pleased with the experiences that you provided for my students. I think that it is really important and beneficial for young kids to interact with older students. It was great for them to have some small group attention from cool young adults instead of their old teacher! Thanks!

Link to blog: https://blogs.ubc.ca/lfs350livingstone/

Critical Reflections

Student 1: This has been my first Community Based Experiential Learning and it has been an incredibly eye-opening experience unlike any other course I have engaged in. I really appreciated the opportunity of getting paired with a real partner within the community such as David Livingstone Elementary. We also got the chance to create real change within the community through directly impacting food literacy of the children of this grade 1/2 split class. Although the material was already a part of their curriculum, I think that our workshops helped to make the learn more fun and put applications to theoretical concepts that we covered. In previous classes, we had defined food security and food justice but it was not until we got to apply it that I really understood what it means to be food secure and food literate. The group work that we partook in honed cooperation skills and a sense of common purpose within the group that allowed us to achieve the objectives we set out for ourselves. I definitely feel some of the concepts required more reiteration with the students which would require repeated, short bursts of learning over a period of time as opposed to only two workshops per topic. The use of online platforms to report project was convenient!

Student 2: This has been my first class that could not fall under the definition of a traditional class. Although we did learn a lot, and spent many days in a classroom setting, so much of it was done out in the community or with my group that didn't feel like a class at all. I'm used to learning things in lectures, and sometimes applying them in labs, but this is the first time I've spent time learning and teaching at the same time. It was awesome because instead of sitting in a class, and trying to memorize a new set of information each week, it was more like a group of students, getting together and trying to figure this huge problem out. It was interesting to not only see the different strategies that we were taught, such as how to approach community partners properly, but to also use them and see how well they work first-hand. It felt a lot more real because while we learn about concepts and real life things in class, we rarely see them outside of a lecture slide. It was nice to be able to see the stuff we learn in class out in the real world, and it made it easier to cement them in my head.

Student 3: This CBEL project has been a great platform for my group and myself to develop a project plan without clear cut guidelines and harsh deadlines. This CBEL project has allowed myself to discover how rewarding and, at times, challenging it is to develop and integrate learning objectives, program goals, and group chemistry into one workshop targeted towards elementary school students. With regards to group work during this CBEL experience, I believe at first we were all challenged with seamlessly cogitating all of our different backgrounds, interests, and schedules. However, as our CBEL project progressed, our group was able to get into a consistent rhythm with completing projects, hosting workshops, and solving problems collaboratively. During each of our flexible learning periods we made great use of time by scheduling our workshops to be held during those periods. For a majority of my group, working directly with children was a new experience and through this CBEL project we have all learned how to effectively teach and work with children. This new and exciting experience was able to push us out of our comfort zones which provoked some different challenges, however, as a group we were able to overcome these challenges and document them on our successful and engaging blog.

Student 4: I enjoyed the nature of the course, allowing the students the choice to choose what type of project they may be assigned to. I had participated in a CBEL-style project before, in the LFS 250 course. As such, this was my second CBEL. I felt more comfortable with the style of learning now than my first experience with a CBEL. I was quite fortunate to get placed in a group where my group members were actively contributing towards the success of the group. I thoroughly enjoyed working with Ms. Paris'

grade 1 and 2 class at David Livingstone Elementary. The children were, for the most part, open to learning and they were quite responsive. It was quite evident that the students enjoyed seeing our group when we visited their school. Due to the manner in which we scheduled our visits, I believe that our group utilized the entirety of the Flexible Learning sessions allotted to us. It definitely helped, giving us what normally would have been class time, to interact with our community partners. I found that the implementation of online platforms to report our progress was quite tedious. I do understand why they are used in this course, and I understand the practicality of it. Just as a personal opinion, I wasn't the biggest fan of it.

Student 5: The CBEL project has been really important to me for many reasons. I had the opportunity to develop new skills such as working with kids, holding workshops, along with a bit of gardening skills, all which I'm sure will be applicable skills throughout my life. Our project was very rewarding, as I really feel that we made a positive impact in doing our project. Even though I'm sure the students won't remember a lot of what we taught them, every bit of excitement created around leading a healthy life is important for children and I believe our workshops laid a foundation for learning and curiosity revolving around food. Group work is always a learning experience when working with people you've never worked with before, but it's always neat identifying the different strengths of other group members and how each strength can be capitalized on throughout the experience. The flexible learning days were essential for our group as I'm not sure we would have found a time to meet with our community partner without these days and we made use of every one. I thought the blogs were important because, even though I was frustrated by them when we had to write and design our blog, I think I would have been disappointed if those involved in making this opportunity possible didn't get to experience the journey along with us and see all the progress we made and hard work we put into this!

Student 6: I really enjoyed my CBEL project. It was so valuable to me to be able to apply what I have learned in a classroom. I really enjoyed this opportunity. While communication in a group can sometimes be difficult it was nice to be able to have a group to divide the work with. Another huge benefit from being in a group was the ability to divide up the work in a way that let us do what we felt like we had the ability to be best at. For me, it was really nice to take a larger role when making PowerPoints and the infographic, as I feel more comfortable expressing myself in those mediums. Even though the software to make the infographic was difficult it was enjoyable for me to learn a new program. It was really nice to have the flexible lectures because it allowed a built in time in our schedule that we were all free. Other than this built in time it was almost impossible to find times that fit into all 6 of our schedules. Overall this experience was really valuable to me. I was nice to get out of a lecture hall and use some of the skills and knowledge I've acquired over the past 3 years.