AP RESEARCH

Academic Papers
Student Samples
Summer Work

Mr. DiNenno

Dear Rising AP Research Student,

In AP Research, students design and conduct their own research studies; write an academic paper equivalent to an undergraduate thesis; and present and defend their research. The Academic Paper of 4,000-5,000 words and the Individual Presentation and Oral Defense comprise the AP Research Exam.

Most of the research and writing must be done outside of class. Please see the attached summer assignment that is due on Canvas by the second and third class meeting dates in August (depending on the parts). I will provide submission instructions to students on the first day of class.

In AP Research, you are expected to contribute to the conversation in your chosen field of study. You can accomplish this in a variety of ways, including the following:
1. Creating new research
2. Building on or improving research
3. Revealing a new perspective in a field or discipline

If you have questions or need further information, contact me via email at sdinenno@nasd.k12.pa.us.

Table of Contents:

NOTE: These papers represent excellent student examples of Authentic Academic Research Papers. Some of these papers are featured in AP Classroom videos we will be watching in class throughout the year. All have earned a score of "High" or 5.

Page number ranges include information from Collegeboard on Scoring as well the paper's appendix and bibliography. The page range does NOT represent the length of the paper as each paper can only be 5,000 maximum (+ or - 10%)

You will be asked to read and analyze these papers over the summer to become familiar with them. We will refer to them throughout the year as examples you can follow when constructing your own AP Research paper.

Mr. DiNenno

AP Research Summer Assignment

Instructions on how to submit assignments will be posted in Schoology on the first day of school.

Directions: Complete the four tasks below.
This assignment will orient you to the nature and responsibilities of research and provide opportunities to explore your research topic.

All responses should be in Times New Roman font, size 12. Your completed summer project is due by our second class meeting at the beginning of school.

Task A—Read the AP Research Course Overview

Read the AP Research Course Overview. **https://tinyurl.com/aprcourseoverview**

Write a paragraph (200 words or more) explaining your understanding of the course and its two Performance Task requirements that comprise the AP Exam. Include information about the overall structure of the paper and its components (Literature Review, Methodology, etc.).

Task B—Review Graded AP Research Submissions

Read three (3) of the high-scoring sample academic papers in this packet, including the rubric and scoring commentary. Try to pick the papers that may reflect a personal interest.

Write a synopsis of each paper (250 word minimum each), including purpose(s) for the research, research participants (if any), methods used, results, and conclusions reached by the researchers.

Label the synopsis by the year and title of the paper (e.g., 2017 “Big Hero Six”).

Task C—Brainstorm Possible Topics

Research possible topics that you are interested in pursuing for your AP Research Academic Paper (4,000-5,000 words). Consider ideas/topics/questions that are specific to your passions, interests, areas of expertise, career goals, etc. so that you enjoy the research you will be conducting.

Write a brief summary (2-3 sentences each) of your chosen 3-5 topics.

Task D—Research Your Potential Topic

Analyze 2 research studies completed regarding your potential topic. Write a synopsis of the research in each (200 words minimum) including purpose(s) for the research, participants (if any), methods used, results, and conclusions reached by the researchers. Remember to use only peer-reviewed research studies.

Use American Psychological Association (APA) Style or Modern Language Association (MLA) Style to provide a citation and a link for each source. Resources on APA are available at the Purdue Online Writing Lab (OWL) (link below).

2020

AP® CollegeBoard

Paper #1: Analyzing the Prevalence of the Mediterranean Diet Within Connecticut Facilities that Care for Residents with Alzheimer's Disease.

AP® Research Academic Paper

Sample Student Responses and Scoring Commentary

Inside:

Sample A

- ☑ Scoring Guideline
- ☑ Student Samples
- ☑ Scoring Commentary

The Response…				
Score of 1 **Report on Existing Knowledge**	**Score of 2** **Report on Existing Knowledge with Simplistic Use of a Research Method**	**Score of 3** **Ineffectual Argument for a New Understanding**	**Score of 4** **Well-Supported, Articulate Argument Conveying a New Understanding**	**Score of 5** **Rich Analysis of a New Understanding Addressing a Gap in the Research Base**
Presents an overly broad topic of inquiry.	Presents a topic of inquiry with narrowing scope or focus, that is NOT carried through either in the method or in the overall line of reasoning.	Carries the focus or scope of a topic of inquiry through the method **AND** overall line of reasoning, even though the focus or scope might still be narrowing.	Focuses a topic of inquiry with clear and narrow parameters, which are addressed through the method and the conclusion.	Focuses a topic of inquiry with clear and narrow parameters, which are addressed through the method and the conclusion.
Situates a topic of inquiry within a single perspective derived from scholarly works **OR** through a variety of perspectives derived from mostly non-scholarly works.	Situates a topic of inquiry within a single perspective derived from scholarly works **OR** through a variety of perspectives derived from mostly non-scholarly works.	Situates a topic of inquiry within relevant scholarly works of varying perspectives, although connections to some works may be unclear.	Explicitly connects a topic of inquiry to relevant scholarly works of varying perspectives **AND** logically explains how the topic of inquiry addresses a gap.	Explicitly connects a topic of inquiry to relevant scholarly works of varying perspectives **AND** logically explains how the topic of inquiry addresses a gap.
Describes a search and report process.	Describes a nonreplicable research method **OR** provides an oversimplified description of a method, with questionable alignment to the purpose of the inquiry.	Describes a reasonably replicable research method, with questionable alignment to the purpose of the inquiry.	Logically defends the alignment of a detailed, replicable research method to the purpose of the inquiry.	Logically defends the alignment of a detailed, replicable research method to the purpose of the inquiry.
Summarizes or reports existing knowledge in the field of understanding pertaining to the topic of inquiry.	Summarizes or reports existing knowledge in the field of understanding pertaining to the topic of inquiry.	Conveys a new understanding or conclusion, with an underdeveloped line of reasoning **OR** insufficient evidence.	Supports a new understanding or conclusion through a logically organized line of reasoning **AND** sufficient evidence. The limitations and/or implications, if present, of the new understanding or conclusion are oversimplified.	Justifies a new understanding or conclusion through a logical progression of inquiry choices, sufficient evidence, explanation of the limitations of the conclusion, and an explanation of the implications to the community of practice.
Generally communicates the student's ideas, although errors in grammar, discipline-specific style, and organization distract or confuse the reader.	Generally communicates the student's ideas, although errors in grammar, discipline-specific style, and organization distract or confuse the reader.	Competently communicates the student's ideas, although there may be some errors in grammar, discipline-specific style, and organization.	Competently communicates the student's ideas, although there may be some errors in grammar, discipline-specific style, and organization.	Enhances the communication of the student's ideas through organization, use of design elements, conventions of grammar, style, mechanics, and word precision, with few to no errors.
Cites **AND/OR** attributes sources (in bibliography/ works cited and/or in-text), with multiple errors and/or an inconsistent use of a discipline-specific style.	Cites **AND/OR** attributes sources (in bibliography/ works cited and/or in-text), with multiple errors and/or an inconsistent use of a discipline-specific style.	Cites **AND** attributes sources, using a discipline-specific style (in both bibliography/works cited **AND** in-text), with few errors or inconsistencies.	Cites **AND** attributes sources, with a consistent use of an appropriate discipline-specific style (in both bibliography/works cited **AND** in-text), with few to no errors.	Cites **AND** attributes sources, with a consistent use of an appropriate discipline-specific style (in both bibliography/works cited **AND** in-text), with few to no errors.

Academic Paper

Overview

This performance task was intended to assess students' ability to conduct scholarly and responsible research and articulate an evidence-based argument that clearly communicates the conclusion, solution, or answer to their stated research question. More specifically, this performance task was intended to assess students' ability to:

- Generate a focused research question that is situated within or connected to a larger scholarly context or community;
- Explore relationships between and among multiple works representing multiple perspectives within the scholarly literature related to the topic of inquiry;
- Articulate what approach, method, or process they have chosen to use to address their research question, why they have chosen that approach to answering their question, and how they employed it;
- Develop and present their own argument, conclusion, or new understanding while acknowledging its limitations and discussing implications;
- Support their conclusion through the compilation, use, and synthesis of relevant and significant evidence generated by their research;
- Use organizational and design elements to effectively convey the paper's message;
- Consistently and accurately cite, attribute, and integrate the knowledge and work of others, while distinguishing between their voice and that of others; and
- Generate a paper in which word choice and syntax enhance communication by adhering to established conventions of grammar, usage, and mechanics.

Analyzing the Prevalence of the Mediterranean Diet Within Connecticut Facilities that Care for Residents with Alzheimer’s Disease

May 26, 2020

Word Count: 5406

ABSTRACT

The neurodegenerative Alzheimer's Disease is the most common form of dementia. Previous researchers have found a link between the Mediterranean Diet and curbed symptoms and effects of Alzheimer's Disease. This finding from the pre-existing research sparked the goal of this research study: to examine the extent to which Connecticut facilities that care for residents with Alzheimer's Disease are incorporating aspects of the Mediterranean Diet into meal plans.

To assess the prevalence of the Mediterranean Diet amongst 12 Connecticut facilities, 3 methodology tools were used: a pre-validated quantitative questionnaire, qualitative interviews, and both qualitative and quantitative content analyses were conducted on dining menus.

It was concluded that 100% of the participating facilities incorporate aspects of the MedDi into their meal plans. It was additionally concluded that the incorporation of the Mediterranean Diet is both intentional and unintentional and to varying extents.

INTRODUCTION

The rate of Alzheimer's Disease (AD) is increasing annually and claims the unfortunate title of the most common form of dementia (Omar, 2019). In fact, AD accounts for 50%-80% of all dementia cases which affects 40-50 million people currently (Gupta, Lee, Choi, Lee, Kim, Kwon, 2019). "Alzheimer's disease is an irreversible, progressive brain disorder that slowly deteriorates memory, thinking skills and eventually the ability to carry out life's simplest tasks" (National Institute on Aging, 2017, p.1). AD does not lack research and attention; researchers and professionals strive each day to uncover ways to circumvent the neurodegenerative condition—an illness that involves deterioration in parts of the brain.

The pre-existing research regarding AD indicates that dietary choices can lessen symptoms or deter the risk of contracting the cognitive disease (Yusufov, Weyandt, Piryatinsky, 2017). The numerous diets and dietary patterns that researchers have examined include the Ketogenic Diet, Mediterranean Diet, MIND Diet, high iron-related patterns, and high oil related patterns (Rusek, Pluta, Ułamek-Kozioł, & Czuczwar, 2019; Omar, 2019; Shi, El-Obeid, Li, Xu, & Liu, 2019; Woodside, Gallagher, Neville & McKinley, 2014). After reviewing numerous studies pertaining to dietary choices that curb effects and symptoms of AD, it is clear that the Mediterranean Diet (MedDi) garners the most attention in this field and prevails overall in curbing further cognitive decline. The MedDi replicates the eating patterns of individuals from Greece and Italy in the early 1960s (Woodside, Gallagher, Neville, McKinley, 2014). The "building block" for the MedDi is olives, which can be in oil form. The olives provide prominent biophenols, a chemical that can help fight chronic illnesses, including AD (Omar, 2019). The general guidelines of the MedDi (Figure 1) include high intake of foods rich in fiber, protein, and docosahexaenoic acid (DHA). Foods rich in DHA help prevent or improve several chronic conditions, including AD. Some examples of foods consumed while abiding to the diet include fish, nuts, legumes, and eggs (Shi, El-Obeid, Li, Xu, Liu, 2019). According to the pre-existing research, the richness in natural foods plays a role in increasing cognitive function—"any mental process that involves symbolic operations...perception, memory, creation of imagery or thinking" (Segen's Medical Dictionary, 2011, p.1).

Figure 1: *Mediterranean Diet Guidelines/Food Pyramid* (Dodge, 2017)

Gap in the Research

The pre-existing research links the MedDi to positive outcomes concerning cognitive function (e.g., Hernandez-Galiot & Goni, 2017; Scarmeas, Stern, Tang, Mayeux, & Luchsinger, 2006). However, the pre-existing research does not indicate if facilities that care for residents with AD incorporate the MedDi into meal plans. The purpose of this study is to address this gap. This is salient to determine because the prevalence of AD is increasing and it is vital that AD facilities are cognizant of the MedDi due to the link between diet and cognitive function (Nicolson & Ngwenya, 2001). Therefore, this study can assist with facilities choosing to implement aspects of the MedDi to curb and deter AD symptoms (Omar, 2019). To analyze the prevalence of the MedDi at AD facilities, the guiding research question is: To what extent are aspects of the Mediterranean Diet being incorporated into the meal plans in Connecticut facilities that care for residents with Alzheimer's Disease?

LITERATURE REVIEW

Search Strategies

Sources were located via scrutinizing various databases with the limiter of peer-reviewed to ensure credibility. Keywords used while researching were: diet, Mediterranean Diet, cognitive function and Alzheimer's Disease.

Increased Cognitive Function Via the Mediterranean Diet

Researchers, using diverse methods, similarly conclude: there is a correlation between the MedDi and the prevention of or the curbing of AD symptoms. This is attributed to the proportions of foods comprising the diet. For example, when following typical adherence to the diet, red meat is consumed only on a monthly basis and fruits and vegetables are heavily incorporated into the diet on a daily basis (Yusufov, Weyandt, Piryatinsky, 2017).

In a study conducted by researchers in Madrid, 79 subjects ≥ 75 years old were fed the MedDi and later assessed on their cognitive status and potential symptoms of depression. The subjects were surveyed and interviewed daily to test their adherence to the diet, their cognitive function, and potential signs of depression. The study concluded that adherence to the MedDi positively correlates to increased cognitive function, but the correlation to depression symptoms remains unclear. The researchers found that many elders lack essential nutrients such as fish and other fatty vitamins, which are abundant ingredients in the MedDi (Hernandez-Galiot & Goni, 2017).

Evidence of improved cognitive function regarding the MedDi was also assessed by means of surveying. In alignment with Hernandez-Galiot & Goni's (2017) method of utilizing surveys, researchers from Spain assessed the linkage of adherence to the MedDi to chronic mental illness. This cohort study had 11,015 subjects who each filled out a 136-item food frequency questionnaire, that established the participants' general adherence to the MedDi. After data collection for four years, the study "revealed a significant direct association between adherence to Mediterranean diet and all the physical and most mental health domains ...." (Henriquez Sanchez, Ruano, de Irala, Ruiz-Canela, Martinez-Gonzalez, Sanchez-Villegas, 2012, p.360).

Additionally, researchers from the Taub Institute in New York inspected the link between the MedDi and risks of AD. A total of 2,258 subjects were examined over 1.5 years. All subjects participated in an interview which assessed cognitive function. The cognitive assessments included "tests of memory (short- and long-term verbal and nonverbal), orientation, abstract reasoning (verbal and non-verbal); language (naming, verbal fluency, comprehension, and repetition), and construction (copying and matching)." The subject's food intake was recorded daily and assessed for MedDi adherence by interpreting their results on a zero to nine scale (higher score meaning higher adherence). The result of the study determined: "Higher adherence to the MeDi was associated with lower risk for AD" (Scarmeas, Stern, Tang, Mayeux, & Luchsinger, 2006, p.1). The pre-existing research highlights the alignment between AD and the

MedDi; it is of importance to conduct research on this finding to determine if facilities caring for residents with AD are utilizing this diet.

Foods in the Mediterranean Diet Contributing to Increased Cognitive Function

Researchers have discovered foods, nutrients, and vitamins that increase cognitive function, however, the minimum consumption of the diet to achieve curbed symptoms of AD remains unknown (Omar, 2019). According to Omar, olives and olive oil are considered the foundation of the MedDi. The olive, in any form, is a main source of monounsaturated fat. The general format of the diet is as follows: "high consumption of fruit, vegetables, legumes, and complex carbohydrates, with a moderate consumption of fish...and a low-to-moderate amount of red wine during meals" (Sofi et al., 2010, p.798). According to Sofi et al., when an individual has neurological damage, there is an increase in reactive oxygen species. This leads to an imbalance in the brain known as oxidative stress. This stress can diminish the brain's way of repairing damage. As the amount of reactive oxygen species increases, the amount of oxidative stress in the brain also increases. The oxidative stress that is produced can be affected by dietary choices. There are foods rich in antioxidants that can decrease oxidative stress; for example, vitamin C and vitamin E are rich in antioxidants. As expected, the MedDi is rich in foods with antioxidants, explaining why this diet is attributed to curtailing symptoms of AD. Additionally, nuts, seeds, and grains outlined in the diet pertain to foods categorized as rich in vitamin E. (Sofi et al., 2010). The MedDi is copious in natural foods that have not only been linked to increased cognitive function, but also increased quality of life. The wholesomeness of the foods prescribed in the diet make AD patients feel better internally (Henriquez Sanchez et al., 2012). The pre-existing research concludes that higher incorporation rates of specific foods contained in the MedDi are better for cognitive function, general health, and quality of life.

Measurement and Adherence Tactics for Diets

The pre-existing research discovered effective approaches to enable greater adherence to diets. Researchers from Spain created an instrument to quantitatively measure adherence to the MedDi called the *14-Item Mediterranean Diet Assessment Tool*. It is a questionnaire that generates a *Mediterranean Diet Score* that classifies subjects as having high/low adherence to the MedDi (Martinez-Gonzalez et al., 2012). This instrument served as the quantitative tool for this study, further explanation is in the *Research Instruments* section (p.11). Concerning adherence tactics, it is known that individuals with AD can have trouble chewing, swallowing, or staying on task when it is mealtime. (Riley & Volicer, 1990). As a result, it is vital that meals are fed efficiently to AD residents to ensure that all proper nutrients are consumed. For example, researchers Riley and Volicer (1990) analyzed a high-calorie pudding supplement called "Frosty Cal." They hypothesized that small quantities of high calorie supplements would be beneficial for those suffering from AD. It was concluded that the pudding supplement was beneficial because patients found Frosty Cal easier to consume than other supplements.

Summary

Copious studies concluded that higher consumption of the MedDi translates to curbed symptoms and effects of AD (e.g., Scarmeas, Stern, Tang, Mayeux, & Luchsinger, 2006). The evidence of improved cognitive function was found via neuropsychological tests. Individuals were assessed; however, the studies did not address if the participants resided in specialized facilities or not.

To connect the prior research and to fill a gap, this study determined the extent to which Connecticut AD facilities are incorporating aspects of the MedDi into meal plans.

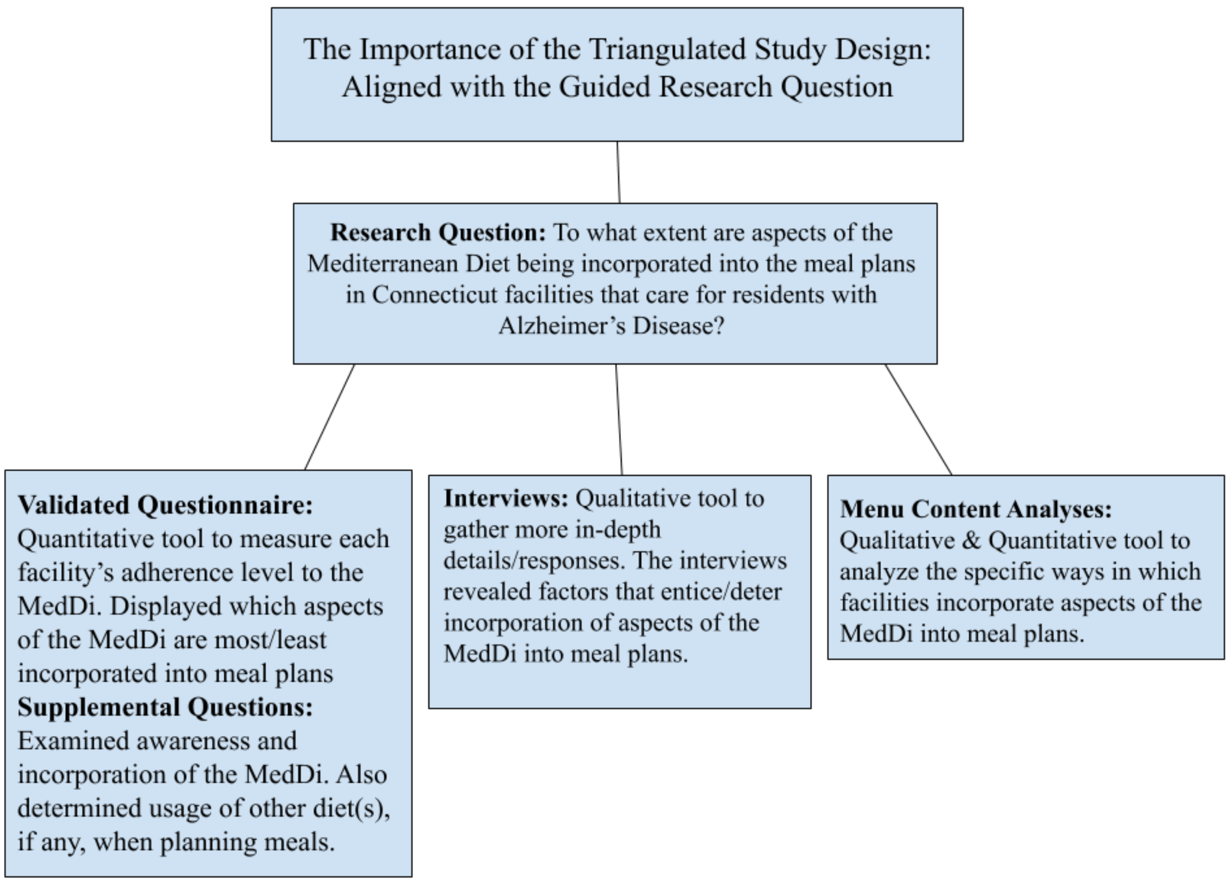
RESEARCH DESIGN AND METHODOLOGY

Study Design

This study explores the prevalence of components of the MedDi within facilities that care for residents with AD. The goal is to increase awareness of the MedDi and thus spur further implementation of it into the design of meal plans. This is important because the decline in cognitive health can be offset by increased consumption of foods contained in the MedDi.

A three-part, mixed-methods study was conducted. This approach allowed for both a quantitative and qualitative analysis of compliance to the MedDi. This is important because the mixed-methods captured details that would not have been revealed had only one component of the method (e.g. the questionnaire) been utilized to gather data and formulate results (Leedy & Ormrod, 2010). The study was also triangulated. The three methods utilized to gather data were: a pre-validated quantitative questionnaire, qualitative interviews, and content analyses of the dining menus (Figure 2). As seen in the literature review, some past researchers have conducted interviews and others have created questionnaires concerning the MedDi, but not in a mixed-method approach as utilized in this study. Additionally, the pre-existing research shows no evidence of researchers performing menu content analyses. The mixed-methods design in this study is important as it combines methods from the literature review and adds a new qualitative measure.

Figure 2: *The 3-part Method Design in Alignment with the Research Question*



Subjects

The subjects were the individuals that are responsible for designing the meal plans in facilities that care for residents with AD. These individuals consisted of nutritionists, chefs, dining directors, and dieticians. This demographic of participants was chosen because they are the decision-makers concerning the dining options and they are the most knowledgeable concerning the quantities of foods served. Also, they have the greatest insight pertaining to the reasons that entice/deter facilities from incorporating aspects of the MedDi into meal plans. Prospective subjects were gathered via compiling a list of all facilities in the state of Connecticut that have a residential memory care unit (n=54).

Research Instruments

The questionnaire in this study was based on the "Validated 14-item Questionnaire of Mediterranean diet adherence" (V14Q) from Martinez-Gonzalez et al. (2012).

Table 1: *Original Questionnaire with Criteria to Score one Point on the Mediterranean Diet Score (Martinez-Gonzalez et al., 2012)*

Questions	Criteria for 1 point
1. Do you use olive oil as main culinary fat?	Yes
2. How much olive oil do you consume in a given day (including oil used for frying, salads, out-of-house meals, etc.)?	≥4 tbsp
3. How many vegetable servings do you consume per day? (1 serving : 200 g [consider side dishes as half a serving])	≥2 (≥1 portion raw or as a salad)
4. How many fruit units (including natural fruit juices) do you consume per day?	≥3
5. How many servings of red meat, hamburger, or meat products (ham, sausage, etc.) do you consume per day? (1 serving: 100–150 g)	<1
6. How many servings of butter, margarine, or cream do you consume per day? (1 serving: 12 g)	<1
7. How many sweet or carbonated beverages do you drink per day?	<1
8. How much wine do you drink per week?	≥7 glasses
9. How many servings of legumes do you consume per week? (1 serving : 150 g)	≥3
10. How many servings of fish or shellfish do you consume per week? (1 serving 100–150 g of fish or 4–5 units or 200 g of shellfish)	≥3
11. How many times per week do you consume commercial sweets or pastries (not homemade), such as cakes, cookies, biscuits, or custard?	<3
12. How many servings of nuts (including peanuts) do you consume per week? (1 serving 30 g)	≥3
13. Do you preferentially consume chicken, turkey, or rabbit meat instead of veal, pork, hamburger, or sausage?	Yes
14. How many times per week do you consume vegetables, pasta, rice, or other dishes seasoned with sofrito (sauce made with tomato and onion, leek, or garlic and simmered with olive oil)?	≥2

Approval to use the instrument was granted by Martinez-Gonzalez et al. and Schroder et al. (Appendix A). The V14Q concerns an individual's diet and answers are assigned points. Table 1 depicts the V14Q questionnaire; on the left side are the questions and on the right is the criteria to score one point. The sum of the points determines the participant's Mediterranean Diet Score. The scoring framework from the V14Q was mirrored in this study. If the response aligned with the coded answer (generated by Martinez-Gonzalez et al., 2012), one point was awarded. According to the V14Q, an overall score ≤ 7 is considered "low adherence" to the MedDi and an overall score ≥ 8 is considered "high adherence" to the MedDi. The questionnaire served as the quantitative measure for assessing overall adherence at the various facilities. The original questionnaire was designed for and effective at examining individuals with obesity risks and had not been used in the context of AD facilities. The purpose of the V14Q instrument was to measure adherence to the MedDi, thus it was useful in this study to measure adherence levels of the MedDi within facilities. Minor modifications to the questionnaire wording were made to accommodate the new context of this study (e.g. words such as "consume" were changed to "provide").

In this study, supplemental questions were added to the questionnaire. They were reviewed and approved by the Institutional Review Board (IRB). Table 2 depicts the supplemental questions. The questionnaire used in the study is located in Appendix B.

Table 2: Supplemental Questions Added to the Validated Questionnaire

Q 1	Q 2	Q 3	Q 4
Prior to this questionnaire, were you aware of any link(s) between cognitive function and the Mediterranean Diet?	Do you intentionally provide/design meals that adhere to the Mediterranean Diet?	Do you provide/design meals that adhere to either the Ketogenic Diet or the MIND Diet?	Do the meals you provide/design adhere to any particular diet? If so, please specify which diet(s). If not, please respond with "N/A."

Note. There were two additional questions: one requesting interviews and the other requesting menus for content analyses (all questions were approved by the IRB).

Procedures

After the compilation of potential subjects, each facility received a recruitment phone call. Subjects that did not answer the phone were left voice messages and contacted a second time. Upon agreement to participate in the study, the subjects were emailed a link to the questionnaire.

Twelve facilities completed the questionnaire, eleven facilities completed the supplemental questions, six out of the twelve provided menus, and four subjects interviewed. The consent form (Appendix C) outlined that facilities can choose which component(s) of the method to complete. To ensure confidentiality, the consent form informed participants that neither names of people nor facilities would not be disclosed. To keep names classified, each subject/location received a study code number (ex. Facility A). Throughout this study, the words "subjects" and "facilities" are used interchangeably. The study design and procedures were approved by the IRB to eliminate ethical issues.

Delimitations

Delimitations were established ahead of time to narrow the subject pool. First, individuals that design meal plans for individuals with AD in residential homes were excluded; only AD facilities with residents were subjects for the study. Second, only facilities located in the state of Connecticut were contacted as participants.

RESULTS

Quantitative Results

The questionnaire (Appendix B) was completed by twelve facilities. Table 3 depicts the frequency and percentage of criteria met/not met in total for all participating facilities per question. Provided with each question is the criteria needed to score one Mediterranean Diet Score (MDS) point according to the V14Q. For example, to score a point for question 4, a response must have been that the facility provides ≥ 3 units of fruit per day.

As seen in Table 3, the total number of responses that met the criteria (90) was greater than the total number of responses that did not meet the criteria (73). Therefore, this table presents an overall finding that the majority of responses to each question met the criteria to earn one MDS point. The top 3 food categorizations that met the criteria were fruits (91.7%; Q4), vegetables (75%; Q3), and legumes (75%; Q9). The top 3 food categorizations that did not meet the criteria were red meat (83.3%; Q5), commercial sweets (75%; Q11) and sweet/carbonated beverages (66.7%; Q7). It is important to note that some facilities omitted responses to questions. In order to keep the scores aligned with the 14-point MDS, scores for these facilities were proportionally calculated (Appendix D).

Table 3: *Frequency and Percentage of Criteria Met/Not Met Per Question* (n=12)

Question with Predetermined Criteria to Score one Point on the Mediterranean Diet Score by Martinez-Gonzalez et al.	Met Criteria Frequency (%)	Did Not Meet Criteria Frequency (%)
1. Do you provide meals utilizing olive oil as main culinary fat? Criteria= Yes	8 (66.7)	4 (33.3)
2. How much olive oil do you provide in a given day (including oil used for frying, salad, out-of-house meals, etc.)? Criteria= ≥ 4 tablespoons	8 (66.7)	4 (33.3)
3. How many vegetable servings do you provide per day? (1 serving: 200 g [consider side dishes as half a serving]) Criteria= ≥ 2 (≥ 1 portion raw or as a salad)	9 (75)	3 (25)
4. How many fruit units (including natural fruit juices) do you provide per day? Criteria= ≥ 3	11(91.7)	1 (8.3)
5. How many servings of red meat, hamburgers, or meat products (ham, sausage, etc.) do you provide per day? (1 serving: 100-150 g) Criteria= < 1	2 (16.7)	10 (83.3)
6. How many servings of butter, margarine, or cream do you provide per day? Criteria= < 1	5 (41.7)	7 (58.3)
7. How many sweet or carbonated beverages do you provide per day? Criteria= < 1	4 (33.3)	8 (66.7)
8. How many glasses of wine do you provide per week?** Criteria= ≥ 7 glasses	6 (60)	4 (40)
9. How many servings of legumes do you provide per week? (1 serving: 150 g) Criteria= ≥ 3	9 (75)	3 (25)
10. How many servings of fish or shellfish do you provide per week? (Serving: 100-150 g of fish or 4-5 units or 200 g of shellfish) Criteria= ≥ 3	8 (66.7)	4 (33.3)
11. How many times per week do you provide commercial sweets or pastries (not homemade), such as cakes, cookies, biscuits, or custard? Criteria= < 3	3 (25)	9 (75)
12. How many servings of nuts (including peanuts) do you provide per week? (1 serving: 30 g)** Criteria= ≥ 3	4 (40)	6 (60)
13. Do you preferentially provide chicken, turkey, or rabbit meat instead of veal, pork, hamburger, or sausage? Criteria= Yes	6 (50)	6 (50)
14. How many times per week do you provide vegetables, pasta, rice, or other dishes seasoned with sofrito (sauce made with tomato and onion, leek, or garlic and simmered with olive oil)?* Criteria= ≥ 2	7 (63.3)	4 (36.7)

Note. Total Frequency of Responses that Met the Criteria= 90, Total Frequency of Responses that Did not Meet Criteria= 73
*One facility omitted a response to this question
** Two facilities omitted responses to this question
See Appendix D for Proportional Explanations for Omitted Questions

Table 4 illustrates the frequency and percentage of criteria met/not met in total, per facility. Facilities A, E, F, I, J, & M (50%) had a sum score ≥ 8 and, therefore, demonstrate "high adherence." In other words, these facilities are most aligned with the guidelines of the MedDi. Contrastingly, facilities B, C, D, G, H, & K (50%) had a sum score ≤ 7 and, therefore, demonstrate "low adherence." In other words, these facilities are least aligned with the guidelines of the MedDi. The highest MDS was 10 out of 14 (Facility A); the lowest MDS was 6 out of 14 (Facilities D & G). None of the facilities had a perfect MDS (14), but 100% incorporated MedDi food options as evidenced by each facility having a MDS ≥ 6.

Table 4: *Frequency and Percentage of Criteria Met/Not Met in Total, Grouped by Facility (n=12)*

Facility	Frequency Met of Total Criteria (%)	Frequency Not Met of Total Criteria (%)
A	10 (71.4)	4 (28.6)
B	7 (50)	7 (50)
C	7 (50)	7 (50)
D	6 (42.9)	8 (57.1)
E	8 (57.1)	6 (42.9)
F^^	9 (64.3)	5 (35.7)
G	6 (42.9)	8 (57.1)
H	7 (50)	7 (50)
I	8 (57.1)	6 (42.9)
J	9 (64.3)	5 (35.7)
K	7 (50)	7 (50)
M^^^	8 (57.1)	6 (42.9)

Note. ^^This facility omitted two questions
^^^This facility omitted three questions
See Appendix D for Proportional Explanations for Omitted Questions

Table 5 summarizes the results of Table 4. This table depicts the frequency and percentage of high and low adherence amongst all the facilities. According to the scoring framework, exactly half of the facilities demonstrated "high adherence" and exactly half of the facilities demonstrated "low adherence."

Table 5: *Frequency and Percentage of High and Low Adherence in Totality for All Facilities (n=12)*

Adherence Level	Frequency (%)
High Adherence	6 (50)
Low Adherence	6 (50)

Note. A frequency of total met criteria ≤ 7 yields "low adherence", a frequency of total met criteria ≥ 8 yields "high adherence."

The supplemental questions consisted of three multiple-choice questions and one open-ended question (see Appendix E for the justifications to the supplemental questions). The responses portray that seven out of the eleven facilities were "...aware of any link(s) between cognitive function and the Mediterranean Diet." In response to the second supplemental question, four facilities selected, "Yes, I intentionally provide/design meals that adhere to the Mediterranean Diet." When asked if they plan meals in accordance to the MIND or Ketogenic Diet, Facility A was the only facility to select "Yes…". Concerning the open-ended question, facilities were asked if they design meals in accordance to any diet in particular and if so, to specify the diet. Only one, Facility F, stated that they use "specifically Mediterranean." Appendix F charts all responses to the supplemental questions.

Qualitative Results

Interviews

The interviews (see Appendix G for questions) were conducted both in person and over the phone. The interviews were transcribed (Appendix H) and then coded in an open-coding format for each emerging theme. Qualitative coding of interview transcripts was conducted using Miles and Huberman's (1994) iterative coding process. After two iterations of open-coding, 14 final themes emerged (Appendix I) with the following four most prevalent: 1) incorporated aspects of the MedDi; 2) willingness to incorporate aspects of the MedDi into meal plans and change menus; 3) reservations regarding incorporating the MedDi and 4) budget factors.

Incorporated Aspects of the Mediterranean Diet

When asked to list the main ingredients incorporated into meal plans, every facility highlighted foods outlined in the MedDi. Facility L stated, "I use olive oil even though it costs more money. We do fish, a lot of fish." Facility D said, "I'd say that 90% of our vegetables are fresh. Our potatoes are all fresh, nothing comes in a box." According to Facility K, "...for vegetables there's a wide variety, but we do a lot of broccoli and carrots...we have and we use olive oil, extra virgin olive oil to roast our vegetables." Facility B stated that they "...make a lot of chicken and a lot of fish...try to incorporate a lot of fresh fruits and vegetables."

Willingness to Incorporate Aspects of the Mediterranean Diet into Meal Plans and Change Menus

All four facilities expressed their willingness to incorporate aspects of the MedDi in their meal plans. According to Facility K, "...we both were aware that it [the MedDi] helps and that is why we are working to incorporate it into our menus." As Scarmeas, Stern, Tang, Mayeux, & Luchsinger (2006) concluded, subjects in this study also recognized that the MedDi is beneficial for individuals with AD. In their interview Facility K stated, "we're trying to promote if you eat this diet you will have fewer symptoms, your blood sugars will look better, there's less sodium so their blood pressure is going to look better, less pills...It's not just gonna extend your life, but you will feel better on a day to day." Additionally, when asked if their facility adheres to any particular diet, as noted prior, Facility F responded with "Specifically Mediterranean" (Appendix F). Half of the facilities (B and D) expressed that they use the MedDi. For example, Facility B stated, "To be honest, our menus do [incorporate the MedDi]." Facility D stated, "We do use that diet [the MedDi] in our building now."

Reservations Regarding Implementing Aspects of the Mediterranean Diet

An obstacle subjects face regarding the incorporation of certain aspects of the MedDi is the texture of the foods. As noted by Riley & Volicer (1990) and all four facilities interviewed in this study, individuals with AD have trouble chewing, swallowing, and consuming food. During interviews, Facilities K & L discussed adjusting meal plans to compensate for the food consumption limitations of the AD residents. For example, Facility L stated that they have beverage only diets because "these guys have teeth issues, that's why a lot of them end up with soft diets and even puree. It's not usually the teeth it's the swallowing mechanisms that's more of the problem." Riley & Volicer also found that nutritional supplements can aid those with AD by ensuring all nutrients are consumed. Similarly, Facility K stated, "Some people cannot tolerate any food at all and I just have to give them like an Ensure or a Boost supplement that gets all their calories and proteins in."

An additional deterrent is food waste factors. Facility B stated, "We don't use things timely and as efficiently as we could...with fresh products there is always the waste factor." Another finding was that not all residents like Mediterranean food. Subjects attributed this to the way residents were raised and to the evolving sense of taste as one ages. For example, although sweets and baked goods are not highly recommended for the MedDi, Facility L mentioned, "...the sweet taste bud is the last to go. So, these guys that live here, if they could live off of sweets for the rest of their lives that's what they'd do… so we balance that." Facility B stated, "Some people...in their eighties or nineties are set in their ways of what they were raised on. I think they are not necessarily going to change, but then we also do have a small percentage that do want to learn while they're here." Also, Facility K noted that the MedDi cannot be sprung upon AD residents, "...we can't do a complete overhaul, we have to take baby steps into this. If we just did a whole Mediterranean Diet menu, the first thing that they would say is 'where is my meatloaf, where are my buttery mashed potatoes?' So we have to do trial and error." See Appendix J for additional quotes regarding each final theme.

Budget Factors

Another prominent theme that emerged was budget factors. While some facilities (K&L) budget for the cost to continuously purchase fresh foods such as ones in the MedDi, others expressed economic concerns. For example, Facility D stated, "We also have to write these menus in coordination with our budget...we write a budget for the year and we pertain to that budget monthly" (Appendices H & J). Additionally, Facility B stated, "cost of course is always a concern." Therefore, a limitation to the MedDi is the cost of ingredients. According to researchers in Washington, "The Mediterranean diet has come to be viewed, at times, as a high-cost option for the elite, especially when transplanted from its rustic roots to an urban North American setting" (Drewnowski & Eichelsdoerfer, 2010, p.1). Consequently, a potential barrier to incorporating the MedDi are financial circumstances.

Content Analyses

Content analyses were made upon the dining menus to discover how MedDi foods are incorporated into meals. This analysis was both a quantitative and qualitative measure and it triangulated the study. Two coding iterations were completed via Strauss' (2010) deductive coding process. Appendix K depicts Iteration One: deductive coding of the food categories on the V14Q, which are organized by those that align (Theme 1) with the MedDi and those that do not (Theme 2). For example, vegetables fall in Theme 1 and commercial sweets fall in Theme 2.

Iteration Two analyzed each facility's menu in accordance with the foods that fall into each theme from Iteration One. First, food categories were separated via Iteration One. Then, each food category was analyzed on facilities' menus. This iteration uncovered how the menu offerings do and do not incorporate aspects of the MedDi (Appendix L). For example, Facility B incorporated vegetables into the menu by providing potato soup and Facility J incorporated fish into the menu by providing baked tilapia, tuna salad and tuna melts. Based on the specific foods found, the frequencies of each food category were tabulated (Table 6).

As seen in Table 6, each menu incorporated ≥ 1 unit of vegetables. This was the only food category incorporated by all facilities. Facility M did not incorporate fruit and all others did. Half of the facilities incorporated fish into the menu. Not one facility listed wine as an option on their menu. This is a limitation to the menus because according to the survey responses from the facilities that provided menus, four out of the six (66.7%) indicated that they provide ≥ 7 glasses of wine per day. A similar situation occurred with the nuts and peanut category. Two out of the six facilities (33%) met the criteria for this category on the questionnaire, but zero units of nuts or peanuts were found on any of the menus. Facility B offered the most aspects of the MedDi on their menu (12 items). Facility M offered the least aspects of the MedDi on their menu (4 items). Please note that signs of butter/margarine, sofrito, and olive oil were not present on any menu. This serves as a limitation because these foods are not typically listed on a menu, but they are on the V14Q. Appendix M displays the final coding framework for the themes (Iteration Two).

Table 6: *Frequency of Each Food Category on the Dining Menus, by Facility: Foods that Align with the Mediterranean Diet*

Food Category	Facility B	Facility C	Facility I	Facility J	Facility K	Facility M
Olive Oil	0	0	0	0	0	0
Vegetables	7	6	2	6	6	1

Fruits	3	1	2	1	1	0
Wine	0	0	0	0	0	0
Protein/Meat	0	1	0	0	1	0
Pasta	1	0	1	0	0	0
Rice	0	0	0	1	0	0
Nuts & Peanuts	0	0	0	0	0	0
Sofrito	0	0	0	0	0	0
Fish	1	0	0	3	0	1
Shellfish	0	0	0	0	0	1
Legumes	0	0	0	0	1	1

DISCUSSION

The study was designed to examine the extent to which Connecticut facilities attending to residents with Alzheimer's Disease are incorporating aspects of the MedDi into their meals.

Findings

After examining the results obtained by the three methods, it can be concluded that 100% of the participating facilities incorporate aspects of the MedDi into their meal plans. This is proven by all facilities having a MDS ≥ 6 (Table 4). The incorporation is both intentional and unintentional (Table 2, Q2; Appendix F) and to varying extents—as displayed by the MDS scores ranging from 6-10 (Table 4).

As depicted in Table 5, the percentage of facilities demonstrating high/low adherence was 50%/50%. Although, when triangulating the data, it became apparent that responses concerning the incorporation of MedDi foods fluctuated depending upon the tool used (questionnaire, supplemental questions, interviews and content analyses). This finding displays the importance of triangulation as evidenced by the following analysis: Facility D (along with Facility G) had the lowest MDS score of 6 (Table 4). On the questionnaire Facility D indicated, "No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet." This response correlates to their comparatively low MDS. Contrastingly, the same subject stated in their interview, "we do use that diet [the MedDi] in our facility now...we do utilize this diet so there are no deterrents." These findings emphasize that had this study only scrutinized data via one method (e.g. the questionnaire), prevalence would have been under/over reported. This was also reinforced when the responses to the supplemental questions were compared to the questionnaire. For example, only three out of the eleven facilities (27.3%) selected, "Yes, I intentionally provide/design meals that adhere to the Mediterranean Diet" (Table 2, Q2; Appendix F). However, this number alone is misleading as the questionnaire found that six facilities (50%) scored ≥ 8 on the MDS and, therefore, demonstrate "high adherence." This indicates that facilities unwittingly incorporate more aspects of the MedDi than they think.

Analysis of the menus found that each facility incorporated menu items that align with the MedDi into their meal plans (Table 6). Although non-MedDi food options were available, residents could still choose foods that would allow them to adhere to the MedDi. See Appendix N for an annotated menu.

Another finding is that subjects are incorporating the diet, but are incognizant of the pre-existing research emphasizing the link between cognitive function and the MedDi. According to the supplemental question responses (Appendix F), 4 out of the 11 subjects were unaware of the aforementioned link, yet two demonstrated "high adherence" according to their MDS (Facilities A & J). It is important to mention that the other two facilities also incorporate aspects of the MedDi (MDS=6 & 7). It is beneficial that subjects are incorporating the MedDi into meal plans. However, it is paramount that subjects are also cognizant of this link because ongoing implementation can improve the quality of life of residents by halting and preventing cognitive decline.

Fulfillment of Gaps in the Research

This study addresses several gaps in the pre-existing research. First, the targeted subjects: nutritionists, chefs, dining directors, and dieticians were not the subjects in any of the aforementioned studies. In the pre-existing studies, the cognitive function of people was studied in accordance with dietary choices. The subjects were those actually consuming the diet, not those planning the diets. Second, the setting of this study: prior studies did not mention if the subjects were gathered from specialized facilities. In this study, subjects were only gathered from specialized AD facilities with a memory care unit. Contrastingly, the studies mentioned in the literature review do not specify if the subjects are from facilities or individuals living at home. Third, and the most prominent gap filled was the extent to which specialized AD facilities are incorporating the MedDi into their meal plans. The pre-existing literature reiterated the link between the MedDi and curbed symptoms and effects of AD (Scarmeas, Stern, Tang, Mayeux, & Luchsinger, 2006), but not one study mentioned how prevalent the MedDi is within specialized AD facilities. This gap served as the foundation for this study.

Implications

The results of this study can spur facilities to intentionally incorporate as many aspects as possible of the MedDi into the meal plans for residents with AD. Those that were not previously aware of the correlation between the diet and cognitive function can now introduce the foods into dining plans with a meaningful purpose. As Facility L stated, "I think this topic is certainly something to be considered. I'll even pass it on up to my people and say we are due for a new menu, why don't we lean more in that direction. It can't hurt." In addition, the results of this study can inform the designers of meal plans—in and out of AD facilities—to allocate budgets to fund purchases of MedDi foods. The pre-existing research signifies that the prevalence of AD is increasing (Omar, 2019). Therefore, this study can inform the designers of meal plans at AD facilities—and on a broader scope all people taking care of an individual with AD—to be cognizant of the MedDi to help curb and deter AD symptoms (Hernandez-Galiot & Goni, 2017).

Limitations

As noted, some facilities omitted questions from the questionnaire (both V14Q and supplemental questions). While scores for these facilities were calculated proportionally, more data could have been analyzed had all subjects answered all questions. Another limitation to this study was the failure to acquire Facility L's questionnaire. Technical difficulties prevented Facility L from filling out the questionnaire. Two attempts via email were made to have them fill it out, but no response was returned. Had Facility L responded to the questionnaire the 50%/50% tie between the facilities for high/low adherence to the MedDi would have been broken. Also, limitations with the menus emerged as some facilities only provided dinner menus and others provided menus for all three meals. For example, Facility B showed the most signs of the MedDi, but they are also one of the two facilities that provided menus for all three meals (the other was Facility K). Also, because the menus only account for one day they do not capture the fact that facilities may incorporate more or less aspects of the MedDi on other days.

Areas for Future Research

This study's delimitations are catalysts to new areas of research. The subject pool can be expanded to include those responsible for the meals of individuals with AD that reside at home. Future research can also expand beyond Connecticut to include other geographic regions in the United States and globally. Alternate diets that assist with cognitive functions can also be researched. As noted, the Ketogenic Diet and MIND Diet have also been attributed to increased cognitive function (Rusek, Pluta, Ułamek-Kozioł, & Czuczwar, 2019; Omar, 2019). One could look into the prevalence of the aforementioned diets amongst facilities in Connecticut and elsewhere.

References

Cognitive Function. (n.d.) *Segen's Medical Dictionary*. (2011). Retrieved January 16 2020 from https://medical-dictionary.thefreedictionary.com/cognitive+function

Drewnowski, A., & Eichelsdoerfer, P. (2010). The Mediterranean diet: Does it have to cost more? *US National Library of Medicine National Institutes of Health*. https://doi.org/10.1017/S1368980009990462

Feart, C., Samieri, C., Rondeau, V., Amivera, H., Portet, F., Dartigues, J.-F., . . . Barberger-Gateau, P. (2009). Adherence to a Mediterranean Diet, Cognitive Decline, and Risk of Dementia. *JAMA Network*. https://doi.org/10.1001/jama.2009.1146

Gupta, Y., Lee, K. H., Choi, K. Y., Lee, J. J., Kim, B. C., & Kwon, G. R. (2019). Early diagnosis of Alzheimer's disease using combined features from voxel-based morphometry and cortical, subcortical, and hippocampus regions of MRI T1 brain images. *PLoS ONE*, *14*(10), e0222446. Retrieved from https://link.gale.com/apps/doc/A601726309/AONE?u=s1553&sid=AONE&xid=5b105851

Henríquez Sánchez, P., Ruano, C., de Irala, J., Ruiz-Canela, M., Martínez-González, M. A., & Sánchez-Villegas, A. (2012). Adherence to the Mediterranean diet and quality of life in the SUN Project. *European Journal of Clinical Nutrition*, *66*(3), 360. https://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=7&sid=65b20b0b-0904-4e72-b2b8-8eb500a00003%40sdc-v-sessmgr03

Hernández-Galiot, A., & Goñi, I. (2017). Adherence to the Mediterranean diet pattern, cognitive status and depressive symptoms in an elderly non-institutionalized population. Nutricion Hospitalaria, 34(2), 338.https://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=4&sid=43f3d7e9-150c-48c8-8ef3-b0bc34bd6d85%40sdc-v-sessmgr01

Leedy, P. D., & Ormrod, J. E. (2010). *Practical Research Planning and Design*. Pearson Education.

Martínez-González, Miguel & Corella, Dolores & Salas-Salvadó, Jordi & Ros, Emilio & Covas, María-Isabel & Fiol, Miguel & Wärnberg, Julia & Borau, Fernando & Ruiz-Gutierrez, Valentina & Lamuela-Raventós, Rosa M & Lapetra, Jose & Muñoz, Miguel & Alfredo, Martinez & Sáez, Guillermo & Serra-Majem, Lluis & Pinto, Xavier & Mitjavila, María & Tur, Josep A & Portillo, María & Estruch, Ramon. (2010). Cohort profile: design and methods of the PREDIMED study. International journal of epidemiology. 41. 377-85. 10.1093/ije/dyq250.

Martínez-González, Miguel & Garcia-Arellano, Ana & Toledo, Estefania & Salas-Salvadó, Jordi & Buil-Cosiales, Pilar & Corella, Dolores & Covas, María-Isabel & Schroder, Helmut & Borau, Fernando & Gómez-Gracia, Enrique & Fiol, Miguel & Ruiz-Gutierrez, Valentina & Lapetra, José & Lamuela-Raventós, Rosa M & Serra-Majem, Lluis & Pinto, Xavier & Muñoz, Miguel & Wärnberg, Julia & Ros, Emilio & Estruch, Ramon. (2012). A 14-Item Mediterranean Diet Assessment Tool and Obesity Indexes among High-Risk Subjects: The PREDIMED Trial. PloS one. 7. e43134. 10.1371/journal.pone.0043134.

Miles, M. B., & Huberman, A. M. (1994). *Qualitative data analysis: An expanded sourcebook*.

National Institute on Aging. (2017, May 16). What Is Alzheimer's Disease? Retrieved January 16, 2020, from National Institute on Aging website: https://www.nia.nih.gov/health/what-alzheimers-disease

Nicolson, G. L., & Ngwenya, D. R. (2001, October). Dietary Considerations for Patients with Chronic Illnesses and Multiple Chronic Infections: A Brief Outline of Eighteen Dietary Steps to Better Health. *Townsend Letter for Doctors and Patients*, (219), 62. Retrieved from https://link.gale.com/apps/doc/A78900838/AONE?u=s1553&sid=AONE&xid=9d019caa

Omar, S. H. (2019). Mediterranean and MIND Diets Containing Olive Biophenols Reduces the Prevalence of Alzheimer's Disease. International Journal of Molecular Sciences, 20(11), 2797. https://doi.org/10.3390/ijms20112797

Riley, M. E., & Volicer, L. (1990). Evaluation of a new nutritional supplement for patients with Alzheimer's disease. Journal of the American Dietetic Association, 90(3), 433+. Retrieved from https://link.gale.com/apps/doc/A8869565/AONE?u=s1553&sid=AONE&xid=c8fbebbd

Rusek, M., Pluta, R., Ułamek-Kozioł, M., & Czuczwar, S. J. (2019). Ketogenic Diet in Alzheimer's Disease. *International Journal of Molecular Sciences*, *20*(16), 3892. https://doi.org/10.3390/ijms20163892

Scarmeas, N., Stern, Y., Tang, M.-X., Mayeux, R., & Luchsinger, J. A. (2006). Mediterranean Diet and Risk for Alzheimer's Disease. *National Center for Biotechnology Information*. https://doi.org/10.1002/ana.20854

Schroder, Helmut & Fitó, Montserrat & Estruch, Ramon & Martínez-González, Miguel & Corella, Dolores & Salas-Salvadó, Jordi & Lamuela-Raventós, Rosa M & Ros, Emilio & Salaverría, Itziar & Fiol, Miguel & Lapetra, José & Vinyoles, Ernest & Gómez-Gracia, Enrique & Lahoz, Carlos & Serra-Majem, Lluis & Pinto, Xavier & Ruiz-Gutierrez, Valentina & Covas, María-Isabel. (2011). A Short Screener Is Valid for Assessing Mediterranean Diet Adherence among Older Spanish Men and Women. The Journal of nutrition. 141. 1140-5. 10.3945/jn.110.135566.

Shi, Z., El-Obeid, T., Li, M., Xu, X., & Liu, J. (2019). Iron-related dietary pattern increases the risk of poor cognition. Nutrition Journal, 18(1). Retrieved from https://link.gale.com/apps/doc/A600195990/AONE?u=s1553&sid=AONE&xid=c511a26a

Sofi, F., Macchi, C., Abbate, R., Gensini, G. F., & Casini, A. (2010). Effectiveness of the Mediterranean Diet: Can It Help Delay or Prevent Alzheimer's Disease? Journal of Alzheimer's Disease, 20(3), 795–801. https://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=7&sid=94959b26-3cb4-4ec7-a2f3-4a435a508d8b%40sdc-v-sessmgr01

Strauss, A. L. (2010). *Qualitative analysis for social scientists*. Cambridge, United Kingdom: Cambridge University Press.

Woodside, J. V., Gallagher, N. E., Neville, C. E., & McKinley, M. C. (2014). Mediterranean diet interventions to prevent cognitive decline-opportunities and challenges. European Journal of Clinical Nutrition, 68(11), 1241.

https://eds.a.ebscohost.com/eds/pdfviewer/pdfviewer?vid=1&sid=aaaed6af-8f4e-4c75-813f-ac6db2f7ea84%40sdc-v-sessmgr02

Yusufov, M., Weyandt, L. L., & Piryatinsky, I. (2017). Alzheimer's disease and diet: a systematic review. International Journal of Neuroscience, 127(2), 161–175. https://eds.b.ebscohost.com/eds/pdfviewer/pdfviewer?vid=8&sid=7fd7c485-465a-4ab6-95fd-75f5f86acb58%40pdc-v-sessmgr04

APPENDICES

Appendix A: *Permission for Questionnaire Instrument Utilization from Miguel Angel Martinez-Gonzalez*

Note. Crossed out is my name and my email. This was done to maintain anonymity. Also crossed out is Dr. Martinez-Gonzalez's email for his own privacy.

Utilization Request: "Validated 14-item Questionnaire of Mediterranean diet adherence"

Miguel Ángel Martínez González [redacted] Mon, Nov 25, 2019 at 1:58 AM
To: [redacted]

Dear [redacted]

You have our permission to use this tool. However, you need to send me (an email is enough) your commitment to quote always the following three sources:

-www.predimed.es
-Martínez-González et al. Cohort profile: design and methods of the PREDIMED study. Int J Epidemiol. 2012 Apr;41(2):377-85
-Schröder H, et al. A short screener is valid for assessing Mediterranean diet adherence among older Spanish men and women. J Nutr. 2011 Jun;141(6):1140-5.

Thank you for you interest in our work.
Sincerely,
miguel

Miguel A. Martinez-Gonzalez. MD, PhD, Univ. **Navarra** *(Prof. & Chair, Prev. Med. & Public Health)*
Harvard TH Chan School Public Health, Dpt. Nutrition *(Adjunct Prof.)*. ***CIBEROBN*** *(Group Coordinator)*,

Appendix B: *Questionnaire Sent to Participating Facilities*

Questionnaire: Dietary Choices within Facilities that Care for Residents with Alzheimer's Disease

This questionnaire is based on a study conducted by Martinez-Gonzalez et. al (2012).
Note: These questions pertain to what is provided/available to an individual resident at your facility. Thank you for completing the questionnaire. Your participation is greatly appreciated!

You are being asked to participate in a research study that is focused on dietary options within facilities that care for patients with Alzheimer's Disease. Please note that you have the ability to opt out of any question(s) with no penalty. The compiled results will not contain information that enables participant recognition. If you have any questions about this study, feel free to contact:

Researcher: ________________ Email:________________
Teacher:________________ Email:________________

By clicking "accept," I agree to participate in the study.

Accept

1. Do you provide meals utilizing olive oil as main culinary fat?

   Yes

   No

2. How much olive oil do you provide in a given day (including oil used for frying, salads, out-of-house meals, etc.)?

   > 4 Tablespoons

   < 4 Tablespoons

   4 Tablespoons

3. How many vegetable servings do you provide per day? (1 serving: 200 g [consider side dishes as half a serving])

   > 2 (>1 portion raw or as a salad)

   < 2 (< 1 portion raw or as a salad)

   2 (1 portion raw or as a salad)

4. How many fruit units (including natural fruit juices) do you provide per day?

   > 3

   < 3

   3

5. How many servings of red meat, hamburgers, or meat products (ham, sausage, etc.) do you provide per day? (1 serving: 100-150 g)

   > 1

   < 1

   1

6. How many servings of butter, margarine, or cream do you provide per day?

   > 1

< 1

1

7. How many sweet or carbonated beverages do you provide per day?

> 1

< 1

1

8. How many glasses of wine do you provide per week?

> 7

< 7

7

9. How many servings of legumes do you provide per week? (1 serving: 150 g)

> 3

< 3

3

10. How many servings of fish or shellfish do you provide per week? (serving: 100-150 g of fish or 4-5 units or 200 g of shellfish)

> 3

< 3

3

11. How many times per week do you provide commercial sweets or pastries (not homemade), such as cakes, cookies, biscuits, or custard?

> 3

< 3

3

12. How many servings of nuts (including peanuts) do you provide per week? (1 serving: 30 g)

> 3

< 3

3

13. Do you preferentially provide chicken, turkey, or rabbit meat instead of veal, pork, hamburger, or sausage?

Yes

No

14. How many times per week do you provide vegetables, pasta, rice, or other dishes seasoned with sofrito (sauce made with tomato and onion, leek, or garlic and simmered with olive oil)?

> 2

< 2

2

15. Prior to this questionnaire, were you aware of any link(s) between cognitive function and the Mediterranean Diet?

Yes, prior to this questionnaire I was aware of any link(s) between cognitive function and the Mediterranean Diet.

No, prior to this questionnaire I was not aware of any link(s) between cognitive function and the Mediterranean Diet.

16. Do you intentionally provide/design meals that adhere to the Mediterranean Diet?

Yes, I intentionally provide/design meals that adhere to the Mediterranean Diet.

No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet.

17. Do you provide/design meals that adhere to either the Ketogenic Diet or the MIND Diet?

Yes, I do provide meals that adhere to either the Ketogenic Diet or the MIND Diet.

No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet.

18. Do the meals you provide/design adhere to any particular diet? If so, please specify which diet(s). If not, please respond with "N/A."

19. If you are willing, please provide me with dining menus that display the foods provided to residents with Alzheimer's Disease (which may be the same menu for the general population that you serve). Please Email the menus using the Email: ____________

I will be providing menus.

20. Would you like to participate in a brief interview (10 minutes or less) over the phone? Please provide your name, phone number and/or Email to schedule a time.

Appendix C: *Consent Form*

Project Title: Analyzing the Prevalence of the Mediterranean Diet Within Connecticut Facilities that Care for Residents with Alzheimer's Disease

Introduction/Purpose:

You are being asked to participate in a research study that is focused on the extent to which the Mediterranean Diet is utilized in meals for those with Alzheimer's Disease. The purpose of the research is to determine if facilities are utilizing this diet and if so, to what extent.

Procedures:

As a participant of this study, you will be asked to fill out a questionnaire which assesses adherence to the Mediterranean Diet. At the end of the questionnaire I will ask if you would be willing to participate in an interview for a more in-depth conversation. Please note that interviews will be audio recorded. The audio recordings are for the sole purpose of transcribing the interviews. Your participation in the survey/questionnaire will require approximately 10 minutes. The interview portion will require an estimated 20 minutes. Additionally, I will request copies of your dining menus (if there is not a separate menu for Alzheimer's Disease residents that is still acceptable). Participation in the study is fully optional. If you feel uncomfortable answering any of the questions asked, you can opt out of any question(s). There will be no penalty for unanswered questions. Furthermore, if you wish to drop out of the study at any time you have the ability to do so. If you withdraw from the study after you have completed the questionnaire, I will remove you from the prospective interviewee pool (if you had indicated you would be willing to participate in an interview). When you indicate your withdrawal from the study, I will ask if the material already collected (the questionnaire data and menus) can still be used in my project.

Risks:

Your participation in this study involves no physical risks. As noted before, you have the ability to opt out of any particular question with no penalty. You are permitted to remain in the study if you leave question(s) unanswered. You also have the ability to withdraw from the study at any time.

Benefits:

A potential benefit to the study is increased awareness of the link between the Mediterranean Diet and cognitive function. This study may serve as a catalyst to curb further cognitive deterioration by increasing the incorporation of Mediterranean Diet foods into the meal plans for residents with Alzheimer's Disease. This study may not benefit you directly, but will improve the general understanding concerning the rate and extent to which Alzheimer's Disease facilities are utilizing the Mediterranean Diet.

Alternatives:

You have the alternative to choose not to participate in this research study.

Confidentiality:

Participation in this study will not result in a loss of privacy. Unless required by law, only I and my expert advisor will have access to your information. This study is for my AP score in the class AP Research. Therefore, the final paper which explains my study will be submitted to the College Board to be graded. To protect your identity and the identity of the facility you are affiliated with, I will assign to your facility a study code number. This means your name and your facility's name will not be released.

Data Collection:

The data will be stored on my password-protected laptop. The stored results will not contain information that enables participant recognition.

Subject's Rights:

Participation in this study is voluntary, you have the ability to withdraw from the study at any time. You have the authority to leave any question(s) unanswered without penalty. If you leave question(s) unanswered, you may remain in the study if desired.

Consent:

I agree to participate in the research study outlined above.

Name (printed), signature, date signed, E-mail address

Name (printed) of person obtaining consent, date signed

If you have any questions, please contact me or my Research Advisor.
My email: _____________
Research Advisor email: _____________

Appendix D: *Supporting Work for Proportional Scoring*

Table A: *Percentage for Each Question*

Question:	1	2	3	4	5	6	7	8**	9	10	11	12**	13	14*
% Met Criteria $\frac{x}{12}$ *(100)*	66.6	66.6	75	91.6	16.6	41.6	33.3	60	75	66.6	25	40	50	63.6
% Did not Meet Criteria $\frac{x}{12}$ *(100)*	33.3	33.3	25	8.33	83.3	58.3	66.6	40	25	33.3	75	60	50	36.4

*This question was omitted once amongst all the facilities, percentage was proportionally calculated (ex. $\frac{7}{11} = \frac{x}{12} \rightarrow 11x=84 \rightarrow x= 7.6$, *formula=* $\frac{7.6}{12}$ *(100)*

** This question was omitted twice amongst all the facilities, percentage was proportionally calculated (ex. $\frac{6}{10} = \frac{x}{12} \rightarrow 10x=72 \rightarrow x= 7.2$, *formula=* $\frac{7.2}{12}$ *(100)*)

Table B: *Results from the Questionnaire, Grouped by Facility*

Facility	A	B	C	D	E	F^^	G	H	I	J	K	M^^^
% Met of Total Criteria $\frac{x}{14}$ *(100)*	71.4	50	50	42.8	57.1	66.4	42.8	50	57.1	64.2	50	54.2
% Not Met by Total Criteria $\frac{x}{14}$ *(100)*	28.5	50	50	57.1	42.8	33.5	57.1	50	42.8	35.7	50	45.7

^^This facility omitted two questions, percentage was proportionally calculated= $\frac{8}{12} = \frac{x}{14} \rightarrow 12x=112 \rightarrow x= 9.3$, *formula=* $\frac{9.3}{14}$ *(100)*

^^^This facility omitted three questions, percentage was proportionally calculated= $\frac{6}{11} = \frac{x}{14} \rightarrow 11x=84 \rightarrow x= 7.6$, *formula=* $\frac{7.6}{14}$ *(100)*

Note: Facility L did not submit the questionnaire

Appendix E: *Justification for Supplemental Questions*

Justification for Supplemental Questions

Question	Justification
15.	This question was important because if a subject stated that they were aware of any link(s) between cognitive function and the Mediterranean Diet it could potentially substantiate their "high adherence" result. It will also ascertain if a facility intentionally or unintentionally incorporates aspects of the MedDi.
16.	This question was needed because it is important to gather a baseline, independent of the questionnaire results if a facility believes they incorporate the Mediterranean Diet into their meal plans.
17.	This question is important because the Ketogenic Diet and the MIND Diet have been discussed in pre-existing studies regarding their link(s) to cognitive function. If a facility clicked "yes", it could explain a potential low score on the Mediterranean Diet Score.
18.	It was important to note what other diet(s), if any, that facilities adhere to. This can substantiate a potential low score on the Mediterranean Diet Score because some facilities may already use an alternate diet. Additionally, this question brings up a future area of research: the prevalence of other diets (not the Mediterranean Diet) amongst facilities that care for residents with Alzheimer's Disease).
19.	This question was salient because it helped recruit questionnaire participants to send dining menus for the content analyses section.
20.	This question was needed as it helped recruit questionnaire participants to engage in an interview.

Appendix F: *Each Facility's Supplemental Questionnaire Responses*

Supplemental Questionnaire Responses by Facility (n=11)

	Question			
Facility	Q 1	Q 2	Q3	Q4
	Prior to this questionnaire, were you aware of any link(s) between cognitive function and the Mediterranean Diet?	Do you intentionally provide/design meals that adhere to the Mediterranean Diet?	Do you provide/design meals that adhere to either the Ketogenic Diet or the MIND Diet?	Do the meals you provide/design adhere to any particular diet? If so, please specify which diet(s). If not, please respond with "N/A."
A	"No, prior to this questionnaire I was not aware of any link(s) between cognitive function and the Mediterranean Diet."	"Yes, I intentionally provide/design meals that adhere to the Mediterranean Diet."	"Yes, I do provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"N/A"
B	"Yes, prior to this questionnaire I was aware of any link(s) between cognitive function and the Mediterranean Diet."	"No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"N/A"

C	"No, prior to this questionnaire I was not aware of any link(s) between cognitive function and the Mediterranean Diet."	"No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"N/A"
D	"Yes, prior to this questionnaire I was aware of any link(s) between cognitive function and the Mediterranean Diet."	"No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"Our diets are a mix of residents requests along with always available heart healthy choices."
E	"Yes, prior to this questionnaire I was aware of any link(s) between cognitive function and the Mediterranean Diet."	"Yes, I intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"Yes"
F	"Yes, prior to this questionnaire I was aware of any link(s) between cognitive function and the Mediterranean Diet."	"Yes, I intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"Specifically Mediterranean"

G	"No, prior to this questionnaire I was not aware of any link(s) between cognitive function and the Mediterranean Diet."	"No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"N/A"
H	"Yes, prior to this questionnaire I was aware of any link(s) between cognitive function and the Mediterranean Diet."	"No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"NCS*, NAS"**
I	"Yes, prior to this questionnaire I was aware of any link(s) between cognitive function and the Mediterranean Diet."	"No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"We make sure the residents have choices to order what they want to meet their dietary and nutritional needs."
J	"No, prior to this questionnaire I was not aware of any link(s) between cognitive function and the Mediterranean Diet."	"No, I do not intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"NAS**, sugar free, gluten free"

K	"Yes, prior to this questionnaire I was aware of any link(s) between cognitive function and the Mediterranean Diet."	"Yes, I intentionally provide/design meals that adhere to the Mediterranean Diet."	"No, I do not provide meals that adhere to either the Ketogenic Diet or the MIND Diet."	"Blue Zone Diet"

Note. Facility L did not fill out the questionnaire and therefore these open-ended questions. Facility M omitted responses to all supplemental questions and is therefore not included in this table.

*Understood to mean "No Concentrated Sweets"

**Understood to mean "No Added Salt"

Facility E only responded to Q 4 with "yes" without providing additional detail

Appendix G: *Interview Questions with Justification*

1. Briefly describe the main ingredients you incorporate into meals for residents.
   Justification: Shi, El-Obeid, Li, Xu, Liu, (2019), Yusufov, Weyandt, Piryatinsky, (2017), Hernandez-Galiot & Goni, (2017)

2. Briefly describe the method in which you plan meals that are served to residents with Alzheimer's Disease.
   Justification: This question provides an opportunity for justification if a facility does not adhere to the Mediterranean Diet. I would like to understand the thought process of the meal designers when creating the meal options.

3. Briefly describe what considerations you take into account when you plan meals that are served to residents with Alzheimer's Disease.
   Justification: It is important to determine the meal plan designers thought process when planning meals. This also is an opportunity for them to express any barriers, if any, such as budget.

4. Without disclosing information that will infringe upon resident confidentiality, please describe any correlations you have found between the foods you have provided and cognitive function.
   Justification: Sanchez, Ruano, Irala, Ruiz-Canela, Martinez-Gonzalez, Sanchez-Villegas (2012)

5. Were you previously aware that the Mediterranean Diet is linked to cognitive function? If so, how did you hear about this diet? If not, does this new knowledge provoke you to look into utilizing this diet in meals going forward?
   Justification: Yusufov, Weyandt, Piryatinsky, (2017), Sanchez, Ruano, Irala, Ruiz-Canela, Martinez-Gonzalez, Sanchez-Villegas, (2012), Feart, Samurai, Rondeau, et al., (2009), Scarmeas, Stern, Tang, Mayeux, & Luchsinger, (2006)

6. What are some factors that may deter you from providing the foods associated with the Mediterranean Diet?
   Justification: It is important to know the reasons behind the potential hesitations among facilities.

7. Do you think there are factors that deter residents from consuming the Mediterranean Diet? If so, please specify some factors.
   Justification: It is important to know what hurdles residents may face that may cause low consumption of the foods contained in the Mediterranean Diet.

8. Do you have any other thoughts regarding this topic you would like to share?
   Justification: This question allowed for interviewees to share information they felt was necessary and that did not apply to the aforementioned questions.

Appendix H: *Interview Transcriptions*

Color Code	Theme
Red	Aspects of the Mediterranean Diet
Dark Blue	Timing & Occurrence
Dark Purple	Team Efforts
Pink	Willingness to Incorporate Aspects of the Mediterranean Diet into Meal Plans and Change Menus
Orange	Budget Factors
Neon Yellow	Types of Diets
Navy	Food Presentation
Green	Incorporated Aspects of the Mediterranean Diet
Light Red	Ethnic & Upbringing Factors
Dark Green	Food Consumption Limitations
Light Blue	Importance of Diet
Light Pink	Awareness of the Mediterranean Diet
Mustard Yellow	Reservations Regarding Implementing Aspects of the Mediterranean Diet
Light Purple	Abiding to Legal Guidelines

Facility D

Can you briefly describe the main ingredients you incorporate into meals for residents?

"I would say that 90% of our vegetables are fresh vegetables. 10% are probably frozen and that is just mainly due to certain times like peas, corn; corn you can't get in the winter time so we buy frozen corn and frozen peas. Occasionally spinach we will buy frozen, but I'd say that 90% of our vegetables are fresh. Our potatoes are all fresh, nothing comes in a box. We incorporate fresh garlic on a daily basis. Turmeric, rosemary, tyme, basil--all fresh again, nothing is dried. In terms of protein we use munk fish or salmon, we would actually do flounder. Seasonally we do cod. We use fresh lemons, fresh oregano, I said garlic, white wine, and olive oil."

Briefly describe the method in which you plan meals that are served to residents with Alzheimer's Disease.

"So we as a team meet weekly. So it would be myself, my executive chef, my office manager, and my dietary supervisors. We try to meet at least weekly and go over the menus and what went well and what didn't go well. We also have to write these menus in coordination with our budget, our food budget costs and that comes from our financial office. I do that on a yearly basis--at the beginning of the year we write a budget for the year and we pertain to that budget monthly.

Briefly describe what considerations you take into account when you plan meals that are served to residents with Alzheimer's Disease.

"So diets would be number one, all the residents' therapeutic diets we have here in house. So we have purees, and your minced, chopped, multiple different diets. I would also say presentation and how the meals kind of present on the plate for all those different diets. So for instance it might look nice on a regular meal, a pasta, but on a puree pasta it might be more difficult making it look appealing. Colors also if there is fish like a white fish, we are not gonna put cauliflower on with that white fish, we might put a carrot or greenbean something like that to bring out the color on the plate and the garnishing and what not.

Without disclosing information that will infringe upon resident confidentiality, please describe any correlations you have found between the foods you have provided and cognitive function.

"Um to be honest I haven't--we probably do 700 meals a day here so it is kind of hard for me on my end. I talk to dieticians a little bit and we don't really get that information."

Were you previously aware that the Mediterranean Diet is linked to cognitive function? If so, how did you hear about this diet? If not, does this new knowledge provoke you to look into utilizing this diet in meals going forward?

"We do use that Diet in our building now. So I work for [Facility D], but I also work for [undisclosed company] and that's part of our programs, the Mediterranean Diet. So actually we are incorporating it this month into our facilities because it is national nutrition month (March). So yeah, we do incorporate it, the olive oil, the high fats, the avocados, the fish.

What are some factors that may deter you from providing the foods associated with the Mediterranean Diet?

"As I mentioned before, we do utilize this diet so there are no deterrents."

Do you think there are factors that deter residents from consuming the Mediterranean Diet? If so, please specify some factors.

"I think definitely ethnicity. I think European ethnicity, they wanna have that diet, they are used to that diet, especially if they grew up on that side of the land. Or grew up with families that incoorperated that diet in their daily adult life. So I think ethnicity 100% percent and health too we're in an environment now, in a world now where health is more important than any other time and I think it's just keeping up with the trends and keeping these residents informed of these trends.

Do you have any other thoughts regarding this topic you would like to share?

"Um no I'm pretty sure you know all about it so not much."

Facility L

Can you briefly describe the main ingredients you incorporate into meals for residents?

"Proteins, statches, vegetables"

Briefly describe the method in which you plan meals that are served to residents with Alzheimer's Disease.

"We get all our menus from corporate. It is a 5 week cycle that has been approved by a dietician."

Briefly describe what considerations you take into account when you plan meals that are served to residents with Alzheimer's Disease.

"We have special diets that we have to consider. We have a couple allergies, nothing serious at this time though there have been--seafood is usually the one. We have different levels of diet so we have regular, we have soft, we have ground, we have chopped, we have puree. We also have different beverages. So some people as they lose the ability to swallow correctly--their body can't do it anymore there's nectar and honey and pudding thickness in drinks. So we have speech pathologists that come and evaluate someone that we feel they changed their eating, a lot of time these guys will pocket stuff and we need to make sure that they're safe.

Without disclosing information that will infringe upon resident confidentiality, please describe any correlations you have found between the foods you have provided and cognitive function.

"I don't think that's something you see immediately. But it's certainly a factor if it continues on. One of the biggest issues with old people in this world and every other world that you go to, with old people is they didn't drink water. That's not something they did. They need to drink water. With each meal here they get juice and water and coffee. During the day they have snacks, they have water, they have this and that. But one of our biggest pushes is to get them to stay hydrated. And if they are not hydrated, their behaviors can be off the wall. Like you know you can end up in a hospital because of it. So we constantly, I constantly stress that they drink water. It's amazing how much it throws people off from just simply dehydration. So in that way, yes, if someone is not eating for awhile they're going to get weak and they will not be able to participate in activities and it becomes a negative spiral where the next thing you know, their evaluating them for their diet and they don't like the level or people don't like the purees. The thing about puree is no matter how nice you make it, it's still the texture. So yes absolutely, food does influence behavior, but not immediately that you see.

Were you previously aware that the Mediterranean Diet is linked to cognitive function? If so, how did you hear about this diet? If not, does this new knowledge provoke you to look into utilizing this diet in meals going forward?

"I am aware of it. Just because I am into food a lot. I think we do a lot of healthy things here on the menu and off the menu. There is one little complication and that's the sweet taste bud is the last to go. So, these guys that live here, if they could live off of sweets for the rest of their lives that's what they'd do. Men usually, the family says 'he never liked sweets but now that's all he wants, he wants ice cream and cookies' and I go well you came to the right place. So we balance that. But as far as the Mediterranean itself I think in a group setting it would be a lot more difficult than doing it at home. I'm sure, look at the little Italian guys that drink their red wine every day that followed the Mediterranean Diet all their lives. Yes they do live longer, yes they do get Alzheimers. So I think it certainly helps to have a healthy diet like that, but you still gotta get them to eat.

What are some factors that may deter you from providing the foods associated with the Mediterranean Diet?

"Pretty much everything I just said. I think our budget would cover it. I mean I use olive oil even though it costs more money. We do fish, a lot of fish. Cost would not be a factor, this company really wants the people to eat well and it's up to me to make it work. So obviously after twenty years I am doing something right."

Do you think there are factors that deter residents from consuming the Mediterranean Diet? If so, please specify some factors.

"I don't think so, again a lot of our residents are Italian and from Italy so it's normal to them. So I don't think that's a factor. A lot of this is--picture sushi, you eat with your eyes , then you eat with your mouth. If a plate presents well which I think is very important in this population, that everything looks beautiful that says 'eat me' versus a bunch of stuff on a plate which is something I strive with any new chefs that I bring in here. This crowd more than anyone else I think needs to look good because they have forgotten what the foods are called. So instead they go 'wow that looks really good' and they'll try it. So I think truthfully with any crowd, but especially these guys more so because a lot of times they know that they don't know in the beginning stages and it's very frustrating to them. So if they can look at a plate and go 'wow that looks good, I want to eat it' then we've accomplished what we want to accomplish."

Do you have any other thoughts regarding this topic you would like to share?

"I think this topic is certainly something to be considered. I'll even pass it on up to my people and say we are due for a new menu, why don't we lean more in that direction. It can't hurt. Again, these guys eat good here, we do good food here. Our food tastes good, looks good, but you can always do better. You never reach your goal and are like 'okay we are done now' so why not look in that direction and throw some more things in. We have to be careful of nuts and seeds and stuff like that, but most of the time I will do nuts here. We do have seven or eight soft diets that would not be able to have something like that, but we compensate with cooking a quarter with nuts and a quarter without so we do cover our bases with that. Another issue here and any place you deal with old people is teeth. These guys have teeth issues, that's why a lot of them end up with soft diets and even puree. It's not usually the teeth it's the swallowing mechanisms that's more of the problem. That's another consideration with this crowd. I think moving down the line it won't be such an issue because of implants and everything. Someone might have false teeth, but they don't fit properly because of the disease process so then they don't want them. Things are changing, the world of assisted living and dementia more and more people younger and younger are getting it. It's not uncommon for people in their sixties now to get it--seventies is very common and it did not used to be that way. It burns out younger for a lot of reasons and I think food is one of them. Food, stress, the whole schlemiel. So I think this whole world is evolving and there are also many many baby boomers that are going to traditional assisted living where it is still very independent. A lot of facilities you will see range from very

very independent living all the way down to the last stop. People can stay here until the last stop, but these are people who are paying a lot of money. The world of assisted living is changing."

Facility B

Can you briefly describe the main ingredients you incorporate into meals for residents?

"They make a lot of chicken and a lot of fish. They try to incorporate a lot of fresh fruits and vegetables."

Briefly describe the method in which you plan meals that are served to residents with Alzheimer's Disease.

"We do take a lot of feedback from people in the community. We have comment cards all over the different areas of the community. We do a lot of resident council meetings. We like to get their feedback on what they would like to be offered."

Briefly describe what considerations you take into account when you plan meals that are served to residents with Alzheimer's Disease.

"We take into account the population as a whole in terms of ethnicity. We also take into account the residents input as I mentioned in the last question. Everything also has to meet the nutritional standards in terms of providing adequate nutrients, calories, that kind of stuff so we definitely plan around that.

Without disclosing information that will infringe upon resident confidentiality, please describe any correlations you have found between the foods you have provided and cognitive function.

"The only thing I would say to that and it's not really from a nutrient standpoint, but more a food presentation standpoint would be we have the 'thrive program' where it's basically like a finger food program where the food is made in these specialized molds and wraps that the kitchen uses for our dementia patients. That plays a huge role and then being able to consume their meals without as much assistance as they might need as if it was something they were to eat with a fork and a knife. So that is improving their cognitive function at meal time to proceed themselves and pick up stuff with their hands. I guess it's not the nutrients of the food, but more the presentation of the food.

Were you previously aware that the Mediterranean Diet is linked to cognitive function? If so, how did you hear about this diet? If not, does this new knowledge provoke you to look into utilizing this diet in meals going forward?

"I probably have heard that back when I was in school. To be honest, our menus do--I mean their not perfect in terms of the Mediterranean Diet--but do offer compared to other facilities I have worked with. We do provide a lot more of like whole grains, fresh fruits and vegetables, meats."

What are some factors that may deter you from providing the foods associated with the Mediterranean Diet?

"Waste is a big thing to consider in a huge community like this. We don't use things timely and as efficiently as we could. You know utilize things across multiple recipes. With fresh products there is always the waste factor. Cost of course is always a concern. I don't deal too much to be honest with you regarding the food budget, but I know that's going to get mentioned anywhere."

Do you think there are factors that deter residents from consuming the Mediterranean Diet? If so, please specify some factors.

"In general we always have a percentage of people that are not concerned with what they eat and how they eat. They kind of want to stick with what they are used to and order hotdogs and cheeseburgers that kind of stuff off of our always available menu. Some people I think that are in their eighties or nineties are set in their ways of what they were raised on. I think they are not necessarily going to change, but then we also do have a small percentage that do want to learn while they're here.

Do you have any other thoughts regarding this topic you would like to share?

"I don't think so"

Facility K

Can you briefly describe the main ingredients you incorporate into meals for residents?

"We do 4 ounces of starch at lunch and supper. 4 ounces of vegetables at lunch and supper and then we 2 do starch portions at breakfast, it could be cereal, toast or a muffin. And the meat portions are 3 to 4 ounces depending on what the meal is. We do a lot of free starch, we do mashed potatoes, a lot of rice like rice pilaf or brown rice, risotto, different types of rice. We use grains. We do roasted potato, we do sweet potato, potato mashed. And for vegetables there's a wide variety, but we do a lot of broccoli and carrots. We have brutal sprouts we have turnips, green beans, asparagus. We are always using peppers and onions in our meals. So it is a vegetable, but they're in a lot of our meals. Mushrooms we have and we use olive oil, extra virgin olive oil to roast our vegetables or we add once the vegetables are cooked. We use a canola oil/extra virgin olive oil blend to fry. Everybody gets offered a salad at lunch or supper also so there they can get their raw veggies.

Briefly describe the method in which you plan meals that are served to residents with Alzheimer's Disease.

"We have guidelines that tell us exactly how much milk we have to offer and meat equivalents and vegetables. Our food director **undisclosed name** has been trying to incorporate the Blue Zone Diet and the Mediterranean Diet into our menus. So he's been going through a lot of recipes. We meet quarterly to go over the menus, every three months. So we do a major menu overhaul twice a year where we re-do the whole menu. We meet every month to do a change here and a change there. For example, for the spring we are going to do a whole new menu. A 3-week cycle is going to be 63 meals we are going to have to come up with. And that will last for the spring and summer. We will meet a couple months in to see what's working and what's not to see what changes we need to make. And then in the fall and in the winter we do a lot more of comfort foods. Stuff you would eat more in the fall and winter versus the summer."

Briefly describe what considerations you take into account when you plan meals that are served to residents with Alzheimer's Disease.

"As far as the budget we take considerations in saving money, but also keeping our quality of food high. And the way we do that is by making more of our own food. For example, we used to buy pureed fruit and it would be let's say 90 dollars a case, but now we buy whole fruit canned at a third of the price and we puree our own. We found a lot of different methods where we could--say instead of buying stuffed roasted chicken breast for 100 dollars a case, we can buy raw chicken and make our own stuffing for a fraction of the price and we can make our own fresh, stuffed chicken. So we can have quality products at a lower cost. That's something we have been doing for the last couple of years, which has contributed to our success. We also meet with the families and the residents and staff to find out what's working and what's not working when we rate the menus. We once put sauerkraut on there and they all said that nobody liked it. The families said they didn't like it, they also had a hard time chewing. A lot of our residents also have very few teeth too, we have to take that into account also--but we find out what they like and what they don't like.

Without disclosing information that will infringe upon resident confidentiality, please describe any correlations you have found between the foods you have provided and cognitive function.

"As far as cognitive function, we are trying to incorporate the Blue Zone Diet into our menus because they have found that that helps cognitively with anyone that has Alzheimer's Disease. And they have a couple studies done on the Mediterranean Diet also that show that will definitely help. So that is why we have kind of moved our menus over to those two diets. There are more beans and legumes on the menu, definitely more than we've ever had before. Like I said before we have an olive oil/canola oil blend so we are trying to improve the oils we use even if it is just for pan frying, we are using more extra-virgin olive oil. We are definitely trying to use more sweet potatoes for example and we have a lot more fish on the menu than we used to. We are doing minimal meat portions also. For example, we are not going to put a one pound T-bone steak on the plate, which would be phenomenal if we could, but we do the minimal four ounces you know just a few slices of meat and try to help that complement a healthy starch and healthy vegetables.

Were you previously aware that the Mediterranean Diet is linked to cognitive function? If so, how did you hear about this diet? If not, does this new knowledge provoke you to look into utilizing this diet in meals going forward?

"Yes, we both were aware that it helps and that is why we are working to incorporate it into our menus. Basically we read about it, that's how we know it is helpful. We go online and check resources and check menus and sort of look. We also learned that we can't do a complete overhaul, we have to take baby steps into this. If we just did a whole Mediterranean Diet menu, the first thing that they would say is 'where is my meatloaf, where are my buttery mashed potatoes?' So we have to do trial and error. We have to try it, put it out there and get some feedback and then go from there. A lot of the generations that are here are in their eighties and nineties, they're all meat and potatoes, that's all they ate their whole life. So we also have to make food that they recognize. We once put food in a pita pocket and I remember that none of them knew what it was so we also have to take that into consideration.

What are some factors that may deter you from providing the foods associated with the Mediterranean Diet?

"Yes, the families. I meet with the resident's families daily, pretty much every family. We have 120 residents here so we meet with the families for each (10:25)unit. So basically we have four units which 30 people live on. We are in contact with the families at all times meeting with them and if somebody says 'you know my mother will never follow that diet, that's not something she would follow and I don't want her on it' then I would have to make a separate menu for that person. This is so I can make sure that they're likes and needs are available. And the amount of meat, we have specific guidelines we have to follow as far as our DTA to our state regulations. So I can't just put like beans, spinach, and asparagus on a plate and serve it, I have to meet standards that are given to me and the guidelines we have to follow. So some of the menus that we are finding there are no meat in them and there's not significant protein sources. That would deter us also, meeting our guidelines.

Do you think there are factors that deter residents from consuming the Mediterranean Diet? If so, please specify some factors.

"There are definitely factors. With our population that lives here a lot of them with Alzheimer's Disease you're going to have chewing and swallowing disabilities. And I would say that probably 90% of the people here are left with a form of dysphagia where they cannot swallow. There are 59 steps to chewing and swallowing food that we do automatically and they lose that as they're going through the disease. We have to change our diets around that. We do a more modified diet where it is a lot of chopped up foods and we do a puree diet where everything is almost like a baby food consistency. We also do a liquid diet because some people can drink, but they can't eat so we actually make the meal into a soup. And I have numerous supplements. Some people cannot tolerate any food at all and I just have to give them like an Ensure or a Boost supplement that gets all their calories and proteins in. Where if you were in a regular resting home where everybody here has Alzheimer's Disease, where if they didn't have Alzheimer's Disease some people would put a tube feed in to provide their calories or their proteins. We can't do that here because everybody has Alzheimer's Disease and it puts the people at risk because they don't know what that is and most of them will just pull it out. We have had them in the past but either the resident themself would pull it out and their roommate doesn't know what it is and they'll pull it out. We can't risk by being in this population with the tube feeding so if they do need to have one, they will go somewhere else for that.

Do you have any other thoughts regarding this topic you would like to share?

"Yes, we would like to do more Blue Zone diet and more Mediterranean Diet definitely, but we are up against some challenges that we mentioned previously. The stage of people when they move from regular diet to modified diet and puree diet, their stages of palatability change. Their families wanting certain things, not wanting to try new things for their family members. For us what we're trying to do is give education before we roll out with more vegetable based meals and move away from a lot of meat-based and a lot of unhealthy starches. Try to educate the families, we are working with the families to teach them more about the diet and how it's gonna help their loved one that lives here. Only because a lot of them say 'you know this is it for them' which I understand too. They're only here for a year or two some of them so they just want to eat whatever they want. They're not going to learn about the healthy aspects of the Mediterranean Diet, they just want to have ice cream and cookies and whatever they want. So we have to go along, kind of see where the families are at--that is why everyone is so different here. We are trying to make it homelike also, we don't want it to be so strict. This is their home and they are here. If they were to go home and they're going to eat a whole bag of m&ms, then you know we try to limit how much they eat, but if the families are bringing them in extra stuff and they're eating it and then if they're alright with that then we let them have whatever they want.

Instead of promoting longer life with the Mediterranean Diet and the Blue Zone Diet, we are trying to promote quality of life because people are at the end stages of their lives and some families don't want to prolong that with a healthier diet that they think they might not enjoy as much. So I guess what we're trying to promote is if you eat this diet you will have fewer symptoms, your blood sugars will look better, there's less sodium so their blood pressure is going to look better, less pills. So we are trying to tell people if you eat this diet, then you'll need less pills and you'll feel better. It's not just gonna extend your life, but you will feel better on a day to day and that's the message we are trying to get across for our population. Again, if this was a restaurant or any other nursing home without dementia, residents might be a little easier. We can change the menu and they can try it, but yeah, we are doing our best.

Appendix I: *Interviews Second Iteration, Final Coding Framework*

A. Aspects of the Mediterranean Diet
- 1A1 — Foods found on the questionnaire/instrument by Martinez-Gonzalez et al.

B. Timing & Occurrence
- 1B1 — Reasons for purchasing certain foods (ex. weather)
- 1B2 — Frequency of meeting with associates
- 1B3 — Frequency of meeting with residents & families
- 1B4 — Occurrence of certain foods (ex. more vegetables available at dinner time)

C. Team Efforts
- 1C1 — Resident's input
- 1C2 — Families' input
- 1C3 — Expert's input (chefs, speech pathologists, dining directors, office managers)

G. Food Presentation
- 1G1 — Strategic color choices
- 1G2 — Garnishing
- 1G3 — Visual Appeal
- 1G4 — Specialized molds/wraps

H. Incorporated of Aspects of the Mediterranean Diet
- 1H1 — Mention if diet is in use
- 1H2 — Methods of incorporation

I. Ethnic & Upbringing Factors
- 1I1 — Mention of geographical regions
- 1I2 — Follow diet of their upbringing
- 1I3 — How residents were raised (ex. use foods that residents will recognize)
- 1I4 — Generational reasons

J. Food Consumption Limitations
- 1J1 — Limited swallowing ability
- 1J2 — Lack of teeth & Difficulty chewing
- 1J3 — Certain food textures
- 1J4 — Desire sweet foods
- 1J5 — Usage of dietary supplements

D. Willingness to Incorporate Aspects of the Mediterranean Diet into Meal Plans and Change Menus

- 1D1 — Mention of future development
- 1D2 — Discussion of "foods that went well"
- 1D3 — Mention of improvements to the menus (ex. re-do)

E. Types of Diets
- 1E1 — Mention of dietary restrictions (ex. allergies)
- 1E2 — Mention of special/modified diets (puree, chopped, minced, soft)
- 1E3 — The Mediterranean Diet

1E4 — The Blue Zone Diet

F. Budget Factors

1F1 — Mention of food cost or money
1F2 — Mention of food Budget
1F3 — Cost efficiency & saving money

K. Importance of Diet

1K1 — Drinking water
1K2 — Fewer symptoms
1K3 — Lower blood Sugars
1K4 — Less pills needed
1K5 — Improved quality of life

L. Awareness of the Mediterranean Diet

1L1 — Mentioned awareness
1L2 — Mentioned pre-existing research
1L3 — Reading about the Mediterranean Diet
1L4 — Online Resources

M. Reservations Regarding Implementing Aspects of the Mediterranean Diet

1M1 — Difficulties in a group setting
1M2 — Managing food waste (ex. fresh foods perish quickly)
1M3 — Resident's lack of concern regarding diet & unwillingness to try new foods
1M4 — Large change (ex. limiting meat availability can be problematic)
1M5 — Residents not able to recognize foods
1M6 — Stage of life

N. Abiding to Nutritional Guidelines

1N1 — Mention of required quantities

1N2 — Mention of nutritional standards
1N3 — State regulations & guidelines

Appendix J: *Interview Quotes Regarding each Theme, by Facility*

Interview Quotes Regarding each Theme, by Facility

Theme	Facility B	Facility D	Facility K	Facility L
Aspects of the Mediterranean Diet	"They make a lot of chicken and a lot of fish. They try to incorporate a lot of fresh fruits and vegetables." "We offer more compared to other facilities I have worked with. We do provide a lot more of like whole grains, fresh fruits and vegetables, meats."	"...our vegetables are fresh vegetables...like peas and corn" "Occasionally spinach we will buy frozen, but I'd say that 90% of our vegetables are fresh. Our potatoes are all fresh, nothing comes in a box." "So yeah, we do incorporate it, the olive oil, the high fats, the avocados, the fish."	"We do mashed potatoes, a lot of rice like rice pilaf or brown rice, risotto, different types of rice. We use grains. We do roasted potato, we do sweet potato, potato mashed. And for vegetables there's a wide variety, but we do a lot of broccoli and carrots. We have brutal sprouts we have turnips, green beans, asparagus. We are always using peppers and onions in our meals. So it is a vegetable, but they're in a lot of our meals. Mushrooms we have and we use olive oil, extra virgin olive oil to roast our vegetables or we add once the vegetables are cooked. We use a canola oil/extra virgin olive oil blend to fry."	"Proteins, starches, vegetables" "I use olive oil even though it costs more money. We do fish, a lot of fish."
Timing/Occurrence	N/A	10% [of our vegetables] are probably frozen and that is just mainly due to certain times like peas, corn; corn you can't get in the winter time so we buy frozen corn and frozen peas. "We incorporate fresh garlic on a daily basis… seasonally we do cod." "We as a team meet weekly… It is a 5 week cycle [the menus]."	"We do 4 ounces of starch at lunch and supper. 4 ounces of vegetables at lunch and supper and then we 2 do starch portions at breakfast…" "Everybody gets offered a salad at lunch or supper also so there they can get their raw veggies." "A 3-week cycle is going to be 63 meals we are going to have to come up with. And that will last	"It [the dining menus] is a 5 week cycle" "I don't think that's [influence on cognitive function] something you see immediately. But it's certainly a factor if it continues on." "So yes absolutely, food does influence behavior, but not immediately that you see."

			for the spring and summer.”	
Team Efforts	“We do take a lot of feedback from people in the community. We have comment cards all over the different areas of the community. We do a lot of resident council meetings.”	“So we as a team meet weekly. So it would be myself, my executive chef, my office manager, and my dietary supervisors.”	“Our food director...has been trying to incorporate the Blue Zone Diet and the Mediterranean Diet into our menus. So he’s been going through a lot of recipes. We meet quarterly to go over the menus, every three months.” “We also meet with the families and the residents and staff to find out what’s working and what’s not working when we rate the menus. “I meet with the resident’s families daily, pretty much every family. We have 120 residents here so we meet with the families for each unit.” “We are in contact with the families at all times meeting with them and if somebody says ‘you know my mother will never follow that diet, that’s not something she would follow and I don’t want her on it’ then I would have to make a separate menu for that person.”	“We get all our menus from corporate… that has been approved by a dietician.” “So we have speech pathologists that come and evaluate someone that we feel they changed their eating…”
Willingness to Incorporate Aspects of the Mediterranean Diet into Meal Plans and Change Menus	“We like to get their [the community’s] feedback on what they would like to be offered.” “We also take into account the residents input”	“We try to meet at least weekly and go over the menus and what went well and what didn’t go well.”	“So we do a major menu overhaul twice a year where we re-do the whole menu. We meet every month to do a change here and a change there. For example, for the spring we are going to do a whole new menu.” “We will meet a couple months in to see what’s working and what’s not to see what changes we need to make.” “we are trying to improve the oils we use even if it is just for pan frying, we are using more	“I think this topic is certainly something to be considered. I’ll even pass it on up to my people and say we are due for a new menu, why don’t we lean more in that direction. It can’t hurt.” “Our food tastes good, looks good, but you can always do better. You never reach your goal and are like ‘okay we are done now’ so why not look in that direction and throw some more things in.”

			extra-virgin olive oil. We are definitely trying to use more sweet potatoes for example and we have a lot more fish on the menu than we used to. We are doing minimal meat portions also."	
Types of Diets	N/A	"So diets would be number one, all the residents' therapeutic diets we have here in house. So we have purees, and your minced, chopped, multiple different diets."	"...we would like to do more Blue Zone diet and more Mediterranean Diet definitely" "As far as cognitive function, we are trying to incorporate the Blue Zone Diet into our menus because they have found that that helps cognitively with anyone that has Alzheimer's Disease. "We do a more modified diet where it is a lot of chopped up foods and we do a puree diet where everything is almost like a baby food consistency. We also do a liquid diet because some people can drink, but they can't eat so we actually make the meal into a soup."	"We have special diets that we have to consider. We have a couple allergies, nothing serious at this time though there have been--seafood is usually the one. We have different levels of diet so we have regular, we have soft, we have ground, we have chopped, we have puree… we do have seven or eight soft diets."
Budget Factors	"Cost of course is always a concern. I don't deal too much to be honest with you regarding the food budget, but I know that's going to get mentioned anywhere."	"We also have to write these menus in coordination with our budget, our food budget costs and that comes from our financial office. I do that on a yearly basis--at the beginning of the year we write a budget for the year and we pertain to that budget monthly."	"As far as the budget we take considerations in saving money, but also keeping our quality of food high. And the way we do that is by making more of our own food."	"I think our budget would cover it [the Mediterranean Diet]. I mean I use olive oil even though it costs more money…cost would not be a factor, this company really wants the people to eat well and it's up to me to make it work."
Food Presentation	"a food presentation standpoint would be we have the 'thrive program' where it's basically like a finger food program where the food is made in these specialized molds and wraps that the kitchen uses for our dementia patients."	"I would also say presentation and how the meals kind of present on the plate for all those different diets. So for instance it might look nice on a regular meal, a pasta, but on a puree pasta it might be more difficult making it look appealing. Colors also if there is fish	N/A	"...you eat with your eyes , then you eat with your mouth. If a plate presents well which I think is very important in this population, that everything looks beautiful that says 'eat me' versus a bunch of stuff on a plate which is something I strive with any new chefs that I bring in here. This

		like a white fish, we are not gonna put cauliflower on with that white fish, we might put a carrot or green bean something like that to bring out the color on the plate and the garnishing and what not."		crowd more than anyone else I think needs to look good because they have forgotten what the foods are called. So instead they go 'wow that looks really good' and they'll try it. So I think truthfully with any crowd, but especially these guys more so because a lot of times they know that they don't know in the beginning stages and it's very frustrating to them. So if they can look at a plate and go 'wow that looks good, I want to eat it' then we've accomplished what we want to accomplish."
Incorporated of Aspects of the Mediterranean Diet	"To be honest, our menus do--I mean they're not perfect in terms of the Mediterranean Diet--but do offer compared to other facilities I have worked with."	"We do use that diet [the Mediterranean Diet] in our building now." "So actually we are incorporating it this month into our facilities because it is national nutrition month" "...we do utilize this diet so there are no deterrents."	"Instead of promoting longer life with the Mediterranean Diet and the Blue Zone Diet, we are trying to promote quality of life because people are at the end stages of their lives and some families don't want to prolong that with a healthier diet that they think they might not enjoy as much."	N/A
Ethnic/Upbringing Limitations	"Some people I think that are in their eighties or nineties are set in their ways of what they were raised on. I think they are not necessarily going to change but then we also do have a small percentage that do want to learn while they're here." "We take into account the population as a whole in terms of ethnicity."	"I think definitely ethnicity. I think European ethnicity, they wanna have that diet, they are used to that diet, especially if they grew up on that side of the land. Or grew up with families that incorporated that diet in their daily adult life. So I think ethnicity 100% percent."	"A lot of the generations that are here are in their eighties and nineties, they're all meat and potatoes, that's all they ate their whole life. So we also have to make food that they recognize."	"I don't think so, again a lot of our residents are Italian and from Italy so it's normal to them. So I don't think that's a factor."
Food Consumption Limitations	" ...the food is made in these specialized molds and wraps that the kitchen uses for our dementia patients. that	N/A	"they also had a hard time chewing. A lot of our residents also have very few teeth too, we have to take that into account also--but we find	"We also have different beverages. So some people as they lose the ability to swallow correctly--their body can't do it anymore…"

	plays a huge role and then being able to consume their meals without as much assistance as they might need as if it was something they were to eat with a fork and a knife. So that is improving their cognitive function at meal time to proceed themselves and pick up stuff with their hands."		out what they like and what they don't like." "...a lot of them with Alzheimer's Disease you're going to have chewing and swallowing disabilities. And I would say that probably 90% of the people here are left with a form of dysphagia where they cannot swallow. There are 59 steps to chewing and swallowing food that we do automatically and they lose that as they're going through the disease." "And I have numerous supplements. Some people cannot tolerate any food at all and I just have to give them like an Ensure or a Boost supplement that gets all their calories and proteins in. Where if you were in a regular resting home where everybody here has Alzheimer's Disease, where if they didn't have Alzheimer's Disease some people would put a tube feed in to provide their calories or their proteins. We can't do that here because everybody has Alzheimer's Disease and it puts the people at risk because they don't know what that is and most of them will just pull it out."	"...a lot of time these guys will pocket stuff and we need to make sure that they're safe." "And if they are not hydrated, their behaviors can be off the wall." There is one little complication and that's the sweet taste bud is the last to go. So, these guys that live here, if they could live off of sweets for the rest of their lives that's what they'd do…so we balance that." Another issue here and any place you deal with old people is teeth. These guys have teeth issues, that's why a lot of them end up with soft diets and even puree. It's not usually the teeth it's the swallowing mechanisms that's more of the problem. That's another consideration with this crowd."
Awareness of the Mediterranean Diet	N/A	N/A	"And they have a couple studies done on the Mediterranean Diet also that show that will definitely help." "Yes, we both were aware that it helps and that is why we are working to incorporate it into our menus. Basically we read about it, that's how we know it is helpful. We go online and	"I am aware of it. Just because I am into food a lot."

			check resources and check menus and sort of look."	
Reservations Regarding Implementing Aspects of the Mediterranean Diet	"Waste is a big thing to consider in a huge community like this. We don't use things timely and as efficiently as we could. You know utilize things across multiple recipes. With fresh products there is always the waste factor." "In general we always have a percentage of people that are not concerned with what they eat and how they eat. They kind of want to stick with what they are used to and order hotdogs and cheeseburgers that kind of stuff off of our always available menu."	"As I mentioned before, we do utilize this diet so there are no deterrents."	"We also learned that we can't do a complete overhaul, we have to take baby steps into this. If we just did a whole Mediterranean Diet menu, the first thing that they would say is 'where is my meatloaf, where are my buttery mashed potatoes?' So we have to do trial and error." "We once put food in a pita pocket and I remember that none of them knew what it was so we also have to take that into consideration." "The stage of people when they move from regular diet to modified diet and puree diet, their stages of palatability change. Their families wanting certain things, not wanting to try new things for their family members." "They're only here for a year or two some of them so they just want to eat whatever they want. They're not going to learn about the healthy aspects of the Mediterranean Diet, they just want to have ice cream and cookies and whatever they want."	"But as far as the Mediterranean itself I think in a group setting it would be a lot more difficult than doing it at home." "We have to be careful of nuts and seeds and stuff like that, but most of the time I will do nuts here."
Abiding to Nutritional Guidelines	"Everything also has to meet the nutritional standards in terms of providing adequate nutrients, calories, that kind of stuff so we definitely plan around that."	N/A	"We have guidelines that tell us exactly how much milk we have to offer and meat equivalents and vegetables." And the amount of meat, we have specific guidelines we have to follow as far as our DTA to our state regulations. So I can't just put like beans, spinach, and	N/A

			asparagus on a plate and serve it, I have to meet standards that are given to me and the guidelines we have to follow…that would deter us also, meeting our guidelines."	
Importance of Diet	N/A	N/A	"we're trying to promote is if you eat this diet you will have fewer symptoms, your blood sugars will look better, there's less sodium so their blood pressure is going to look better, less pills. So we are trying to tell people if you eat this diet, then you'll need less pills and you'll feel better. It's not just gonna extend your life, but you will feel better on a day to day and that's the message we are trying to get across for our population."	"One of the biggest issues with old people in this world and every other world that you go to, with old people is they didn't drink water. That's not something they did. They need to drink water… one of our biggest pushes is to get them to stay hydrated" "So in that way, yes, if someone is not eating for a while they're going to get weak and they will not be able to participate in activities and it becomes a negative spiral…"

Appendix K: *Menu Analyses First Iteration*

Initial Themes for Menu Analysis

Theme 1 Foods that Align with the Mediterranean Diet Based on the V14Q	Theme 2 Foods that Do Not Align with the Mediterranean Diet Based on the V14Q
Olive Oil	Beef
Vegetables	Hamburger
Fruits	Ham
Wine	Sausage
Legumes	Butter
Nuts	Margarine
Peanuts	Cream
Chicken	Sweet/Carbonated Beverages
Turkey	Commercial Sweets (cookies, cakes, custard, pastries)
Rabbit Meat	Pork
Veal	All other foods on the menu not mentioned
Pasta	
Rice	
Sofrito	
Fish	
Shellfish	

Appendix L: *Second Iteration of Menu Analyses*

Foods that Align with the Mediterranean Diet on the Menus (Martinez-Gonzales et al.)

Food Category	Facility B	Facility C	Facility I	Facility J	Facility K	Facility M
Olive Oil						
Vegetables	Potato Leek Soup Mixed Vegetables Yellow Squash Roasted Potato Medley Vegetable Soup Honey Glazed Brussel Sprouts Tossed Green Salad	Minestrone Soup Tossed Salad Green Peas Butternut Squash O'Brien Potatoes Whipped or Baked Potato	Butternut Squash Garden House Salad	Mixed Green Salad Cucumber Tomato Mushrooms Steamed Broccoli Garden Vegetable Blend	Mashed Potatoes Steamed Cabbage Carrots Lettuce Tomato Pickle Chips	Caesar Salad
Fruits	Stewed Prunes Banana Diced Peaches	Fruit Cup	Apple Soup (chicken broth) Fresh Fruit	Fresh Fruit Cup	Fruit	
Wine						
Protein/Meat		Chicken Breast Bruschetta			Chicken Salad Sandwich	
Pasta	Baked Manicotti with Marinara Sauce		Spaghetti			
Rice				Rice Pilaf		
Nuts & Peanuts						
Sofrito						
Fish	Pan Seared Salmon			Baked		Grilled Salmon

				Tilapia Tuna Salad Tuna Melt		
Shellfish						Shrimp Cocktail
Legumes					Bean Salad Sandwich	Red Bean and Lentil Stew

Foods that Do Not Align with the Mediterranean Diet on the Menus (Martinez-Gonzales et al.)

Food Category	Facility B	Facility C	Facility I	Facility J	Facility K	Facility M
Protein/Meat		Roast Pork Tenderloin	Steak	Beef Tips Cheeseburger	Corned Beef Pot Roast Ham and Cheddar Sandwich	Rack of Lamb Classic Bacon, Lettuce,Tomato Sandwich Filet Mignon
Butter & Margarine	Butter Margarine					
Cream						
Sweet & Carbonated Beverages	Orange Juice Coffee, DeCaf Tea, DeCaf Arnold Palmer Iced Tea	Assorted Soda Juice Coffee Tea			Juice	
Commercial Sweets	Marble Cake with and without Frosting	Homemade Baked Treats	Assorted Desserts	Cheesecake Ice Cream	Carrot Cake	NY Cheesecake
Other Foods not Outlined in the V14Q	Assorted Cereal Scrambled Eggs French Toast Bacon White & Whole Wheat Toast Beverages Milk, Skim, Ice	Condiments Salad Dressing & Gravy Beverages Milk	Ham & Potato Casserole	Cottage Cheese	Hash Browns Cereal Milk Condiments Brown Sugar Potato Chips Vegetable Frittata with Onions, Peppers, and	

Water	Sauteed Mushrooms
Condiments	
Jelly,	
Salt,	
Pepper,	
Sugar,	
Sugar,	
Syrup	
Bacon, Lettuce, Tomato Sandwich	
Cream of Wheat	
Broccoli Quiche	

Appendix M: *Menu Final Coding Framework Separated by Foods that Would/Would Not Score a Point on the Mediterranean Diet Score*

Factor 1: Foods that would score one point for the Mediterranean Diet score (Martinez-Gonzalez et al.)

1A. Olive Oil

1B. Vegetables
- 1B1 — Mention of Salad & Vegetable Blends
- 1B2 — Lettuce (ex. romaine)
- 1B3 — Fresh Vegetables (ex. cucumber, tomato, broccoli, butternut squash)
- 1B4 — Vegetable Soup & Stew (ex. potato leek soup, minestrone soup, butternut squash soup)
- 1B5 — Pickle Chips
- 1B6 — Mashed, Steamed Vegetables

1C. Fruits
- 1C1 — Mention of fresh fruits
- 1C2 — Fruit compotes
- 1C3 — Stewed fruits & Diced Fruits
- 1C4 — Fruit Soups (ex. apple soup)

1D. Wine

1E. Protein/Meat
- 1E1 — Chicken Breast Bruschetta
- 1E2 — Chicken Salad Sandwich

1F. Pasta
- 1F1 — Spaghetti

1I. Sofrito

1J. Fish
- 1J1 — Tilapia
- 1J2 — Tuna & Tuna Melt
- 1J3 — Salmon

1K. Shellfish
- 1K1 — Shrimp

1L. Legumes
- 1L1 — Bean Salad
- 1L2 — Red Bean & Lentil Stew

1F2 — Baked Manicotti with Marinara Sauce

1G. Rice
1G1 — Rice Pilaf

1H. Nuts & Peanuts

Factor 2: Foods that would not score one point for the Mediterranean Diet score (Martinez-Gonzalez et al.)

2A. Protein/Meat
2A1 — Bacon
2A2 — Corned Beef
2A3 — Pot Roast
2A4 — Ham
2A5 — Lamb
2A6 — Steak (ex. filet mignon) & Beef Tips
2A7 — Cheeseburger
2A8 — Pork Tenderloin

2B. Butter & Margarine

2C. Cream

2D. Sweet & Carbonated Beverages
2C1 — Fruit Juices
2C2 — Coffee
2C3 — Tea
2D4 — Arnold Palmer Iced Tea
2D5 — Soda

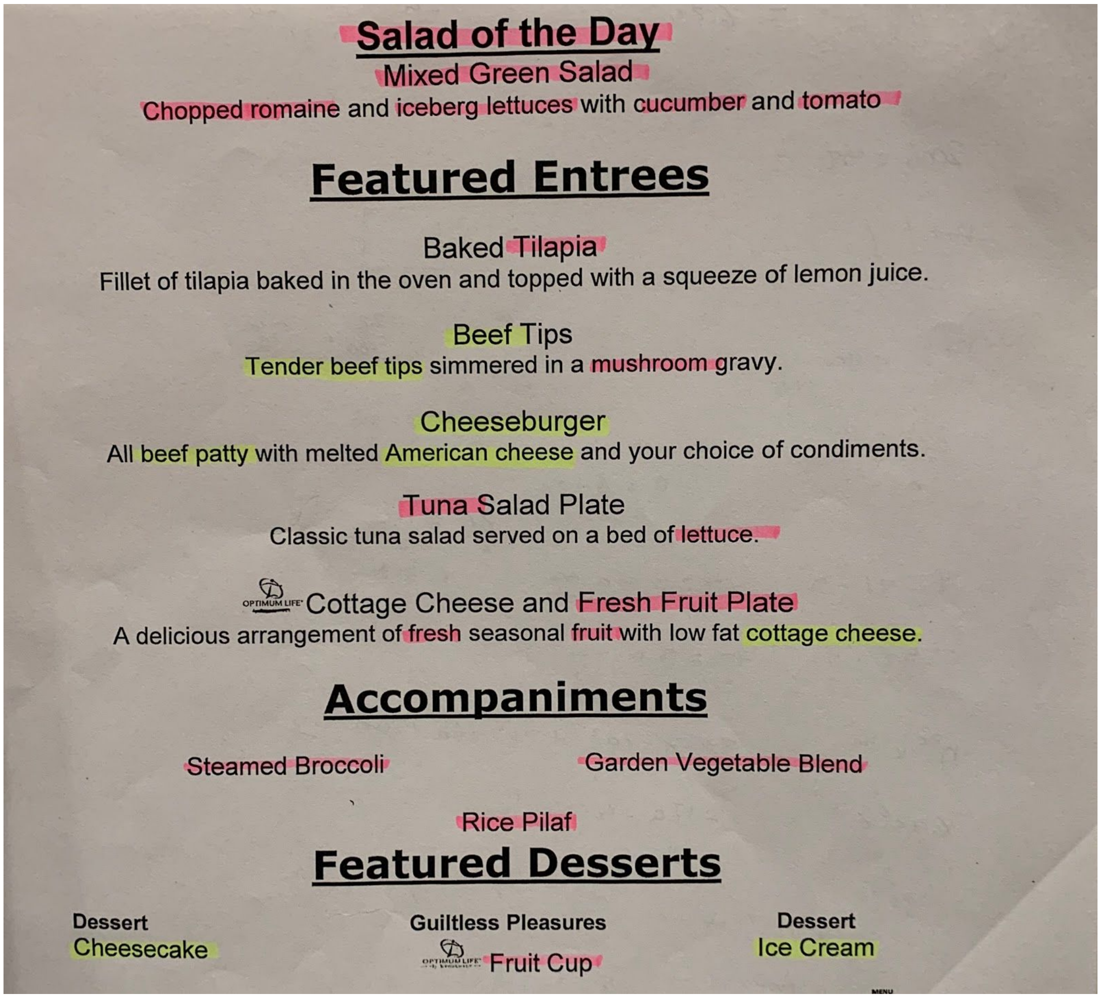
2E. Commercial Sweets
2C1 — Assorted Desserts
2C2 — Cake & Cheesecake
2C3 — Ice Cream

2F. Other Foods not Outlined in the Questionnaire
2D1 — Milk (ex. skim)
2D2 — Condiments (ex. salad dressing, gravy, brown sugar, jelly, salt, pepper, artificial sweetener, syrup)
2F3 — Cottage Cheese, Cheese
2F4 — Potato Chips & Hash Browns
2F5 — Cereal
2F6 — Bread (ex. white toast, whole wheat toast, French toast)
2F7 — Eggs (ex. scrambled, vegetable quiche, vegetable frittata)
2F8 — Cream of Wheat

Appendix N: *Annotated Menu (Facility J)*

Note. This is one example of a menu used in this study. To see all other menus, please contact the researcher.

Highlight Color	Categorization
Pink	Would Score 1 Point on MDS, Aligns with MedDi (Martinez-Gonzalez et al.)
Yellow	Would Not Score 1 Point on MDS, Does Not Align with MedDi (Martinez-Gonzalez et al.) or Foods Not Mentioned on the V14Q



Salad of the Day

Mixed Green Salad

Chopped romaine and iceberg lettuces with cucumber and tomato

Featured Entrees

Baked Tilapia

Fillet of tilapia baked in the oven and topped with a squeeze of lemon juice.

Beef Tips

Tender beef tips simmered in a mushroom gravy.

Cheeseburger

All beef patty with melted American cheese and your choice of condiments.

Tuna Salad Plate

Classic tuna salad served on a bed of lettuce.

Cottage Cheese and Fresh Fruit Plate

A delicious arrangement of fresh seasonal fruit with low fat cottage cheese.

Accompaniments

Steamed Broccoli

Garden Vegetable Blend

Rice Pilaf

Featured Desserts

Dessert
Cheesecake

Guiltless Pleasures
Fruit Cup

Dessert
Ice Cream

Academic Paper

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Sample: A
Score: 5

Analyzing the Prevalence of the Mediterranean Diet within Connecticut Facilities that Care for Residents with Alzheimer's Disease

The paper earned a score of 5 because it presents a clear and narrow topic found on page 5: "To what extent are aspects of the Mediterranean Diet being incorporated into the meal plans in Connecticut facilities that care for residents with Alzheimer's Disease?" Further, there is a logical explanation of the gap in the professional conversation found on page 4: "...the pre-existing research does not indicate if facilities that care for residents with AD incorporate the MedDi into meal plans." The methods detailed on pages 9-13 are ambitious: "a three-part, mixed-methods study... a pre-validated quantitative questionnaire, qualitative interviews, and content analyses of the dining menus (Figure 2)." Each component is defended, including the content analysis on page 21: "Two coding iterations were completed via Strauss' (2010) deductive coding process." An example of the justification of the new understanding is on page 24: " These findings emphasize that had this study only scrutinized data via one method (e.g. the questionnaire), prevalence would have been under/over reported."

This paper didn't earn a score of 4 because of its thorough explanation of limitations and implications found on page 25: "It is beneficial that the subjects are incorporating the MedDi into meal plans. However, it is paramount that subjects are also cognizant of this link because ongoing implementation can improve the quality of life of residents by halting and preventing cognitive decline." The paper also confidently communicates the student's ideas through its organization, design, and voice, hallmarks of a paper that exceeds the criteria for an essay earning the score of 4.

2018

AP® CollegeBoard

Paper #2: A Case Study on the Defiant Gardens of the Manzanar Internment Camp during World War II

AP Research Academic Paper

Sample Student Responses and Scoring Commentary

Inside:

Sample A

☑ Scoring Guideline

☑ Student Samples

☑ Scoring Commentary

2018 AP Research Academic Paper Rubric **v1.0**

The response…

Score of 1 **Report on Existing Knowledge**	**Score of 2** **Report on Existing Knowledge with Simplistic Use of a Research Method**	**Score of 3** **Ineffectual Argument for a New Understanding**	**Score of 4** **Well-Supported, Articulate Argument Conveying a New Understanding**	**Score of 5** **Rich Analysis of a New Understanding Addressing a Gap in the Research Base**
• Presents an overly broad topic of inquiry.	• Presents a topic of inquiry with narrowing scope or focus, that is NOT carried through either in the method or in the overall line of reasoning.	• Carries the focus or scope of a topic of inquiry through the method AND overall line of reasoning, even though the focus or scope might still be narrowing.	• Focuses a topic of inquiry with clear and narrow parameters, which are addressed through the method and the conclusion.	• Focuses a topic of inquiry with clear and narrow parameters, which are addressed through the method and the conclusion.
• Situates a topic of inquiry within a single perspective derived from scholarly works **OR** through a variety of perspectives derived from mostly non-scholarly works.	• Situates a topic of inquiry within a single perspective derived from scholarly works **OR** through a variety of perspectives derived from mostly non-scholarly works.	• Situates a topic of inquiry within relevant scholarly works of varying perspectives, although connections to some works may be unclear.	• Explicitly connects a topic of inquiry to relevant scholarly works of varying perspectives **AND** logically explains how the topic of inquiry addresses a gap.	• Explicitly connects a topic of inquiry to relevant scholarly works of varying perspectives **AND** logically explains how the topic of inquiry addresses a gap.
• Describes a search and report process.	• Describes a nonreplicable research method **OR** provides an oversimplified description of a method, with questionable alignment to the purpose of the inquiry.	• Describes a reasonably replicable research method, with questionable alignment to the purpose of the inquiry.	• Logically defends the alignment of a detailed, replicable research method to the purpose of the inquiry.	• Logically defends the alignment of a detailed, replicable research method to the purpose of the inquiry.
• Summarizes or reports existing knowledge in the field of understanding pertaining to the topic of inquiry.	• Summarizes or reports existing knowledge in the field of understanding pertaining to the topic of inquiry.	• Conveys a new understanding or conclusion, with an underdeveloped line of reasoning **OR** insufficient evidence.	• Supports a new understanding or conclusion through a logically organized line of reasoning **AND** sufficient evidence. The limitations and/or implications, if present, of the new understanding or conclusion are oversimplified.	• Justifies a new understanding or conclusion through a logical progression of inquiry choices, sufficient evidence, explanation of the limitations of the conclusion, and an explanation of the implications to the community of practice.
• Generally communicates the student's ideas, although errors in grammar, discipline-specific style, and organization distract or confuse the reader.	• Generally communicates the student's ideas, although errors in grammar, discipline-specific style, and organization distract or confuse the reader.	• Competently communicates the student's ideas, although there may be some errors in grammar, discipline-specific style, and organization.	• Competently communicates the student's ideas, although there may be some errors in grammar, discipline-specific style, and organization.	• Enhances the communication of the student's ideas through organization, use of design elements, conventions of grammar, style, mechanics, and word precision, with few to no errors.
• Cites **AND/OR** attributes sources (in bibliography/works cited and/or in-text), with multiple errors and/or an inconsistent use of a discipline-specific style.	• Cites **AND/OR** attributes sources (in bibliography/works cited and/or in-text), with multiple errors and/or an inconsistent use of a discipline-specific style.	• Cites **AND** attributes sources, using a discipline-specific style (in both bibliography/works cited AND in-text), with few errors or inconsistencies.	• Cites **AND** attributes sources, with a consistent use of an appropriate discipline-specific style (in both bibliography/works cited AND in-text), with few to no errors.	• Cites **AND** attributes sources, with a consistent use of an appropriate discipline-specific style (in both bibliography/works cited AND in-text), with few to no errors.

AP® RESEARCH
2018 SCORING COMMENTARY

Academic Paper

Overview

This performance task was intended to assess students' ability to conduct scholarly and responsible research and articulate an evidence-based argument that clearly communicates the conclusion, solution, or answer to their stated research question. More specifically, this performance task was intended to assess students' ability to:

- Generate a focused research question that is situated within or connected to a larger scholarly context or community;
- Explore relationships between and among multiple works representing multiple perspectives within the scholarly literature related to the topic of inquiry;
- Articulate what approach, method, or process they have chosen to use to address their research question, why they have chosen that approach to answering their question, and how they employed it;
- Develop and present their own argument, conclusion, or new understanding while acknowledging its limitations and discussing implications;
- Support their conclusion through the compilation, use, and synthesis of relevant and significant evidence generated by their research;
- Use organizational and design elements to effectively convey the paper's message;
- Consistently and accurately cite, attribute, and integrate the knowledge and work of others, while distinguishing between the student's voice and that of others;
- Generate a paper in which word choice and syntax enhance communication by adhering to established conventions of grammar, usage, and mechanics.

Cultivation, Resistance, & Beauty:

A Case Study on the Defiant Gardens of the Manzanar Internment Camp during World War II

AP Research
Word Count: 4736

"The Foundation" by Mitsuye Yamada[1]

This could be the land
where everything grows.
Bulldozers had sifted up
large piece of parched woods and
worthless rocks.
Bilateral builds to be are not yet.

Meanwhile on this dust
I counted seven shapes
of sturdy grey and greens
some small and slender
vertical parallels.
No one planted them here with squared T's.
Some weblike tentacles reaching out
Toward rounded rotundas.

Molded by no one.

Here
starshaped with tiny speckles,
are these the intruder in my garden
of new seedlings?
My garden carefully fed and fettered?
Of course.
I pronounced their execution
with a pinch of my fingers.

But here
among a myriad of friends
they flourished in weedly wilderness,
boldly gracing several acres
of untended land.
Tomorrow they shall be banished from their home.

And watered by many droplets
of human sweat
will sprout another college where
disciplined minds finely honed
will grow
in carefully
planted rows.

No room for random weeds.

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[1] Yamada, Mitsuye. Camp Notes and Other Poems. San Lorenzo, California: Shameless Hussy Press, 1976 149.

Abstract

Following the bombing of Pearl Harbor, US President Franklin D. Roosevelt signed Executive Order 9066, authorizing the incarceration of 110,000 Japanese Americans into internment camps. By 1943, agriculture dominated camp life, especially at the Manzanar Internment Camp in Owens Valley, California. During their internment, the Japanese Americans, unbeknownst to each other, raised a variety of gardens, including traditional Japanese ornamental gardens. The ornamental gardens ranged greatly in size and consisted of raked gravel dry gardens, cactus gardens, showy flower gardens, and ornate rock gardens. In an effort to preserve the history of the near-extinct generation of Japanese Americans, this study seeks to understand the purposes and implications of the ornamental gardens, with a focus on the Manzanar camp. In this qualitative retrospective ethnographic case study, I examine the overarching themes arising from ten interviews with WWII internees who lived at the Manzanar internment camp using the thematic analysis approach. This study found that the Japanese Americans initially raised the ornamental gardens to resist and combat their desolate, harsh environment, but these gardens had unforeseen consequences for the Manzanar community. While the gardens functioned as a pastime, a means to preserve and revive Japanese culture, and, paradoxically, an avenue to strengthen relationships with the War Relocation Authority officials, they also ultimately helped the inmates to conceptualize their highly complex experiences during WWII. This study's findings, with a deep examination of the Manzanar camp, are aligned with broader environmental studies on the Japanese Americans during WWII, specifically with regard to the gardens functioning as acts of resistance. Looking towards the future, I recommend that further research should examine how defiant gardens throughout history compare with one another and drive the narratives of those involved.

Historical Context

On December 7, 1941, the Japanese bombed Pearl Harbor, catalyzing mass fear and mistrust of Japanese American citizens across the United States.[2] Thus, on February 19th, 1942, President Franklin D. Roosevelt signed Executive Order 9066 which authorized the removal and incarceration of 110,000 Japanese Americans (two-thirds of whom were American citizens) living on the West Coast into temporary internment camps.[3] The executive order also called for the establishment of the War Relocation Authority (WRA), the federal government agency responsible for the relocation of all Japanese people and the creation and regulation of relocation centers (internment camps). [4] Beginning in August 1942, the Japanese Americans were moved into the internment camps and deprived of their civil liberties. On March 20, 1946, nearly six months after the official end of WWII, all internment camps were retired and the Japanese Americans were left to rebuild their American lives.[5]

As Japanese Americans relocated into the internment camps, they were forced to leave their homes and occupations behind. In contrast to their pre-WII lives, the Japanese Americans in the camps were assigned occupations designed to aid the war effort, such as teaching, cooking, and farming.[6] From the perspective of the WRA, the conditions in the internment camps generally provided the "the bare subsistence level".[7] In camp, the Japanese Americans were relegated to "simple construction barracks," in the place of homes and provided with a few facilities and

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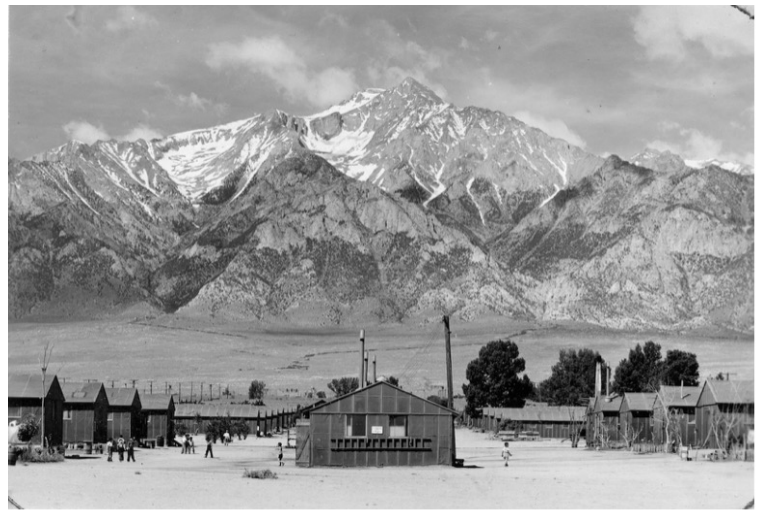
[2] Oguzhan, Mehmet. "The Relocation and Internment of People of Japanese Descent in the US during WWII". *Uluslararasi Suçlar ve Tarih* 15, (2014): 135-171.
[3] Ibid, 135.
[4] Chiang, Connie. "Imprisoned nature: Toward an environmental history of the world war II Japanese American incarceration." *Environmental History* 15. No 2 (2010): 236-267.
[5] Ibid, 240
[6] Oguzhan, 150.
[7] "Relocation of Japanese Americans". War Relocation Authority. Washington D.C., May 1943.

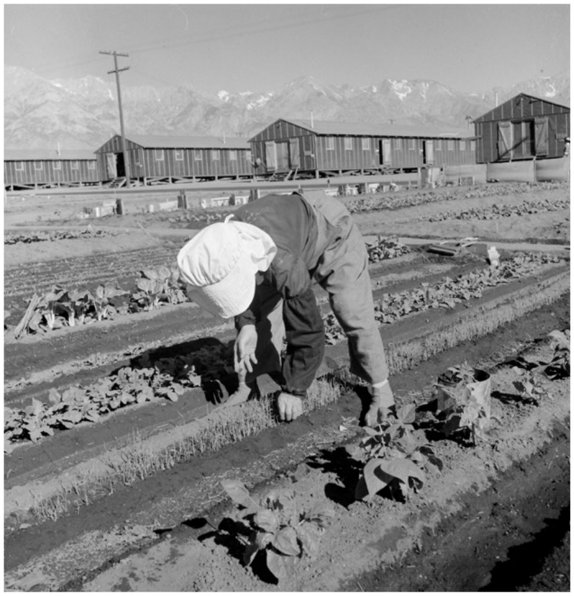
services including food courts, minimal medical care, and education for their children.[8] Despite their job assignments and their access to meager resources, the Japanese Americans found themselves with an abundance of time. After living in the camps for a few months, the internees longed to enrich camp life. They began organizing activities such as painting, pottery, baseball, fishing, farming, and gardening.[9] Prior to WWII, Japanese Americans dominated agricultural businesses in the US. Ten years before the war, one-third of Japanese Americans in Los Angeles were gardeners. By 1940, on the West Coast more than forty-six percent of Japanese Americans were employed in agriculture, with an additional twenty-six percent employed in “agriculture-related activities such as produce businesses."[10] However, these pursuits had to be suspended at the start of WWII.



Adams, Ansel. *View of barracks with mountains in the background*. 1943. Shinjo Nagatomi Collection, Manzanar National Historic Site Collection. Manzanar Relocation Center.

By 1943, agriculture came to dominate camp life. Camp community groups, led by former farmers and gardeners, and schools typically maintained the gardens and crops.[11] Most of the internment camps had victory gardens — gardens initiated by the US government to aid the war effort. The victory gardens enriched the inmates’ government-issued diet with an increased

[8] “Relocation of Japanese Americans”. War Relocation Authority. Washington D.C., May 1943.
[9] Obler, Bibiana. “The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps, 1942–1946” *The Journal of Modern Craft* 4, no. 1 (2011). 93-98.
[10] Tamura, Anna. "Gardens in Camp," *Densho Encyclopedia*. Last modified July 18, 2016. Accessed September 3, 2017. http://encyclopedia.densho.org/Gardens%20in%20camp/
[11] Ibid.



Lange, Dorothea. *Japanese American working in victory garden*. 1942. Dorothea Lange Collection, National Archives. Manzanar Relocation Center.

variety of produce; the internees took this opportunity to plant Japanese vegetables. The Japanese Americans also constructed thousands of ornamental gardens, ranging in size from parks for all inmates to enjoy, block gardens (a set of barracks were called a block), to small personal gardens.[12] Among these ornamental gardens were traditional raked gravel dry gardens, cactus gardens, showy flower gardens, and ornate rock gardens. The Manzanar internment camp in Owens Valley, CA became famous for the creation of Merritt Park, the most elaborate and sophisticated garden in all in of the camps. The project, featuring ponds, boulders, tea houses, and a waterfall, illustrated the complexity and magnitude of a wartime garden.[13]

Literature Review

In this literature review, four major works consider the environmental conditions and agriculture across Japanese internment camps during WWII. Bowdoin College Professor Connie Chiang sets the framework for the current literature on the topic. Chiang not only provides an overview of environmental theory and history, but also examines how agriculture influenced the interactions between WRA officials and inmates. Examining specifically environmental injustice theories, Chiang claims that, “WRA officials tried to use nature as an instrument for social

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[12]Tamura, Anna. "Gardens in Camp," *Densho Encyclopedia*. Last modified July 18, 2016. Accessed September 3, 2017. http://encyclopedia.densho.org/Gardens%20in%20camp/
[13]Ibid.

control by locating the camps in places where they could isolate Japanese Americans and procure their labor in the name of assimilation and patriotism."[14] As she explores both the perspectives of the WRA and of Japanese Americans, she asserts that in an effort, "to resist and endure their incarceration, Japanese Americans both established intimate connections to nature and sometimes refused to work when demanded."[15] In short, Chiang argues that, "the natural world" became a platform that upset "power relations" between the WRA and Japanese Americans, "ensuring that WRA control over the detainees was not absolute."[16]

Kenneth Helphand finds a similar theme in his book on defiant gardens. According to Helphand, defiant gardens are, "gardens created in extreme or difficult environmental, social, political, economic, or cultural conditions".[17] In his chapter on Japanese internment, Helphand claims that, "At the relocation camps, garden-making was literally the domestication of an inhospitable environment, creating a cultural setting which was a semblance of normalcy."[18] He further adds that the gardens were mechanisms to maintain "cultural integrity" and "self-respect"; they were "an enterprise of survival, a defense of sanity and a demonstration of psychological, and here political, defiance."[19] Helphand's book claims that the gardens served as acts of resistance, a tool to defy the WRA and their living conditions, and a means to emotionally survive the wartime experience. Ultimately, Helphand and Chiang's analyses demonstrate how the Japanese Americans' relationship with nature across the camps became a tool for defiance against their incarceration and the WRA.

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[14] Chiang, Connie. "Imprisoned nature: Toward an environmental history of the world war II Japanese American incarceration." *Environmental History* 15. No 2 (2010): 239.
[15] Ibid, 236.
[16]Ibid, 236.
[17]Helphand, Kenneth I, *Defiant Gardens: Making Gardens in Wartime*. EDRA/Places Awards Research 19, 2007.
[18] Ibid, 117.
[19] Ibid, 117.

Anna Tamura offers a similar perspective as she focuses on agriculture at two internment camps: Manzanar and Minidoka. Similar to Helphand and Chiang, she reports that the gardens functioned as acts of resistance — “political symbols of sedition and non-compliance as well as loyalty and patriotism.”[20] Arguing that the gardens were “restorative agents that fostered communal healing, and [were] the results of cultural cohesion and community competition,” she too highlights how these gardens served as techniques of daily survival.[21] Monica Embrey’s dissertation speaks to Tamura’s claims. In her case study on the environmental justice history of the Manzanar internment camp, Embrey examines the Japanese Americans’ relationship with the Owens Valley land, with a focus on their use and conservation of water. When addressing gardening and farming in the camp, she brings two important Japanese concepts into the literature discussion: "Gaman" and "Shikata ga nai". In her book *The Art of Gaman*, Delphine Hirasuna defines gaman as, “enduring what seems unbearable with dignity and grace”[22] while Professor Jane Iwamura defines Shikata ga nai as the belief that, “one should not concentrate on the things one cannot change.”[23] With these two concepts in mind, Embrey argues that they are fundamental in understanding the motives of Japanese Americans’ relationships with the land surrounding them. With sources such as Tamura and Embrey, the Japanese Americans’ quest to ease routine adversity shines through; it is apparent that agriculture in the camps fostered emotional survival.

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[20] Tamura, Anna. “Gardens Below the Watchtower: Gardens and Meaning in World War II Japanese American Incarceration Camps,” *Landscape Journal* 23, (2004): 1.
[21] Ibid, 1.
[22] Hirasuna, Delphine, and Kit Hinrichs. *The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps*. Ten Speed Press, 2005.
[23] Iwamura, Jane Naomi. “Critical Faith: Japanese Americans and the Birth of a New Civil Religion.” *Critical Faith The American Studies Association* (1997): 994

While Helphand, Chiang, Tamura, and Embrey's analyses contextualize the Japanese Americans' relationships with the environment and agriculture, no study focuses solely on the Japanese ornamental gardens. Furthermore, with the exception of Embrey, this literature lacks comprehensive research on one particular internment camp. While these articles analyze the importance and implications of these gardens, the current gap in research allows for generalizations when understanding the Japanese American experience and their relationship with ornamental gardens. A qualitative ethnographic case study examining the purposes of the gardens in the Manzanar internment camp may shed light on this gap. Furthermore, it will provide deeper insight into the everyday acts of resistance and the grit that enhanced camp life.

Method

The method of my study addresses the question: *Through a qualitative retrospective ethnographic case study, what purposes did the Japanese ornamental gardens in the Manzanar internment camp serve for the Japanese Americans during World War II?* I hypothesized that the Japanese Americans built the gardens as a pastime, a means to resist the WRA, and a method of healing as a community. It is important to recognize that I made a significant assumption within the research question. Asking, "what purposes did the… gardens… serve" implies that I believe that there is/are purpose(s) behind these gardens. But gardens do not, in general, spring out of deserts without good cause.

Qualitative Retrospective Ethnographic Case Study

With these questions in mind, it is important to break down and define the different components of the method. Qualitative methods "rely on text and image data, have unique steps in data analysis, and draw on diverse designs."[24] In a qualitative retrospective ethnographic case study, "retrospective" implies that outcome of the event has already occurred by the time the study is initiated.[25] Hence, this study analyzed the purposes of the gardens during WWII, rather than the purpose of the gardens today. An ethnographic case study is a sociological method that explores how a select group of people live and make sense of their lives with one another in a particular place.[26] In the context of this study, the selected cohort consists of ten Japanese Americans who lived at the Manzanar internment camp. Each individual in the cohort developed a relationship with the gardens, whether it was through a parent working in the gardens or their own direct contact with and memory of the gardens. This method was chosen to not only fill the current gap in the literature, but also to avoid generalizations when describing the internees' relationships with the ornamental gardens. I chose to focus on the Manzanar internment camp as it was the largest internment camp in the nation and was home to Merritt Park, and thus has the most primary sources documented.[27]

Thematic Analysis

At the beginning of the study, I thematically analyzed interviews of the ten internees. In thematic analysis, qualitative researchers determine the relationship between overarching themes in a data set; they build their patterns, categories, and themes from the bottom up by organizing the data into increasingly more abstract units of information.[28] This method of

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[24] "Ethnography," Department of Sociology at Columbia University.edu. Last modified 2009. Accessed October 4th, 2017, http://sociology.columbia.edu/ethnography
[25]"Retrospective Study," NEDARC.org. Last modified August 29, 2016. Accessed September 3, 2017. http://www.nedarc.org/statisticalHelp/projectDesign/retrospectiveStudy.html
[26] "Ethnography," 1.
[27] Tamura, Anna. "Gardens in Camp," Densho Encyclopedia. Last modified July 18, 2016. Accessed September 3, 2017. http://encyclopedia.densho.org/Gardens%20in%20camp/
[28] Creswell, John W. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks, CA: SAGE Publications, 2014.

analysis was chosen to link the individual experiences of the internees to common themes that can be applied to the Manzanar narrative as a whole. The ten interviews were found on the Densho Encyclopedia Digital Repository by using the search words, "Manzanar camp gardens", "Manzanar", "camp gardens", "parks", and "camp activities". The interviews were pre-recorded on the site and range from one to five minutes. Densho Encyclopedia is a nonprofit organization with the "initial goal of documenting oral histories from Japanese Americans who were incarcerated during World War II."[29] Today it serves as a database of primary sources from Japanese Americans during WWII.[30]

The thematic analysis was conducted in three steps. Firstly, I watched and transcribed each of the ten interviews. I watched the interviews multiple times in effort to familiarize myself with the testimonies of the interviewees. Then, I identified similar experiences among the Japanese Americans in an attempt to understand what types of events contributed to the raising of the gardens. Once I identified similar experiences, the narratives were analyzed to discover the purpose of raising ornamental gardens. Then the overlapping experiences were sorted into groups and further labeled with an overarching theme.

After I conducted a pilot study in December 2017, I realized I lacked a robust and clear argument based solely on using these interviews. Therefore, a second qualitative step was added to my method: a mixed media primary source thematic analysis. I expanded my data set by adding other primary sources such as official documents from the WRA, poems, diary entries, and camp newsletters to flesh out my argument. These sources were found on various platforms

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[29]"About Densho," *Densho.org*. Accessed September 3, 2017. https://densho.org/about-densho/
[30] Ibid.

including Densho Encyclopedia, museum collections, and other literature on the gardens. The primary sources underwent the same process of thematic analysis as the interviews.

Limitations

Before moving on to the findings discussion of the study, it is important to address the limitations in my research process and findings. The first and most significant limitation lies within my cohort. Because most of my desired cohort is over 80+ years old or already deceased, conducting the interviews myself was unfeasible. Owing to the nature of historical retrospective inquiry, I chose instead to use the ten pre-recorded interviews found on Densho. Therefore, I was unable to write the questions myself. Perhaps if I was able to conduct the interviews in person, my findings would have been free of the innate subjectivity of some of the questions asked. Another limitation regarding my cohort was the sample size. Considering the number of interviews and the average length of each segment directly speaking to the ornamental gardens (two minutes), the amount of data I was able to analyze was not lengthy. Given this limitation, I may have missed opportunities for a wider analysis. However, since very few individuals who lived in the Manzanar Camp and were connected to the gardens are still alive today, the perspectives in the interviews still offer crucial insight into the purposes of the Manzanar gardens. Lastly, there was room for human error from both the interviewees and researcher. Because the interviewees were looking back on their experiences, it is possible that they did not accurately depict camp life in the gardens. Similarly, it is possible that I transcribed part of an interview incorrectly or misinterpreted the meaning in these testimonies which could have potentially skewed my data.

Findings

After I applied the thematic analysis to the interviews and primary sources, seven different themes emerged regarding the purposes of Japanese ornamental gardens in the Manzanar internment camp; however, five themes were repeated consistently. These five themes are: (1) Community Building and Enrichment, (2) Defiance of Environment, (3) Gaman, (4) Shikata ga nai, and (5) Boredom. Below, these five themes are defined.

Table 1: Definitions

Theme	Definition	Number of interviews with this theme
Community Building and Enrichment	The effort to improve or enhance the quality of life through communal activities	5
Defiance of Environment	The attempt to beautify the camp in contrast to the barren environment	4
Gaman	Enduring what seems unbearable with dignity and grace[31]	4
Shikata ga nai	One should not concentrate on the things one cannot change[32]	4
Boredom	The abundance of unstructured time leaving the inmates to feel restless and in need of a pastime	3

[31] Hirasuna, Delphine, and Kit Hinrichs. *The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps*. Ten Speed Press, 2005.
[32] Iwamura, Jane Naomi. "Critical Faith: Japanese Americans and the Birth of a New Civil Religion." *Critical Faith The American Studies Association* (1997): 994

For the purposes of a robust, clear analysis and line of reasoning, these themes will not be discussed in isolation and will rather be analyzed in the context of the larger narrative of the Manzanar internment camp during WWII.

Discussion

When the Japanese Americans were relocated to the internment camps, the community immediately faced a problem: the hazardous and poor environmental conditions. Located in the Owens Valley, California, the Manzanar land was notorious for its extreme temperatures, ruthless sun, and strong winds. When the WRA built the camps, they erased any trace of vegetation and leveled the land, "to build roads, prepare building sites, and establish agricultural fields."[33] This excavation exacerbated the conditions of Manzanar as the newly churned dust coated the lives of the internees, including their skin, food and barracks. Henry Fukuhara remembered, the "wind would come and, and it would be so bad that you could hardly walk outside, and then... the sand would come up through the cracks in the floor and would come in through the sills of the window, and it was terrible."[34] Hikoji Takeuchi added, "let's face it, Manzanar was a barren

Tamura, Anna. *Block 34 garden*. 2001. Anna Tamura Collection, Anna Tamura Collection. Manzanar Relocation Center.

[33] National Park Service. Cultural Landscape Report: Manzanar National Historic Site. Washington DC: U.S. Government Printing Office, 2006.
[34]Fukuhara, Henry, interview by John Allen, Densho Digital Repository, November 6, 2002.

desert."[35] In fact, four internees used the word "barren" to describe the initial conditions of Manzanar, emphasizing the harsh conditions they endured in their desolate, dust-coated camp.

In effort to resolve the environmental issues of the camp, the WRA launched a camp landscaping program. This advancement set the framework for all future agricultural projects to be developed over the next four years, including victory gardens, cattle ranches, block gardens, and ornamental gardens.[36] While the WRA facilitated many of the these landscaping projects, the Japanese Americans initiated the construction of ornamental gardens as a defense against the environment. Sue Kunitomi recalled that internee Henry Uenu raised a little ornamental garden outside of the mess hall, "because everybody lined up for their meals outside the mess hall and there was no shade and no place to sit, so he talked to the mess hall people… and the men in the block …." including Uenu and his friends, "decided they would build …this garden."[37] Uenu's project ultimately sought to mitigate the hot, uncomfortable conditions near the mess hall. His story, along with others, sparked a grander purpose in raising the gardens: beautifying the camp. Henry Fukuhara recalled that before the Japanese Americans began to build these gardens, "everything was just barren because there

Adams, Adams. *Mrs. Nakamura and family in park, Manzanar Relocation Center, California. Others: George Nakano, Keiko Kamahara, Fuimi Tashim.* 1943. Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

[35]Takeuchi, Hikoji, interview by John Allen, Densho Digital Repository, November 7, 2002.
[36] National Park Service. Cultural Landscape Report: Manzanar National Historic Site. Washington DC: U.S. Government Printing Office, 2006. 59
[37] Embrey, Sue Kunitomi, interview by John Allen, Densho Digital Repository, November 6, 2002.

were no trees there at all because, with the exception of an apple tree ... [the WRA] bulldozed everything… [the gardens] made the appearance [of the camp] more appealing and more comfortable.”[38] Willie Ito added, “They tried to make it look homey. Rather than seeing nothing but sand, it [was] so nice to see greenery.”[39] Most of the youth, however, had become accustomed to the barren environment. Eiichi Sakauye remembered that, “Because of the gardens [the] bumble bees and butterflies came in.” He further added that he would have to explain to the kids, “*Watch out, there's a bumblebee, it'll sting you.* And then they wondered why I said that to them. And the butterfly comes along, the butterfly comes to suck the sugar from this pollen and so forth. We [told] them how the butterfly lays its egg and it pupates to a worm, and from the worm, it comes to a butterfly. And these kids were quite interested. So the kids come from all parts of the camp and come to see us… I don't think they'd been exposed to nature.”[40] Essentially, Fukuhara, Ito, and Sakauye’s testimonies describe the stark contrast in environment after the Japanese began building the gardens: with the garden came comfort, beauty and biodiversity. With this juxtaposition, the ornamental gardens defied the barren setup of the Manzanar internment camp. The small but highly significant changes to the landscape altered the Japanese

Adams, Adams. *Nurse Aiko Hamaguchi and patient Tom Kano. Others: George Nakano, Keiko Kamahara, Fuimi Tashim. 1943*. Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

[38] Fukuhara, Henry, interview by John Allen, Densho Digital Repository, November 6, 2002.
[39] Ito, Willie K. interview by Kristen Luetkemeier, Densho Digital Repository, December 5, 2013.
[40] Sakauye, Eiichi Edward, interview by Wendy Hanamura, Densho Digital Repository, May 14, 2005.

Americans perceptions toward their internment experience; they came to see beauty can be nurtured even in dust.

Even with this environmental enrichment, Japanese Americans faced an internal struggle. In the camps, the inmates sought to preserve their Japanese culture and identity, yet needed to pledge their allegiance to the WRA and, more broadly, the US. When the Japanese Americans initially settled into the internment camps, their relationships with the WRA were tense and formal. The WRA was responsible for logging the inmates' daily interactions ranging from meal plans to medical examinations. They also regulated the internees' activities and prohibited them from displaying and teaching Japanese culture (including speaking and writing in Japanese and celebrating Japanese cultural events and recreation).[41] Despite these rules, the Japanese Americans silently protested their confinment through the ornamental gardens.

In advancing their agricultural projects, the inmates defied camp regulations but unexpectedly strengthened relationships with the WRA. The nature of these formal interactions with the WRA changed as Pleasure Park, also known as Merritt Park, was built. Brothers Kuichiro and Akira Nishi along with Henry Uenu initiated the project, gathering their fellow inmates to raise the sophisticated, beautiful Japanese ornamental garden. As they embarked on their project however, they faced a problem in the planning of the garden: they did not have the resources

Adams, Adams. *Pool in Pleasure Park*. 1943. Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

[41]Mizuno, Takeya. "Government Suppression of the Japanese Language in World War II Assembly Camps." *Journalism and Mass Communication Quarterly*. (2003).

needed to grow the garden, including machinery, plants, and shrubs. And so the debates and deliberation with the WRA began. Eventually, the Nishi brothers convinced the WRA to not only move forward with the project, but also fund supplies and further loosen camp rules. Henry Nishi, son of Kuichiro, recalled that when his father needed locust trees for Pleasure Park, "[the WRA] must have been given permission to go out of camp… to get locust trees because there [were] no locusts… on the property."[42] Similarly, Arthur Ogami remembered his father, "…had a crew and [the WRA] provided [a] truck for him. And he'd go out to the foothills of the mountain to pick up rocks and trees, shrubs to use in the garden".[43] As the Japanese Americans pushed the limits of their incarceration to build gardens, they found themselves rewarded with opportunities to venture out of the camp, allowing them short reprieves from their highly regulated lives. Eventually, the brothers renamed Pleasure Park to Merritt Park after WRA project director Ralph Merritt in gratitude for his help. Though the WRA still recorded and charted every aspect of the inmates lives (including the gardens), the innate nature of the interactions between the two groups changed course. As the two parties worked together, the WRA learned to trust the Japanese Americans and came to empathize with the Japanese American perspective. Though the gardens initially symbolized defiance, they ultimately functioned as an agent to soften the interactions between the WRA and internees.

While the gardens became a pathway for communication between the WRA and internees, they also forged closer relationships among the Japanese Americans. In Manzanar, sixty-percent of the Issei generation (the first generation of Japanese Americans) had worked in agriculture and landscaping businesses prior to WWII.[44] By raising the gardens, the Japanese Americans were

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[42] Nishi, Henry, interview by Richard Potashin, Densho Digital Repository, January 8, 2009 .
[43] Ogami, Arthur, interview by Richard Potashin, Densho Digital Repository, March 10, 2004.
[44] National Park Service. Cultural Landscape Report: Manzanar National Historic Site. Washington DC: U.S. Government Printing Office, 2006. 46

able to reconnect with their lives before WWII as a community. Madelon Arai Yamamoto remembered that as her father dug a large ornamental pond in 1943, "he had many friends that helped, that were interested in building the pond... before I knew it they were in front of the house digging it out. And then before I knew it they arrived with the concrete, and then before I knew it there was boulders all around there."[45] Yamamoto's testimony demonstrates how the initiative of one person had a multiplier effect on the participation of those around him. George Izumi further described how the gardens were a mechanism for Japanese Americans to collectively reunite with their heritage. He recalled, "there was a fellow named... Mr. Kato, who was a rock garden specialist. He built that garden. He brought all the stone, big rocks down there, and they built a beautiful rock garden up near the hospital."[46] Similarity, Henry Fukuhara added that, "there were gardeners that knew how to make the real Japanese gardens," and taught the younger generations the practices of the Issei.[47] Henry Nishi added, "none of us had too much experience [with ornamental gardens]. We were pretty.... young. But most of our... dads were not around either because they were interned elsewhere... [we were] exposed to a lot of agriculture, ornamental agriculture."[48] Perhaps the gardens acted as a liaison between the generations so the Issei were able to pass down their expertise in traditional Japanese gardening. Yamamoto

Lange, Dorothea. J*apanese American working in garden*. 1942. Dorothea Lange Collection, National Archives. Manzanar Relocation Center.

[45] Yamamoto, Madelon Arai, interview by Richard Potashin, Densho Digital Repository, May 6, 2011.
[46] Izumi, George, interview by John Allen, Densho Digital Repository, November 6, 2002.
[47] Fukuhara, Henry, interview by John Allen, Densho Digital Repository, November 6, 2002.
[48] Nishi, Henry, interview by Richard Potashin, Densho Digital Repository, January 8, 2009 .

added, “it was a way to develop a little community.”[49]

The efforts to beautify the Manzanar environment, build community, and pass down Japanese gardening techniques, however, would not have been possible without the abundance of unstructured time. In the majority of the interviews, the Japanese Americans recalled how bored they were in the camps. Madeline Yamamoto also remembered, “...even though all adults had some sort of responsibility or, quote, job, in camp, they had lots of time. No one had cars, no one could go to the movies... We had a lot of time on our hands.”[50] Perhaps this is to say that without the free time in the camps, the gardens would never have been raised. Jun Ogimachi added, “Well... the people within the block were just doing them. They just... need[ed] something to do.”[51] Yamamoto and Ogimachi’s testimonies bring to light two important Japanese beliefs: gaman (enduring what seems unbearable with dignity and grace)[52] and shikata ga nai (not concentrating on the things one cannot change)[53]. Perhaps the gardens allowed the internees to focus on an aspect of their life which they could change, rather than dwelling on the ways their lives were regulated. George Izumi added, “So, you know, it goes to show you that if... any individual... set[s] their mind to do what they want to do, they can do it. It doesn't matter ... what it is in life.”[54] Looking back on his father’s garden next to the camp hospital, Arthur Ogami added, “I think the gardens expressed that just because we’re here, we have to do something to refresh our feelings. I think that the gardens... express[ed] that there is hope for peace and

[49] Madelon Arai Yamamoto, Densho Digital Repository, 2011.
[50] Yamamoto, Madelon Arai, interview by Richard Potashin, Densho Digital Repository, May 6, 2011.
[51] Ogimachi, Jun, interview by Richard Potashin, Densho Digital Repository, June 3, 2010.
[52] Hirasuna, Delphine, and Kit Hinrichs. *The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps*. Ten Speed Press, 2005.
[53] Iwamura, Jane Naomi. “Critical Faith: Japanese Americans and the Birth of a New Civil Religion.” *Critical Faith The American Studies Association* (1997): 944
[54] Izumi, George, interview by John Allen, Densho Digital Repository, November 6, 2002.

freedom. And you can go to these gardens and feel it."[55] Izumi's and Ogami's reflections on their experiences suggest these gardens functioned as a mechanism of endurance for the people of the Manzanar internment camp. As the Japanese Americans crafted intricate yet bold gardens, they reflected their heritage and peacefully channeled their feelings. Through organizing and nurturing these gardens, the Japanese Americans found their strength, voice, and hope in a time seeded with alienation and adversity.

Conclusion

Toyo Miyatake. *Block 34 mess hall garden*. 1943. Archie Miyatake Personal Collection. Manzanar Relocation Center.

These interviews summarize the purposes of the ornamental gardens for the Japanese Americans in the Manzanar internment camp. The cohorts' reflections on their WWII experiences make apparent that the gardens served to defy environmental conditions, improve relationships with the WRA, reconnect generations, and offer creative expression of their feelings. When comparing the results of this study to the body of literature, certain key differences emerge. The first difference is that while this study does recognise that the gardens were defiant against the environmental conditions, the results did not find that they were used to resist the WRA as Chiang claimed in her study.[56] Rather, I found that the gardens eased the tense relationships between the two. This proves my earlier claim that the gap in

[55] Ogami, Arthur, interview by Anna Tamura, Unpublished oral history, 2002.

[56] Chiang, Connie. "Imprisoned nature: Toward an environmental history of the world war II Japanese American incarceration." *Environmental History* 15. No 2 (2010): 236-267.

literature must be addressed to avoid generalizations when describing the internees' relationships with the ornamental gardens. Furthermore, while the literature focuses on the gardens acting as political statements, my findings suggested that rather than resistance, the significance in the gardens lay in their emotional grounding for the internees of Manzanar.

In contrast to many reactions to unjust historical turning points, the Japanese American response to alienation and incarceration is stunning. While this study is significant in that it preserves the history of this near-extinct generation of Japanese Americans, the narrative of the Manzanar ornamental gardens, arguably more significantly, is a exemplar template for peaceful protest and communal healing. Looking towards the future, I recommend that further research should examine how defiant gardens throughout history compare with one another and drive the narratives of those involved — for example, Guantanamo Bay prisoners scavenged seeds from their meals which flourished as secret gardens, an endeavor later known as "Seeds of Hope".[57] Or, ironically, the British serving in Afghanistan built their own oasis, the Helmand Peace Garden, surrounding their military headquarters. Today, an English Rose grows there in defiance of its barren environment.[58] These stories and many others bring to light the complexity at the intersection of cultivation, resistance, and beauty. Ultimately, the ornamental gardens and their implications serve as the perfect symbol of graceful endurance. Like the gardens, the Japanese Americans were assimilated, organized, and parented. However, despite the obstacles of their barren and toxic environment, they too found a way to thrive.

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[57] Helphand, Kenneth I , "Defiant Gardens: Making Gardens in Wartime," *EDRA/Places Awards Research* 19, (2007): 33.
[58] Ibid, 117.

Bibliography

"About Densho," *Densho.org*. Accessed September 3, 2017. https://densho.org/about-densho/

Adams, Adams. *Mrs. Nakamura and Family in Park, Others: George Nakano, Keiko Kamahara, Fuimi Tashim*. 1943. Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

Adams, Adams. *Nurse Aiko Hamaguchi and Patient Tom Kano. Others: George Nakano, Keiko Kamahara, Fuimi Tashim*. 1943. Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

Adams, Adams. *Pool in Pleasure Park*. 1943. Adam Ansel Collection, Library of Congress Collection. Manzanar Relocation Center.

Adams, Ansel. *View of Barracks with Mountains in the Background*. 1943. Shinjo Nagatomi Collection, Manzanar National Historic Site Collection. Manzanar Relocation Center.

Chiang, Connie. "Imprisoned nature: Toward an environmental history of the world war II Japanese American incarceration." *Environmental History* 15. No 2 (2010): 236-267.

Creswell, John W. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks, CA: SAGE Publications, 2014.

Embrey, Sue Kunitomi, interview by John Allen, Densho Digital Repository, November 6, 2002.

"Ethnography," *Department of Sociology at Columbia University.edu*. Accessed October 4th, 2017. http://sociology.columbia.edu/ethnography

Fukuhara, Henry, interview by John Allen, Densho Digital Repository, November 6, 2002.

Helphand, Kenneth I, *Defiant Gardens: Making Gardens in Wartime*. EDRA/Places Awards Research 19, 2007.

Hikoji Takeuchi, interview by John Allen, Densho Digital Repository, November 7, 2002.

Hirasuna, Delphine, and Kit Hinrichs. *The Art of Gaman: Arts and Crafts from the Japanese American Internment Camps*. Ten Speed Press, 2005.

Ito, Willie K. interview by Kristen Luetkemeier, Densho Digital Repository, December 5, 2013.

Iwamura, Jane Naomi. "Critical Faith: Japanese Americans and the Birth of a New Civil Religion." *Critical Faith The American Studies Association* (1997): 944

Izumi, George, interview by John Allen, Densho Digital Repository, November 6, 2002.

Lange, Dorothea. *Japanese American Working in Garden*. 1942. Dorothea Lange Collection, National Archives. Manzanar Relocation Center.

Lange, Dorothea. *Japanese American Working in Victory Garden*. 1942. Dorothea Lange Collection, National Archives. Manzanar Relocation Center.

Lange, Dorothea. *Katsuki Garden*. 1942. Dorthea Lange Collection. Bancroft Library Collection. Manzanar Relocation Center.

Mizuno, Takeya. “Government Suppression of the Japanese Language in World War II Assembly Camps.” *Journalism and Mass Communication Quarterly* (2003).

Nagatomi, Shinjo. *Block Gardens in Manzanar*. 1943. Shinjo Nagatomi Collection, Manzanar National Historic Site Collection. Manzanar Relocation Center.

National Park Service. Cultural Landscape Report: Manzanar National Historic Site. Washington DC: U.S. Government Printing Office, 2006.

Nishi, Henry, interview by Richard Potashin, Densho Digital Repository, January 8, 2009 .

Ogami, Arthur, interview by Anna Tamura, Unpublished Oral History, 2002.

Ogami, Arthur, interview by Richard Potashin, Densho Digital Repository, March 10, 2004.

Ogimachi, Jun, interview by Richard Potashin, Densho Digital Repository, June 3, 2010.

Oguzhan, Mehmet. “The Relocation and Internment of People of Japanese Descent in the US during WWII”. *Uluslararasi Suçlar ve Tarih* 15, (2014): 135-171.

“Relocation of Japanese Americans”. War Relocation Authority. Washington D.C., May 1943.

“Retrospective Study,” NEDARC.org. Last modified August 29, 2016. Accessed September 3, 2017. http://www.nedarc.org/statisticalHelp/projectDesign/retrospectiveStudy.html

Sakauye, Eiichi Edward, interview by Wendy Hanamura, Densho Digital Repository, May 14, 2005.

Tamura, Anna. *Block 34 garden*. 2001. Anna Tamura Collection, Anna Tamura Collection. Manzanar Relocation Center.

Tamura, Anna. “Gardens Below the Watchtower: Gardens and Meaning in World War II Japanese American Incarceration Camps,” *Landscape Journal 23*, (2004): 1.

Tamura, Anna. "Gardens in Camp," *Densho Encyclopedia*. Last modified July 18, 2016. Accessed September 3, 2017. http://encyclopedia.densho.org/Gardens%20in%20camp/

Toyo Miyatake. *Block 34 Mess Hall Garden*. 1943. Archie Miyatake Personal Collection. Manzanar Relocation Center.

Yamada, Mitsuye. Camp Notes and Other Poems. San Lorenzo, California: Shameless Hussy Press, 1976 149

Yamamoto, Madelon Arai, interview by Richard Potashin, Densho Digital Repository, May 6, 2011.

Academic Paper

Sample: A
Score: 5

The paper earned a score of 5 because it establishes a focused topic of inquiry, clearly providing background information on its topic (pages 4–9). The paper indicates the relevance of its uncovered gap and resulting research question (page 9, paragraph 1: "A qualitative ethnographic case study examining the purposes ..."). The paper speaks to the limitations of its replicable method and discusses implications (page 22) of an analysis like this for other contexts such as Guantanamo. In addition, the paper is well organized and uses its interpretation of evidence to construct a persuasive and sophisticated argument leading to a new understanding. The student is also able to connect this understanding and the research process back to the scholarly literature (see page 21), placing the new understanding in conversation with past studies. While the visuals (for examples, see pages 5, 6, and 14) were not analyzed directly as the student implied they might be, if they are considered as visuals accompanying a presented lecture, they do not detract or confuse the main argument.

The paper did not score a 4 because the writing and citation attribution style are clear and compelling and provide a strong sense of the student's unique voice as a credible researcher. It is the establishment of this voice and the paper's superior understanding of the context in which the research is being conducted that caused the paper to merit more than a score of 4.

2017

AP® CollegeBoard

Paper #3: Growth For Good: How Past Experiences Motivate Executives To Join Double Bottom Line Organizations In The Indian Construction Industry

AP Research Academic Paper

Sample Student Responses and Scoring Commentary

Inside:

- ☑ Sample A
- ☑ Scoring Guideline
- ☑ Student Samples
- ☑ Scoring Commentary

AP® RESEARCH 2017 SCORING GUIDELINES
Performance Task Rubric: Academic Paper

Content Area	Performance Levels		
1 Understand and Analyze Context	The paper identifies a broad topic of inquiry and/or a purpose. 2	The paper identifies a focused topic of inquiry and describes the purpose. 4	The paper explains the topic, purpose, and focus of the inquiry and why further investigation of the topic is needed by connecting it to the larger discipline, field, and/or scholarly community. 6
2 Understand and Analyze Argument	The paper identifies or cites previous scholarly works and/or summarizes a single perspective on the student's topic of inquiry. 2	The paper summarizes, individually, previous scholarly works representing multiple perspectives about the student's topic of inquiry. 4	The paper explains the relationships among multiple scholarly works representing multiple perspectives, describing the connection to the student's topic of inquiry. 6
3 Evaluate Sources and Evidence	The paper uses sources/evidence that are unsubstantiated as relevant and/or credible for the purpose of the inquiry. 2	The paper uses credible and relevant sources/evidence suited to the purpose of the inquiry. 4	The paper explains the relevance and significance of the used sources/cited evidence by connecting them to the student's topic of inquiry. 6
4 Research Design	The paper presents a summary of the approach, method, or process, but the summary is oversimplified. 3	The paper describes in detail a replicable approach, method, or process. 5	The paper provides a logical rationale for the research design by explaining the alignment between the chosen approach, method, or process and the research question/project goal. 7
5 Establish Argument	The paper presents an understanding, argument, or conclusion, but it is simplistic or inconsistent, and/or it provides unsupported or illogical links between the evidence and the claim(s). 3	The paper presents a new understanding, argument, or conclusion that the paper justifies by explaining the links between evidence and claims derived from the student's research. 5	The paper presents a new understanding, argument, or conclusion that acknowledges and explains the limitations and implications in context. 7
6 Select and Use Evidence	Evidence is presented, but it is insufficient or sometimes inconsistent in supporting the paper's conclusion or understanding. 2	The paper supports its conclusion by compiling relevant and sufficient evidence generated by the student's research. 4	The paper demonstrates an effective argument through interpretation and synthesis of the evidence generated by the student's research, while describing its relevance and significance. 6
7 Engage Audience	Organizational and design elements are present, but sometimes distract from communication or are superfluous. 1	Organizational and design elements convey the paper's message. 2	Organizational and design elements engage the audience, effectively emphasize the paper's message and demonstrate the credibility of the writer. 3
8 Apply Conventions	The paper cites and attributes the work of others, but does so inconsistently and/or incorrectly. 2	The paper consistently and accurately cites and attributes the work of others. 4	The paper effectively integrates the knowledge and ideas of others and consistently distinguishes between the student's voice and that of others. 6
9 Apply Conventions	The paper's use of grammar, style and mechanics convey the student's ideas; however, errors interfere with communication. 1	The paper's word choice and syntax adheres to established conventions of grammar, usage and mechanics. There may be some errors, but they do not interfere with the author's meaning. 2	The paper's word choice and syntax enhances communication through variety, emphasis, and precision. 3

NOTE: To receive the highest performance level presumes that the student also achieved the preceding performance levels in that row.

ADDITIONAL SCORES: In addition to the scores represented on the rubric, readers can also assign scores of **0** (zero).

- A score of **0** is assigned to a single row of the rubric when the paper displays a below-minimum level of quality as identified in that row of the rubric.

Academic Paper

Overview

This performance task was intended to assess students' ability to conduct scholarly and responsible research and articulate an evidence-based argument that clearly communicates the conclusion, solution, or answer to their stated research question. More specifically, this performance task was intended to assess students' ability to:

- Generate a focused research question that is situated within or connected to a larger scholarly context or community;
- Explore relationships between and among multiple works representing multiple perspectives within the scholarly literature related to the topic of inquiry;
- Articulate what approach, method, or process they have chosen to use to address their research question, why they have chosen that approach to answering their question, and how they employed it;
- Develop and present their own argument, conclusion, or new understanding while acknowledging its limitations and discussing implications;
- Support their conclusion through the compilation, use, and synthesis of relevant and significant evidence generated by their research;
- Use organizational and design elements to effectively convey the paper's message;
- Consistently and accurately cite, attribute, and integrate the knowledge and work of others, while distinguishing between the student's voice and that of others;
- Generate a paper in which word choice and syntax enhance communication by adhering to established conventions of grammar, usage, and mechanics.

GROWTH FOR GOOD: HOW PAST EXPERIENCES MOTIVATE EXECUTIVES TO JOIN DOUBLE BOTTOM LINE ORGANIZATIONS IN THE INDIAN CONSTRUCTION INDUSTRY

Word Count: 5183

Abstract

Researcher Anthony Bisconti defines the unorthodox companies called double bottom line (DBL) organizations as businesses which do good for society while earning profit (Bisconti, 2009). Since 2001, the amount of these organizations has started to increase in the Indian construction industry. By thematically analyzing the narratives of eight executives working in Indian construction DBL organizations, I seek to understand the reason for this growth. Specifically, this study looks at important events in an executive's life in order to understand how experiences motivate executives to join Indian DBL organizations within the construction industry. Through interviews with eight executives working in this sector, I collected multiple narratives detailing how past experiences influenced the decision to work with the double bottom line. With a thematic analysis, I drew connections between common themes arising from the narratives in order to find the types of experiences which functioned as motivators to join a DBL organization. This paper was written with the initial assumption that experiences and events relating to poverty would make people more prone to joining a DBL organization. Through the research process, however, it was instead revealed that experiences based off a need to self actualize - defined as the desire to use one's skills for social impact rather than profit- catalyzed the desire to work with a DBL organization. Therefore, this study concludes that experiences related to doing good for society engender the motivation to join a DBL organization. This research indicates that certain experiences do, in fact, play a role in motivating executives to join DBL organizations. Therefore, it can be used in order to understand how to best augment the growth of DBL organizations in the Indian construction industry.

Introduction

Although India has the second largest construction industry in the world, only 20% of its total workforce are a part of the organized sector (Nihas, 2013). The organized sector is comprised of businesses which are publicly listed, and therefore can be regulated by the government (Nihas, 2013). The other 25 million workers operate in the unorganized sector, meaning they are hired by unincorporated businesses (Nihas, 2013). This fragmentation of labor has made regulation of the industry difficult, as government institutions have no way of officially cataloguing the companies in the unorganized sector (Tiwary et al, 2012). Moreover, the lack of both federal monitoring and efficient labor laws has made it easy for the aforementioned companies to abuse workers (Tiwary, 2011). Over time, this has caused an epidemic of human rights violations which directly impacts the lives of many impoverished Indians. As of now, there is little anyone can do to protect the rights of Indian laborers. The government, due to rampant corruption, is inefficient in regulating the unorganised sector (Betancourt et al, 2013). Non governmental organizations (NGOs) have had some success in bringing human rights to the industry, but typically withdraw because of their dependence on donations and third party funding (Chung, 2008). Although both these parties have had limited success, businesses known double bottom line organizations have been instrumental in causing social change within the market (Afsharipour, 2013).

It is widely believed that double bottom line businesses can bring about societal change within an industry (Jue, 2015). Double bottom line (DBL) organizations are essentially companies which earn profit while doing good for society. Indeed, Bisconti defines the double bottom line as " a way to describe a social enterprise's balance of financial viability and social impact." (Bisconti, 2009). There are many examples of such companies currently doing social work while earning profit in India. In the construction industry, for example, some DBL organizations educate their laborers on workplace security. Others may provide them with vocational training (Char, 2011).

In India, DBL organizations have started to grow in number (Bos, 2015). While the rise of these businesses is welcome in society, it is also puzzling. This is because conventionally, social enterprises of all forms pay less than conventional businesses due to their need to sacrifice profit for social impact (Char, 2011). DBL organizations are no exception to this rule. As a result, they offer lower compensation packages to executives who join them, and are more difficult to sustain than a for-profit organization (Afsharipour, 2013). However, despite the obvious disadvantages to joining them, trained professionals are forgoing work at conventional businesses for a job with a DBL organization (Sodhi et al, 2011). This growth indicates that something other than profit motivates entrepreneurs to join DBL organizations - perhaps something such as an executive's past experiences. Therefore, it is in our best interests to investigate how past experiences motivate executives to join businesses adopting the double bottom line metric.

Literature Review

In order to understand why this study analyzes the past experiences of executives and how they influence a DBL organization's growth, it is important to look at the existing body of research on the subject. There are currently few studies looking at how these experiences function as motivators, however, some studies suggest that they build a positive reputation for themselves in order to become more popular and therefore grow more (Douglas, 2010; Lee, 2015). These studies look at how DBL organizations build a public image for themselves in order to gain support. As concluded by Lee, "the growth of social enterprises in South Korea is attributed to the country's characteristically strong central government and its creation of relevant institutions and provision of support services". This study suggests that DBL organizations are able to grow by developing a strong public imagine which, in turn, allows them to access resources that aid their development. Similarly, Douglas asserted in their research that "institutional identity problems" for a DBL organization "reduce external appreciation". Just like Lee, Douglas' work shows how a DBL organization's public image is critical towards its growth and success. In essence, both these studies conclude that DBL organizations experience growth by promoting a positive public imagine. The studies, however, are limited as they do not examine what motivates executives themselves to join a DBL organization. Rather, Lee and Douglas provide explanations for how DBL organizations may grow by garnering more funds or approval.

Unlike the studies conducted by Lee and Douglas, research examining why executives themselves leave their jobs for work at a DBL organization - and therefore engender growth - does exist. (Pulasinghe, 2010; Alfaro et al, 2012,) . These studies collect a sample of entrepreneurs working in NGOs or DBL organizations and then group them based on their common traits. They then conduct analysis on their subject's traits in order to determine their motivation to join a social cause. For example, Pulasinghe concludes in her study on employee motivation in Sri Lankan NGOs that executives join social causes"since they receive more empowerment and recognition by working there" , and due to a "desire to change the world" (Pulasinghe, 2010). In a similar vein, Alfaro's research suggests that executives join social organizations because they want to make a positive impact on society. In short, both of these researchers analyze how common personality traits among a group of entrepreneurs indicate the types of people who are more likely to join a social cause. They assert that personality plays a large role in an executive's decision to join a social cause (such as social enterprise or a NGO). They are limited, however, since they do not take into account how experiences in an executive's past could have influenced their decision to join a DBL organization, and solely focus on their personality. Past experiences - which can have a massive impact on an executive's decisions - are integral to any entrepreneurs motivation (Simmons, 2016). Thus, by not analyzing them these studies do not fully represent how executives are motivated to join social causes. Additionally, the studies are further limited as they do not interview entrepreneurs from similar industries and businesses. Each study aims to investigate the motivation to join a social cause, and therefore looks at why people join NGOs, charities, and even the United Nations. Their data therefore represents why entrepreneurs join all types of social organizations rather than just specifically DBL organizations.

Therefore, while some studies assert that the public image of DBL organizations is what causes them to grow, and others argue that personality is integral in motivating an entrepreneur to join a social cause, few studies test how the past experiences of entrepreneurs influences their motivation to join a DBL organizations. Moreover, given the limitations of previous studies, any research on motivations for entrepreneurs in the future must focus on a specific industry. Seeing as studies have not looked at the Indian construction industry before, future research should aim to examine DBL organizations in this sector in order to bridge the gap in knowledge. Moreover, research needs to be centered around entrepreneurs rather than organizations as a whole.Altogether, these factors illustrate our a gap in our knowledge of why people join DBL organizations, as few studies examine how past experiences motivate executives to join DBL organizations, and the growth of DBL organization in the Indian construction industry. This study will attempt to bridge this gap by asking the question: through a case study on organizations in the Indian construction industry, how do past experiences motivate professionals to join businesses adopting the double-bottom line metric?

My research will therefore be unique as it will examine how *past experiences* motivate professionals to join DBL organizations. As stated earlier, it will be limited to DBL businesses in the Indian construction industry to try and provide an explanation for the growth of DBL organizations in the sector. Additionally, because previous studies have not been centered around this industry it will fill the gap in knowledge on the subject. Under the above parameters, the study will gather qualitative data through a set of recorded interviews in order to test its hypothesis. Specifically, it will obtain the narratives of around eight executives from three different DBL organizations. Moreover, the inquiry will not mention the names and organizations of any participants in order to protect user anonymity.

This study's contributions to research on the topic will be significant as it will highlight the types of experiences which make people more prone to enter DBL organizations. It will research how these experiences can serve as motivations, thereby contributing to the pre-existing knowledge base on why people join social causes. With this knowledge, it may be possible to try and encourage more professionals to join DBL organizations in the Indian construction industry. This would be instrumental in causing social change, and would let us as a society know the types of people who would be prone to joining social enterprise, allowing the Indian government to use this information to increase the growth of DBL organizations. It could also help the organizations themselves launch campaigns to attract interested professionals - further augmenting their growth. Altogether, the results of this study can contribute to increasing the amount of DBL organizations in the Indian construction industry for more social benefit in the future.

Hypothesis

I initially hypothesized that experiences with exposure since childhood to the struggles of the lower class would motivate executives to join DBL organizations in the Indian construction industry. This hypothesis was developed based on conclusions of studies examining the executive's decision to join NGOs. These studies showed a positive correlation between exposure to poverty and the motivation to work for an NGO - that is to say, they discovered that people with experiences with poverty were more likely to join NGOs (Young, 2013). Due to the similarities between NGOs and DBL organizations, I believe that motivations of executives to join either type of business will be extremely alike.

Method

In order to test the hypothesis, a case study method containing narrative interviews and then a thematic analysis was employed. Case studies are close examinations or analyses of people, organizations, or phenomenon (Zucker, 2009). This research focused on a case study of eight executives representing three DBL organizations in the Indian construction industry. The case study method was used to better analyze the phenomenon of how experiences influenced an executive's decision to join a DBL organization. The point of this type of method was to analyze how experiences influenced the motivation to join a DBL organization, so looking at the phenomenon through the close examination offered by a case study was the easiest way to analyze the data. Furthermore, the case study method allowed for information to be collected (through narrative interviews) and then examined with a thematic analysis.

Narrative Interviews

In order to collect data on the personal experiences of executives and to test my hypothesis, I conducted narrative interviews as the first part of the case study. For reference, narrative interviews are interviews which seek to reconstruct experiences and events from an interviewee's life (Jovchelovitch, 2007). They follow a framework proposed by the London School of Economics, and therefore have a few specific guidelines which interviewers must adhere to (Jovchelovitch, 2007). Primarily, narrative interviews must ask questions in chronological order. That is to say, they need to ask questions about events which chronologically occurred first before moving on to explore events which occurred at later dates. They must also have no questions which can be answered by a yes or no, and must allow an interviewee ample room to elaborate on their story. Narrative interviews were selected to the primary method of acquiring data as they are able to effectively extrapolate narratives from interviewees. Since my final goal was to examine how past experiences influenced the motivation of executives, I needed to collect accounts of these events in an anecdotal form. Therefore, narrative interviews were employed as they are specifically designed to have interviewees recall stories or past events.

Before the interviews, however, it was necessary to first select a target group. As stated earlier, eight executives working in three different DBL organizations were examined for the study. Organizations to request interviews from were selected only if they followed the double bottom line metric of success - that is to say, if they focused on both earning profit and having a social impact. They also had to be in the Indian construction industry in order to bridge the gap in knowledge on DBL organizations in that particular sector. Moreover, they had to consider themselves DBL organizations, and explicitly state in their mission statement the desire to do good for society while earning a profit. The three DBL organizations chosen for this study all, therefore, fit the above parameters. Additionally, each organization was taken from a list of DBL organizations recognized by the Indian government, and generally had the same business model. In essence, all three provided livelihoods for rural youth by equipping them with construction skills, and would earn profit by contracting these youth-turned-workers to build sites. After the identification process was complete, interviews with executives representing these companies were organized. Around 2-3 executives were selected from each business - and in total, this meant that 8 executives from 3 different organizations were interviewed as part of the study.

The goal of each interview was to determine which experiences in an executive's life contributed to their decision to join a DBL organization. As such, all interviews featured the same 15 questions on an executive's past experiences, and were all conducted through a phone call. The questions were all opened ended so that interviewees had opportunity to elaborate on their answers, and were designed with the help of the London School of Economics' narrative interview guidelines (Jovchelovitch, 2007). They were also categorized into three groups - early life (5 questions), University years (4 questions), and adulthood (6 questions). The early life category asked interviewees about experiences from when they were born up until age 16, the university category naturally dealt with events occurring during their college years, and the adulthood segment questioned executives about events occurring between after University and before they joined their representative organization. I did this in order to gain a wide spectrum of the types of events which could have motivated an interviewee to join a DBL organization.

Thematic Analysis

After the narrative interviews were conducted, the research moved on to the second step of the case study - qualitative thematic analysis. Thematic analysis is a method of analysis which determines a relationship between common themes in a sample of collected data (Thomas, 2007). For the purposes of the study, this method was used to analyze the experiences presented by the executives in their interviews. It did this by identifying how common themes across the interviewee's differing narratives contributed to an interest in DBL organizations.

The thematic analysis was split into two sections. Firstly, similar experiences were identified among the interviewed executives. These similar experiences indicated the types of common events which occurred to executives who decided to pursue careers in a DBL organization. The overall goal of this process was to determine the types of events which motivated executives to join a DBL organization. In the interviews, however, executives sometimes cited events which were important to them but not to their decision to join a DBL organization - like marriage, or sports tournaments. These events were omitted from analysis, as only experiences which directly contributed to an executive's decision to join a DBL organization were significant for the purposes of my research. After this initial stage of identifying relevant common experiences was complete, I moved on to the next part of the qualitative thematic analysis. For this second segment of the research, the common experiences were analyzed for how they could contribute to an executive's motivation to join social enterprise. In this step, similar experiences were categorized into groups. Each group was then labeled with an overarching theme, which I used in my analysis of how events influenced an executive's motivation. Hence, this research method was used to identify common themes amongst the narratives of executives, which were analyzed to determine how they contributed to an employee's motivation.

Thematic analysis was the second stage of this case study as it was the best way to analyze the data presented from the narrative interviews. Since this study's objective was to find out how experiences motivated executives to join Indian DBL organizations, analyzing the common themes would indicate the *types* of experiences which would make professionals more prone to joining a DBL organization. A thematic analysis does this by identifying the common themes within a sample size - hence it was employed for the research.

Findings

Before moving on to discuss the importance of coding the data into such a table, we need to first clarify what each theme means. From all eight narratives, a total of five themes emerged. These themes and their definitions have been coded into the table below.

Table 1: Definitions of Themes

Theme	Definition
Service	Community service related experiences, such as donating to the charities or doing social work.
Education	Experiences with working in the field of education. Examples of this include working as a teacher, or having a job in a school.
Travel	Experiences with traveling away from home.
Self actualization	Experiences in which an executive realized that they wanted to self actualize. Self actualization is defined as the desire to use one's talents and abilities to the fullest extent. In this case, experiences when an executive realized that they wanted to do use their skillset for more than just earning money .
Poverty	Experiences in which an executive had to survive poverty. Examples of this would include growing up in a lower class family, or having to skip school in order to earn money for food.

The results from the narrative interviews were compiled into the table below.

Table 2 : A Summary of the Eight Interviews

Executive #	Key Events from the Executive's Past	Corresponding Themes
1	Listening to their father talk about the struggles of common workers, and how the poor had to be helped.	Service
	Trip to rural India, where he observed extreme poverty Working for microfinance business	Travel
2	When their parents' business failed, they became impoverished up until High School.	Poverty
	Importance of education was stressed throughout life, to the point where they became a teacher	Education

	Decided to join DBL because wanted to use their teaching skill to empower the disadvantaged.	Self actualization
3	Was pushed by their parents to study hard and succeed, and became a teaching assistant at their University. Realization that they did not want to work as an Engineer, and wanted to use their skill for social good.	Education Self actualization
4	Traveling to rural areas in India and Europe as a teen, and being inspired to do social good. Starting a venture in India which would bring sanitation to girls' schools.	Travel Service
5	Importance of education was stressed since childhood, which inspired them to become a Vice Principal of a school. Realization that they wanted to use their skills in order to empower the poor, not simply earn money.	Education Self actualization
6	Traveled to Indonesia as an employee of a multinational organization, where they trained factory workers. Realization that they did not want to be a school teacher, and instead wanted to help the poor.	Education Travel Self actualization
7	Beginning a venture in India which will seek to give workers proper rights. Growing up in a lower-class family.	Service Poverty
8	As a teen, attended multiple human rights protests with their sibling, and campaigned for equality between genders. Realization that their talents were not appreciated by anybody in their company, and that they wanted to make a difference in the world through community service.	Service Self - actualization

As stated before, 8 executives from 3 different companies were interviewed on important events in their past which led to their desire to join a DBL organization. Their names and the businesses they represent have not been included in this study, hence the first column simply lists the order in which they were interviewed. This means that every row in the table represents a single executive's interview and by extension, their narrative.

The second column contains a short summary of 2-3 important events which emerged from each interview, and therefore describes the most important parts from an executive's narrative. They were included in the table as executives cited the experiences arising from these events as contributors to their decision to join a DBL organization. Finally, the third column in the table lists each experience's theme. These themes - which are listed and defined in table 1 - were assigned based on how an event affected their respective executive's mindset, and correspond to a single event from an executive's interview. They are significant, as they show the types of experiences and events which cause professionals to be inclined to join a DBL organization. For example, in interview number 7 an important event listed in column 2 is "growing up in a extremely lower class family". The corresponding theme is therefore "poverty", as this event allowed the executive to be able to understand the struggles of being poor.

In essence, this table condenses the narratives of each executive into a few important events which motivated them to join a DBL organization. Through the table, it is possible to identify *recurring* themes within the data set. These themes, when thematically analyzed can help identify how experiences motivate professionals to join DBL organizations.

Results

The narratives collected through interviews outlined the types of experiences which motivated executives to join DBL organizations. These experiences were categorized by theme, and then examined through a thematic analysis. The raw experiences and corresponding themes, for reference, can be found on table 1, while each theme's definition is listed on table 2. This section will discuss the results of the thematic analysis as well as the conclusion that my data suggests. Firstly, it is important to see which themes are repeated amongst all eight narratives. By identifying recurring themes, it will be possible to observe the types of experiences which make executives prone to join a DBL organization. Although there were a total of six themes appearing in the executive's narratives, only three were repeated consistently. These three recurring themes, therefore, shed light on how past experiences influence an executive's decision to join a DBL organization.

Recurring Theme 1: Self Actualization

Out of all five of the themes, the one which was most prevalent in each of the eight narratives was self actualization. Five out of the eight executives - numbers 2 , 3, 5, 6, and 8 - cited experiences falling under this theme as being significant factors in their decision to join a DBL organization. As defined by table two, self actualization refers to the desire to use one's skills for something other than earning money. Usually, they involved an executive realizing that rather than be employed by a for-profit organization and work for money, they wanted to use their skills to help the disadvantaged and create real social change.. For example, executive 6 stated in their interview that,

> I started to realize that while I was working for this engineering company, that my project was not kicking off. I did not feel like there was much success, and there was no change that was happening from me, because see, although I was the head of the team, I didn't have much accomplishment, you

> know? I was just working for this company, but there was nothing really significant that I felt was happening. So then when [CEO of their current DBL organization] approached me, I really leapt at the chance to make a difference.

Executive 2 essentially felt that they weren't making much of a change in the world, and their work was not recognized. Thus, they had the revelation that they wanted to do something service - oriented, like join a DBL organization, and create tangible change. Rather than do their regular jobs, each executive instead believed in the importance of having an *impact* in the world. Executive 5 stated that "I was not feeling like I accomplished much with my finance job. I would do work for the company, and there was no change I was making. So then when I started to realize that, I began to want to do something different with my life, and change career," In fact, executives 3, 5, and 8 all had similar sentiment, and specifically use the word "impact" when describing their desire to self actualize. Although the narratives were slightly different, the underlying theme of each experience was the same : self actualization. Seeing as these five are a majority out of the eight, it can be concluded that experiences creating a desire for self-actualization are a part of the reason that executives join DBL organizations in the Indian construction industry. Moreover, the desire to self actualize can be seen to stem from a need to cause social change, or an impact, in the world. This, therefore, suggests that experiences in which an executive felt a need to self actualize make people more likely to join DBL organizations.

Recurring Theme 2: Service

As stated in table 2, hallmarks of experiences under the service theme include work done to further a social cause, or some form of charity. Four out of the eight executives cited these types of experiences and events as important in motivating them to join a DBL organization. Specifically, executives 1,4 ,7, and 8 stated in their interviews that their previous work with doing service had given them an interest for it. In turn, their interest in service lead them to be more inclined to work at a DBL organization. This is because DBL organizations, especially in the Indian construction industry, are built around doing good for society through service while earning money (Afsharipour, 2013). As seen from executive 8's narrative, past experience with doing service make one more interested in doing service through a DBL organization. The executive stated,

> My sister, she was very involved in protests for human rights. I grew up in a small family, so often times my sister and I, since we were the only children, would have a lot of time to ourselves. She would often talk to me about human rights, and as I grew older I would go attend these protests. It was here when I really first started to be involved in the, you know, community service aspect of my work, and I had a lot of satisfaction knowing I was standing up for the people who were not fortunate.

Executives 1,4, and 7 had similar narratives, in which they elaborated on how service-related events made them appreciate the power of social work, and in turn made them interested in working with DBL organizations. These executives, however, generally shared the same insight on experiences involved service. They stated that it was "the sense of accomplishment and *change* " which they felt from a service - related experience that gave them an interest for social work. This is similar to how executives listing self-actualization related experiences felt the need to make an impact in the world with their skillset. Therefore we may observe that, once again, a desire to have a tangible impact on the world leads executives to join DBL organizations. In this scenario, executives who had experience with service felt the need to have an impact on the world, and extend their interactions with service to their professional life . Hence, these recurrence of these service - related experiences suggest a sense of fulfillment and impact achieved through doing social good inspired executives to join DBL organizations.

Recurring Theme 3: Education

Four out of the eight executives - numbers 2, 3, 5, and 6 - stated that education-related experiences were critical in motivating them to join a DBL organization in the construction industry . As seen in table 2, education related experiences include teaching others or working for schools. The four executives who cited these types of experiences as being important motivators to join their DBL organization all held teaching positions within an academic institution. Numbers 2 and 6 as teachers, number 5 was a teaching assistant, and number 3 was a Vice Principal.

Initially, a relationship between education related jobs and DBL organizations was not clear. A connection between these experiences and the Indian construction industry, however, appeared during thematic analysis. In order to understand the implications of this, we must re emphasize the role of the DBL organization in the construction industry. As seen earlier from Char and Afsharipour research, DBL organizations in the construction industry primarily focus on training workers and teaching them about their rights (Char 2011, Afsharipour 2013). Indeed, each of the three organizations these four executives represented focused heavily on worker training. Therefore, experiences in teaching would mean that it would be easier for executives to work for DBL organizations in the construction industry, as these organizations focus heavily on education. As stated by executive number 2, "I had a job teaching, but then I realized I wanted to do some work for India, for the nation. So I decided that instead of teaching the children, I would go and teach the poor [construction workers]." In fact, executives 2,5 and 6 all stated it was "easier" or "convenient" to move from teaching their students to educating construction workers, rather than go into another part of the nonprofit sector. Therefore, the recurrence of this theme does not explain why executives join DBL organizations as a whole. Rather, shows what makes professionals more inclined to enter the *construction* industry given the fact that an executive is interested in joining a DBL organization.

Limitations

Before moving on to discuss the results of the study, it is necessary to identify potential limitations which could have hindered the effectiveness of the data. The biggest of these was sample size. Upon contact, each DBL organization only let me interview around 3 executives. Since each executive held an important position in their company, this limitation made sense. Nonetheless, having more executives to interview would have made the findings more robust, and perhaps produced a more accurate conclusion. Another limitation in this study was in human error. As stated earlier, each interview lasted around 15 minutes. During this time, interviewees were asked to remember important events from their past - which could have occurred decades ago. It is possible that some of the executives were unable to report events which drove them to join a DBL organization, due to the fact that they were being made to do so off the top of their head and in a very limited timeframe. Because of this, some events which could have led executives to join DBL organizations may not have been mentioned in the study, simply because at the time of the interview, the executives were unable to recall these specific events. Granted, events of such magnitude would likely be easily remembered due to their importance to an executive - but nevertheless, the existence of this human error is still probable. Additionally, as a researcher it is possible that human error occured during the analysis section. I may not have studied a transcription carefully enough, and potentially missed listing an important experience. This would also have lead to a less accurate data set, which could, in turn, have slightly skewed the results.

Discussion of Results

Therefore, the results of this study suggest that the initial hypothesis was wrong : rather than experiences with poverty, it is experiences with service and self actualization that motivate executives to join DBL organizations by giving them a desire to have an impact on the world. Additionally, experiences with education are what drive executives to enter organizations specifically in the construction industry because they better prepare executives to train workers. This means that executives with these types of experiences are more prone to join DBL businesses within the Indian construction industry, especially if their experiences leave them with a drive to change or impact the world.

This conclusion has multiple implications for the future of Indian DBL organizations. Firstly, these results show us that experiences which make executives feel the need to have an impact in the world can function as motivators to join DBL organizations. Secondly, the disparity between the initial hypothesis and final conclusion suggest that executives have different motivations to join NGOs and DBL organizations. The initial hypothesis, which stated that experiences with poverty motivated executives to join DBL organizations, was created based on the results of previous studies examining the motivation to join an NGO (Pulasinghe 2013). Seeing as, however, this hypothesis was disproved, it can be concluded that executives have different reasons for joining NGOs than they have for joining DBL organizations. Although the two are similar in the sense that they both do good for society, this research shows that professionals have differing motivations to work in either type of company.

Through the results of the study, it is possible for entities like the Indian government to create programs designed to garner interest for DBL organizations. Since it is evident that specific types of experiences make professionals likely to enter them, PSAs, workshops, or other methods targeted at those with these experiences can be used to further augment the growth of Indian DBL organizations within the construction industry. Further research, however, on finding additional mechanisms through which the Indian government could use the data from this study in order to attract interest for social enterprises is required in order to most efficiently use the results. Moreover, future research could be centered on finding whether the conclusions made by this study can be applicable to other industries in India - or potentially the globe.

References

Afsharipour, Afra (2013). The Emergence of new social enterprise regimes in India and China. *UC Davis Journal of Law*. 1(14). Retrieved from: http://digitalcommons.law.umaryland.edu/cgi/viewcontent.cgi?article=2446&context=fac_pubs

Alfaro-Trujillo, B., Valles-Medina, A., & Vargas-Ojeda, A. (2012). Profiles, Perceptions and Motivations of Community Health Workers of NGOs in a Border City of US-Mexico. *Journal Of Community Health*, *37*(3), 583-590. doi:10.1007/s10900-011-9486-z

Betancourt, T. S., Shahinfar, A., Kellner, S. E., Dhavan, N., & Williams, T. P. (2013). A qualitative case study of child protection issues in the Indian construction industry: investigating the security, health, and interrelated rights of migrant families. *BMC Public Health*, *13*(1), 1-12. doi:10.1186/1471-2458-13-858

Bisconti, A. (2009). The Double Bottom Line: Can Constituency Statutes Protect Socially Responsible Corporations Stuck in Revlon Land. *Loyola of Los Angeles Law Review*. 3(1). Retrieved from: http://digitalcommons.lmu.edu/cgi/viewcontent.cgi?article=2666&context=llr

Bos, J. W., & Millone, M. (2015). Practice What You Preach: Microfinance Business Models and Operational Efficiency. *World Development*, *70*28-42. doi:10.1016/j.worlddev.2014.12.018

Char, Sudhanva (2011). Social Entrepenuership: Promoting Social Growth through Non- Profits. *Journal of Emerging Knowledge on Emerging Markets*. 1(3). Retrieved from: https://www.mendeley.com/viewer/?fileId=3716c161-49ee-80ad-3bd5-cc4ea3d8b739&documentId=c4e3bba6-82d9-363a-962d-06e5ac1ca41d

Chung, B. Y., Skibniewski, M. J., Lucas, H. C., & Kwak, Y. H. (2008). Analyzing Enterprise Resource Planning System Implementation Success Factors in the Engineering–Construction Industry. *Journal Of Computing In Civil Engineering*, *22*(6), 373-382. doi:10.1061/(ASCE)0887-3801(2008)22:6(373)

Douglas, Heather. (2010). Walking Towards the Light? The Transformation of Jigsaw from a Not-For-Profit Organization to a Social Enterprise. *Third Sector Review*, *16*(2), 29-47. Retrieved from : http://web.a.ebscohost.com/ehost/detail/detail?sid=9aae321c-abe7-47bd-860e-21d3fadfd541%40sessionmgr4006&vid=0&hid=4109&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#AN=57267692&db=a9h

Lee, E. (2015). Social Enterprise, Policy Entrepreneurs, and the Third Sector: The Case of South Korea. *Voluntas: International Journal Of Voluntary & Nonprofit Organizations*, *26*(4), 1084-1099. doi:10.1007/s11266-015-9584-0

Jovchelovitch, Sandra;. (2007). Narrative interviewing].:*LSE Research Online*. 1(1). 1-5. Retrieved from: http://eprints.lse.ac.uk/2633

Jue, D., & Pruter, M. (2015). Creating an essential marketplace to close the information gap for social impact technologies. *Current Science (00113891)*, *109*(9), 1630-1638. doi:10.18520/v109/i9/1630-1638

Nihas, Syed. (2013) Construction Industry Structure in India. *RICS Conference Journal*. 1(1), 1-10. Retrieved from:https://www.researchgate.net/publication/280923884_CONSTRUCTION_INDUSTRY_STUCTURE_IN_INDIA

Pulasinghe, C. (2010). Employee Motivation: What Factors Motivate Employees to Work in Nongovernmental Organizations (NGO) in Sri Lanka: A Study According to Maslow's Hierarchy of Needs Model. *International Journal Of Interdisciplinary Social Sciences*, *5*(4), 197-211.

Simmons, S. A., Carr, J. C., Hsu, D. K., & Shu, C. (2016). The Regulatory Fit of Serial Entrepreneurship Intentions. *Applied Psychology: An International Review*, *65*(3), 605-627. doi:10.1111/apps.12070

Sodhi, M. S., & Tang, C. S. (2011). Social enterprises as supply-chain enablers for the poor. *Socio-Economic Planning Sciences*, *45*(4), 146-153. doi:10.1016/j.seps.2011.04.001

Thomas, D (2010). Methods for the thematic synthesis of qualitative research in system reviews. *Economic and Social Research Council,* 10(7), 1-5. Retrieved from: http://eprints.ncrm.ac.uk/468/1/1007_JTAHthematic_synthesis.pdf

Tiwary, G., & Gangopadhyay, P. K. (2011). A review on the occupational health and social security of unorganized workers in the construction industry. *Indian Journal Of Occupational & Environmental Medicine*, *15*(1), 18-24. doi:10.4103/0019-5278.83003

Tiwary, G., Gangopadhyay, P. K., Biswas, S., Nayak, K., Chatterjee, M. K., Chakraborty, D., & Mukherjee, S. (2012). Socio-economic status of workers of building construction industry. *Indian Journal Of Occupational & Environmental Medicine*, *16*(2), 66-71. doi:10.4103/0019-5278.107072

Reiser, D. Dan, SA. (2013). Hunting Stag with a Fly Paper: A Hybrid Model for Social Enterprise. *Boston College Law Review*, *54*(4), 1495-1544. Retrieved from : http://web.a.ebscohost.com/ehost/detail/detail?sid=9aae321c-abe7-47bd-860e-21d3fadfd541%40sssionmgr4006&vid=0&hid=4109&bdata=JnNpdGU9ZWhvc3QtbGl2ZQ%3d%3d#AN=5726769&db=a9h

Young, Dennis R., "If Not for Profit, for What?" (2013). *2013 Faculty Books*. 1. Retrieved from: http://scholarworks.gsu.edu/facbooks2013/1

Zucker, M. (2009). How to do Case Study Research. *Scholar Works at University of Michigan, Amherst*. 1 (1).

Retrieved from:
http://scholarworks.umass.edu/cgi/viewcontent.cgi?article=1001&context=nursing_faculty_pubs

AP® RESEARCH
2017 SCORING COMMENTARY

Academic Paper

Sample: A
1 Understand and Analyze Context Score: 6
2 Understand and Analyze Argument Score: 6
3 Evaluate Sources and Evidence Score: 6
4 Research Design Score: 7
5 Establish Argument Score: 7
6 Select and Use Evidence Score: 6
7 Engage Audience Score: 3
8 Apply Conventions Score: 6
9 Apply Conventions Score: 3

HIGH SAMPLE RESPONSE

Growth For Good: How Past Experiences Motivate Executives to Join Double Bottom Line Organizations in the Indian Construction Industry

Content Area: Understand and Analyze Context — Row 1
The response earned 6 points for this row because there is a clear purpose and focus on page 4, paragraph 2: "My research will therefore be unique as it will examine how past experiences motivate professionals to join DBL organizations. As stated earlier, it will be limited to DBL businesses in the Indian construction industry to try and provide an explanation for the growth of DBL organizations in the sector". The paper goes on to demonstrate a gap and rationale for the topic of inquiry pursued: "Additionally because previous studies have not been centered around this industry it will fill the gap in knowledge on the subject".

Content Area: Understand and Analyze Argument — Row 2
The response earned 6 points for this row because the paper puts sources with multiple perspectives in conversation with each other on page 3 in the first two paragraphs: "Unlike the studies conducted by Lee and Douglas, research examining why executives themselves leave their jobs for work at a DBL organization - and therefore engender growth - does exist. (Pulasinghe, 2010; Alfaro et al, 2012)". This allows the student's inquiry to demonstrate engagement with the literature in the field. The arguments in the sources are also well-integrated with the student's topic of inquiry.

Content Area: Evaluate Sources and Evidence — Row 3
The response earned 6 points for this row because the paper clearly states how the literature sources point in the direction of the student's research - see, for example, page 4, paragraphs 1 and 2: "This study will attempt to bridge the gap..." and "My research will therefore be unique...". The student then explains how these sources are limited, requiring more work to be done: see page 3, paragraph 1 ("They are limited, however, since they do not take into account how experiences in an executive's past could have influenced their decision...") and page 3, paragraph 2 ("Additionally, the studies are further limited as they do not interview entrepreneurs").

AP® RESEARCH
2017 SCORING COMMENTARY

Academic Paper

Content Area: Research Design — Row 4
The response earned 7 points for this row because the case study approach is outlined and justified on pages 5 and 6. This study can be replicated and the rationale is solid, based on the limitations of previous studies, and addresses the student's choice on how to bridge this gap. Narrative interviews are rationalized on page 5, paragraph 2 and 3, which fits well with the desire to know about the executive's past experiences. Rationale for Thematic Analysis are also well-supported on page 6, paragraph 2.

Content Area: Establish Argument — Row 5
The response earned 7 points for this row because the limitations are clearly described on the bottom of page 11 and the implications of the conclusion are clearly set forth on page 12, in the second paragraph under "Discussion of Results": "This conclusion has multiple implications for the future of Indian DBL organizations. Firstly, these results show us.... Secondly, the disparity between the initial hypothesis and final conclusion suggest that...".

Content Area: Select and Use Evidence — Row 6
The response earned 6 points for this row because the coding of the evidence collected from the narrative interviews into themes on pages 7 and 8 (see Tables 1 and 2) clearly demonstrates a synthesis of the findings and is a suitable analytic tool for the purposes of this study. The paper also clearly describes initial and concluding assumptions that are changed by data.

Content Area: Engage Audience — Row 7
The response earned 3 points for this row because the paper overall is well-written and engaging. Tables clearly present the data (despite a minor mix-up of the Table numbers on page 9, under "Results" - "The raw experiences and corresponding themes, for reference, can be found on Table 1, while each theme's definition is listed on Table 2") and the use of subheadings and discussion of evidence clearly adds to the credibility of the student's findings.

Content Area: Apply Conventions — Row 8
The response earned 6 points for this row because the citations overall are well done. While there is one missing use of a listed citation (Reiser, 2013, is not used in the paper) and the date of the Thomas paper is confusing (is it the 2007 in paper or the 2010 in "Reference" list?), for the most part the student's voice is very clearly separate from the sources. See for example page 2, last paragraph: "...trained professionals are forgoing work at conventional businesses for a job with a DBL organization (Sodhi, et al, 2011). This growth indicates that something other than profit motivates entrepreneurs to join DBL organizations - perhaps something such as an executive's past experiences".

Content Area: Apply Conventions — Row 9
The response earned 3 points for this row because the paper is well written, with a good introduction to draw the reader in, moving nicely into the student's complex argument and clear descriptions of how the study was conducted and interpreted. Minor punctuation errors do not detract from the overall message.

2017

AP CollegeBoard

Paper #4: Making Health Education LGBTQ+ Inclusive in Vermont High Schools

AP Research Academic Paper

Sample Student Responses and Scoring Commentary

Inside:

- ☑ Sample D
- ☑ Scoring Guideline
- ☑ Student Samples
- ☑ Scoring Commentary

AP® RESEARCH 2017 SCORING GUIDELINES
Performance Task Rubric: Academic Paper

Content Area	Performance Levels		
1 Understand and Analyze Context	The paper identifies a broad topic of inquiry and/or a purpose. 2	The paper identifies a focused topic of inquiry and describes the purpose. 4	The paper explains the topic, purpose, and focus of the inquiry and why further investigation of the topic is needed by connecting it to the larger discipline, field, and/or scholarly community. 6
2 Understand and Analyze Argument	The paper identifies or cites previous scholarly works and/or summarizes a single perspective on the student's topic of inquiry. 2	The paper summarizes, individually, previous scholarly works representing multiple perspectives about the student's topic of inquiry. 4	The paper explains the relationships among multiple scholarly works representing multiple perspectives, describing the connection to the student's topic of inquiry. 6
3 Evaluate Sources and Evidence	The paper uses sources/evidence that are unsubstantiated as relevant and/or credible for the purpose of the inquiry. 2	The paper uses credible and relevant sources/evidence suited to the purpose of the inquiry. 4	The paper explains the relevance and significance of the used sources/cited evidence by connecting them to the student's topic of inquiry. 6
4 Research Design	The paper presents a summary of the approach, method, or process, but the summary is oversimplified. 3	The paper describes in detail a replicable approach, method, or process. 5	The paper provides a logical rationale for the research design by explaining the alignment between the chosen approach, method, or process and the research question/project goal. 7
5 Establish Argument	The paper presents an understanding, argument, or conclusion, but it is simplistic or inconsistent, and/or it provides unsupported or illogical links between the evidence and the claim(s). 3	The paper presents a new understanding, argument, or conclusion that the paper justifies by explaining the links between evidence and claims derived from the student's research. 5	The paper presents a new understanding, argument, or conclusion that acknowledges and explains the limitations and implications in context. 7
6 Select and Use Evidence	Evidence is presented, but it is insufficient or sometimes inconsistent in supporting the paper's conclusion or understanding. 2	The paper supports its conclusion by compiling relevant and sufficient evidence generated by the student's research. 4	The paper demonstrates an effective argument through interpretation and synthesis of the evidence generated by the student's research, while describing its relevance and significance. 6
7 Engage Audience	Organizational and design elements are present, but sometimes distract from communication or are superfluous. 1	Organizational and design elements convey the paper's message. 2	Organizational and design elements engage the audience, effectively emphasize the paper's message and demonstrate the credibility of the writer. 3
8 Apply Conventions	The paper cites and attributes the work of others, but does so inconsistently and/or incorrectly. 2	The paper consistently and accurately cites and attributes the work of others. 4	The paper effectively integrates the knowledge and ideas of others and consistently distinguishes between the student's voice and that of others. 6
9 Apply Conventions	The paper's use of grammar, style and mechanics convey the student's ideas; however, errors interfere with communication. 1	The paper's word choice and syntax adheres to established conventions of grammar, usage and mechanics. There may be some errors, but they do not interfere with the author's meaning. 2	The paper's word choice and syntax enhances communication through variety, emphasis, and precision. 3

NOTE: To receive the highest performance level presumes that the student also achieved the preceding performance levels in that row.

ADDITIONAL SCORES: In addition to the scores represented on the rubric, readers can also assign scores of **0** (zero).

- A score of **0** is assigned to a single row of the rubric when the paper displays a below-minimum level of quality as identified in that row of the rubric.

AP® RESEARCH
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Academic Paper

Overview

This performance task was intended to assess students' ability to conduct scholarly and responsible research and articulate an evidence-based argument that clearly communicates the conclusion, solution, or answer to their stated research question. More specifically, this performance task was intended to assess students' ability to:

- Generate a focused research question that is situated within or connected to a larger scholarly context or community;

- Explore relationships between and among multiple works representing multiple perspectives within the scholarly literature related to the topic of inquiry;

- Articulate what approach, method, or process they have chosen to use to address their research question, why they have chosen that approach to answering their question, and how they employed it;

- Develop and present their own argument, conclusion, or new understanding while acknowledging its limitations and discussing implications;

- Support their conclusion through the compilation, use, and synthesis of relevant and significant evidence generated by their research;

- Use organizational and design elements to effectively convey the paper's message;

- Consistently and accurately cite, attribute, and integrate the knowledge and work of others, while distinguishing between the student's voice and that of others;

- Generate a paper in which word choice and syntax enhance communication by adhering to established conventions of grammar, usage, and mechanics.

Making Health Education LGBTQ+ Inclusive in Vermont High Schools

Word Count: 5,009

Context

It has been widely demonstrated that the health of LGBTQ+[1] youth is, on average, worse than that of their heterosexual and cisgender peers. In 2011, the Centers for Disease Control and Prevention (CDC) collected data utilizing the Youth Risk Behavior Survey about which “health-risk” behaviors 9-12th grade students across the United States participated in. “Health-risk” behaviors were classified as behaviors detrimental to one's health such as drinking (alcohol), smoking, violence, behaviors related to suicide, and various sexual behaviors. The study found that, generally, “health-risk” behaviors were more prevalent in sexual minority youth than in heterosexual youth by 63.8% for gay and lesbian youth and by 76% for bisexual youth.

This trend was also found to be true in the more specific results found by the study. To start, across the eight sites which assessed whether students had been a victim of dating violence, the median percentage of heterosexual students who had was 10.2%, while that of gay and lesbian students was 27.5% and that of bisexual students was 23.3%. In addition, across the nine sites which assessed if a student had drank alcohol before the age of 13, the median percentage of students who had was 21.3% for heterosexual students, 34.6% for gay or lesbian students, and 36.2% for bisexual students; and, in that same area of “health-risk” behaviors, the median rates of students who had had at least one drink of alcohol during the thirty days prior to the survey were 37.6% among heterosexual students, 47.5% among gay and lesbian students, and 55.6% among bisexual students. Other general trends found in this study included lower exercise rates, higher usage of technology, less frequent use of seatbelts, more frequent use of various drugs,

[1] LGBTQ+ stands for the lesbian, gay, bisexual, transgender, queer, and questioning community, and can include anyone who is not heterosexual-heteroromantic (straight) and cisgender (the opposite of transgender; someone who identifies with the gender that they were assigned at birth).

more reports of sexual assault, and higher rates of obesity reported for LGB[2] youth than for heterosexual youth (Kann et all, 2011).

The "health-risk" behaviors that LGBTQ+ youth are experiencing or participating in are not only unhealthy, but can be deadly. A meta-analysis published in the *Journal of Homosexuality* in 2011 and completed by A.P. Hass, PhD, director of education and prevention at the American Foundation for Suicide Prevention, explains that, since the 1990s, population-based surveys of American youth which asked sexuality-related questions constantly found that suicide rates had consistently been two to seven times higher in LGB high school students than in heterosexual high school students. The previously mentioned CDC study found results consistent with the meta-analysis, finding that, across the states which assessed having attempted suicide in the twelve months prior to the survey, the median rate of suicide attempts in heterosexual youth was 6.4%, while it was 25.8% among gay and lesbian youth and 28% among bisexual youth (Kann et all, 2011). A third study, published in the *American Journal of Public Health* and organized by Brian Mustanski, PhD, director at the Institute for Sexual and Gender Minority Health and Wellbeing at Northwestern University, corroborated this finding as well. This study looked at 246 LGBT 16-20 year olds in the Chicago area and found that 31% of the participants had attempted suicide in their lifetime (2010).

From these findings, one can see that the LGBTQ+ youth of America are having a health crisis. This crisis is not being effectively addressed in health education laws. The law in only thirteen states requires that the discussion of sexual orientation be included in health education

[2] While the phrase "LGBTQ+"will be used by the author of this paper to refer to the community being discussed, when referring to other people's studies, the term that the researchers themselves use in the study will be used to describe the community. When "LGB" is used without the "T", it means that the study was done on non-heterosexual students and did not include specifically studying members of the transgender community.

courses, and in four of those states, that discussion is mandated to include only “negative information” about sexual orientation. In addition, 16 states do not mandate HIV education. In Arizona, if HIV education is taught, it is not allowed to portray homosexuality in a positive light and, in Oklahoma, where HIV education is required, it is taught that "homosexual activity" is one of the things "responsible for contact with the AIDS virus" (Guttmacher Institute, 2017).

In many cases, however, even if a law mandates that LGBTQ+ topic be taught in health education courses, this mandated education does not necessarily occur. According to the Gay, Lesbian, and Straight Education Network (GLSEN)’s 2009 National School Climate Survey, only 3.8% of respondents reported that their health course acknowledged “sexual and/or gender orientation education”.

Due to the state of the health of LGBTQ+ youth and the lack of health education laws attempting to address this issue, the question driving the research presented in this paper is “How LGBTQ+ inclusive are Vermont high school health education courses and what needs do students have in relation to the level of inclusivity present?”

Literature Review

One way that this health crisis could be at least partially addressed is through an LGBTQ+-inclusive health education curriculum. It has been established that health education, if presented properly, has the ability to affect the future behavior of its participants. In 1996, G. Kok, MSc and PhD, professor of applied psychology and former dean at Maastricht University, performed a meta-analysis of twenty-one meta-analyses that analyze the effects of health education and health promotion interventions and found that the education and interventions had a significant positive impact on the participants and their behavior thereafter. There are many case studies that support this notion as well. For example, a selective review published in 1997 in *The Journal of the Royal College of Paediatrics and Child Health* found that all of the interventions and education opportunities reviewed in some way had a positive impact on the health of its participants.

Not only has it been proven that health education generally positively affects people's health, but also that aspects of it can specifically positively affect the sentiment of students towards LGBT people. In 2015, V. P. Poteat, B.S. and PhD, professor at Boston College, conducted a study by surveying New England high school students to examine factors that contribute to the likelihood of behaving in an LGBT-affirming manner. The study found that, among other factors, peer discussions of sexual orientation-based issues, having LGBT friends, critical thinking, and self-reflection were "significantly associated with LGBT-affirming behavior". From this, one can deduce that, because health classes involve some form of critical thinking and self-reflection, if a curriculum was LGBTQ+-inclusive, the normally occurring peer discussions could be about sexual orientation and other important LGBTQ+ issues.

"LGBT-affirming" behaviors are necessary to teach in health classes not only because of their positive effects, but also because the alternative to "LGBT-affirming" behaviors is often bullying and harassment which can then lead to self-destructive behavior. A study done by Brian Mustanski in 2010 found that each time an LGBT person is "victimized" or is the recipient of "physical or verbal harassment or abuse", the likelihood of that person participating in "self harming behavior" increases, on average, by 2.5 times.

A model of an ideal health curriculum is the CDC's Health Education Curriculum Analysis Tool (HECAT). This tool is the national government-crafted standards for what health education should include and look like as well as an assessment tool to see if a health education curriculum is up to those standards. It goes into great detail, being divided up by chapter and additionally by module. Each module has a name such as “Healthy Eating”, “Sexual Health”, or “Tobacco”, and within those modules are the tools to evaluate a health class on that specific part of the curriculum. The tool is a present example of an LGBTQ+-inclusive curriculum, including expectations such as learning how to support those with gender identities and sexualitites that differ from your own (2012).

Few previous studies have been done on the inclusivity of health education courses and the needs of the students who take them. One, however, was conducted through the use of focus groups by L. Kris Gowen in 2014 at Portland State University. The purpose of the study was to examine youth perspectives of sexuality based education in Oregon and see how inclusive the students thought it was in order to “create a framework of LGBTQ-inclusive sexuality education”. This study was later published in *The Journal of Sex Research*.

Although studies like this have been conducted, the researcher plans to fill a gap in knowledge with the study being presented because, due to the fact that the law and social climate varies state to state, results found by conducting a similar study in Vermont will differ to those found in Oregon.

Because the gap in knowledge that the researcher is filling is related to the location of the study, it is important that one knows about the context in which the research was conducted. As one can see in Title 16, Chapter 001, Subchapter 007 on the website of the Vermont legislature, no current law requires health education to be LGBTQ+-inclusive in Vermont (2016). It may seem to some that, because Vermont is generally considered to be a politically blue state that tolerance and acceptance of the LGBTQ+ community would coincide with that political affiliation, however, this is not necessarily true. According to the Vermont Secretary of State, about one tenth of Vermonters voted for one of the ten Republican candidates in the Presidential Primaries of 2016 (2016). As demonstrated by the Human Rights Campaign, all of the Republican presidential candidates had at least some anti-LGBTQ+ beliefs or policy plans (2016). On the other hand, according to the 2015 Vermont High School Youth Risk Behavior Survey, at least 12% of Vermont high school students identify as LGB, while questions about gender identity were not asked. This means that, in this election cycle, about 10% of the adults in the state supported candidates who were against the rights of, at bare minimum, 12% of the youth population in the state. In addition, this figure does not include the political preferences of non-voting age Vermonters nor does it include the transgender youth and LGBTQ+ adults that live in Vermont.

Methods

The researcher took a mixed method approach and both distributed a survey to and conducted interviews with high school students across Vermont.

A survey was chosen as part of the method because it gave the researcher the ability to reach more people from different areas than solely conducting interviews would have and therefore made the results of the study more applicable to the entirety of Vermont. In order to get the most responses and thus have the most accurate data, the survey was sent to all of the high school Gender and Sexuality Alliances (GSAs) in Vermont. The survey was targeted towards high school students who were currently taking or had taken a health education course in high school.

The design of the survey was based on a study done by Russell Toomey, PhD, chair and professor at the University of Arizona, on the perceived effectiveness of GSAs. In order to study this, the researcher asked participants retrospectively about their experiences in GSAs in order to evaluate their effectiveness. The survey conducted in this study followed this design and asked the participants retrospectively about their experiences in health education courses.

The first section of questions had the participant answer on a four-point scale with there always being a fifth option of "not sure". The fifth option improved the validity of the results by decreasing the likelihood of participants not being able to remember and providing false information by just guessing their response. The scale provided was as follows:

0= I was not taught about LGBTQ+ people in the context of this topic

1= I was taught some about LGBTQ+ people in the context of this topic, but it was not enough for me to feel knowledgeable on the topic.

2= I was taught a substantial amount about LGBTQ+ people in the context of this topic.

3= I was taught everything I think one needs to know about LGBTQ+ people in the context of this topic.

The use of a four-point scale with a fifth option of "not sure" in order to have a broader and more informative range of answers as well as the wording of the descriptors for each number were adopted from Toomey's study. When interpreting the scale, 0 and 1 indicate that the respondent is undereducated on and 2 and 3 indicate the respondent has been sufficiently educated on the topic at hand.

In the first section of the survey, the participants were asked about the degree to which LGBTQ+-relevant information was taught in certain topics in their health education course. The topics were picked by examining both the Vermont law on what is required to be included in health education courses and the 2011 Youth Risk Behavior Survey results. This was in order to pick topics that have specifically LGBTQ+-relevant information related to them and that legally have to be taught in all Vermont health education courses so that the questions asked in the survey would be relevant to all potential participants. The topics inquired about in this section were: 'Emotional and Social Development', 'The Bases of Human Sexuality and Reproduction', 'Anatomy/Physiology/Physical Development', 'Safe Sex Practices/Disease Prevention/Sexual Responsibility', 'Mental Health, Relationships', 'Parenting/Family', 'Drug Abuse', 'Sexual Violence', and 'Utilizing Health/Support Services'.

In the next section of the survey, participants were asked if they had or had not learned about certain LGBTQ+ related health topics. These topics were chosen by examining the CDC's HECAT in order to find topics that are not required by the Vermont law to be taught in health education courses but that would be crucial in an inclusive health education course. The topics of inquiry in this section were: 'Various gender identities/What it means to be transgender', 'Different romantic/sexual orientations', 'The difference between gender and sex', and 'How to be respectful to and support those who have a different gender identity and/or sexuality than you'.

The next two questions asked participants to choose three of the formerly discussed topics that they felt they knew the least about and three that they would have liked to know more about. This was to help determine areas where students feel they are lacking knowledge on and to help determine what is not being sufficiently taught in current health education courses.

At the end of the survey, participants were asked about demographic information as well as asked if they would be willing to be interviewed and if they would like to be updated on the research being conducted. Present was also a text box in which the participant was prompted to add any other thoughts they had “about how LGBTQ+-inclusive your health education was, what you would have liked to learn about, etc.?” This provided an opportunity for the researcher to receive qualitative results from people who did not want to be interviewed.

The second portion of the method involved interviewing high school students. The purpose of individually interviewing students was to receive more in depth qualitative results about health education experiences and to get direct feedback from students. The researcher based this portion of the study after Gowen’s previously mentioned study. Because the objective of the study mentioned is very similar to that of this study, the researcher at one point considered modeling this study directly after the former and utilizing focus groups as the method by which to conduct this study. However, due to ethical concerns about anonymity and time and logistical constraints of the researcher and the participants of the study, it was decided that focus groups would not be the most effective way to conduct this study. Instead, the researcher decided to distribute the survey in order to achieve the breadth of participants and perspectives that focus groups achieve and the interviews in order to receive the in depth, qualitative testimonies that focus groups achieve.

Although this study conducted individual interviews and Gowen’s conducted group interviews, because the objective of the two studies was similar, the nature of the interviews in this study was based off those in Gowen’s. Like in Gowen’s study, the researcher took a semi-structured approach to the individual interviews conducted and had a predetermined set of questions to ask each participant but also explored new avenues of questioning and clarification if the interview lead in that direction. As done in Gowen's study, the interview was made up of two types of questions: questions about participants' past experiences in health education courses, and questions about what participants would want to be done to improve those experiences for others in the future. Questions about past experiences included questions such as "Describe your overall experience in your health education course- how LGBTQ+-inclusive was it? How was the LGBTQ+ community portrayed?" and "What types of safe sex practices were discussed in your health class?". Questions about improvement of experiences included questions such as "You indicated in the survey that you would have liked to learn more about (topic that the participant indicated on the survey that they would have like to learn more about). Can you expand on that? What would you liked to have learned about that you didn't? What would you liked to have been taught that wasn't?". In order to acquire interview subjects, participants of the survey were asked if they would be willing to interviewed. The interview subjects were then randomly selected from those who indicated that they were willing to be interviewed. Interviews were conducted both via Skype and in person depending on the availability of the participant.

The descriptive-interpretive method used to analyze the gathered data was adopted from *A Handbook of Research Methods for Clinical and Health Psychology* by Jeremy Miles and Paul Gilbert. To start, the researcher transcribed the recorded interviews. Then, the data was divided into meaning units. Meaning units are "… parts of the data that even if standing out of context, would communicate sufficient information to provide a piece of meaning to the reader." The meaning units were then sorted into two domains- meaning units that described participants' past experiences in health education courses, and meaning units that described things that participants wished would have happened in their health education courses or would recommend to happen in future classes. Then, the data in each domain was categorized by meaning (also known as open coding). Finally, using essential sufficiency and trying to fully depict the phenomenon explained in the data in the simplest way possible, the researcher abstracted the main themes and findings of the study (2005).

Results

Survey:

The survey yielded results from students from over 20 different high schools across the state of Vermont. The respondents were 82.1% members of the LGBTQ+ community, 52.2% female, 14.9% male, and 32.9% another gender (such as genderqueer, genderfluid, agender, etc.). The majority of the results from the survey can be seen in Tables 1, 2, 3, and 4. The results from the end section of the survey where participants were asked to add any other comments that they had on their health education experience will be included with the results from the interviews because the results were both qualitative in nature and therefore analyzed in the same manner.

Table 1 depicts the results of the section that asked participants to rate their health education experience for each topic based on the provided scale. As one can see on the table below, 0 and 1 were the most chosen responses, with 0 being chosen 50% of the time and 1 being chosen 25% of the time. In addition, 2 was chosen 14% of the time, 3 was chosen 8% of the time, and not sure was chosen 3% of the time. Table 2 displays the results from the section where students were asked if they learned about specific topics in their health education course.

As one can see on the table below, it was most often indicated that the student did not learn about the topic in question, with no being chosen 69% of the time, yes being chosen 23% of the time, and not sure being chosen 8% of the time.

Tables 3 and 4 demonstrate the results when participants were asked both what topic they felt they knew the least about and what topic they wanted to learn more about in terms of LGBTQ+ related information. As can be seen in the tables below, 'Safe Sex Practices/Disease Prevention/Sexual Responsibility' and 'Emotional and Social Development' were the top two chosen topics for both questions. Also notable is that 'Utilizing Health/Support Services' was the fourth most chosen topic in Table 3 and the third most chosen topic in Table 4.

Table 1

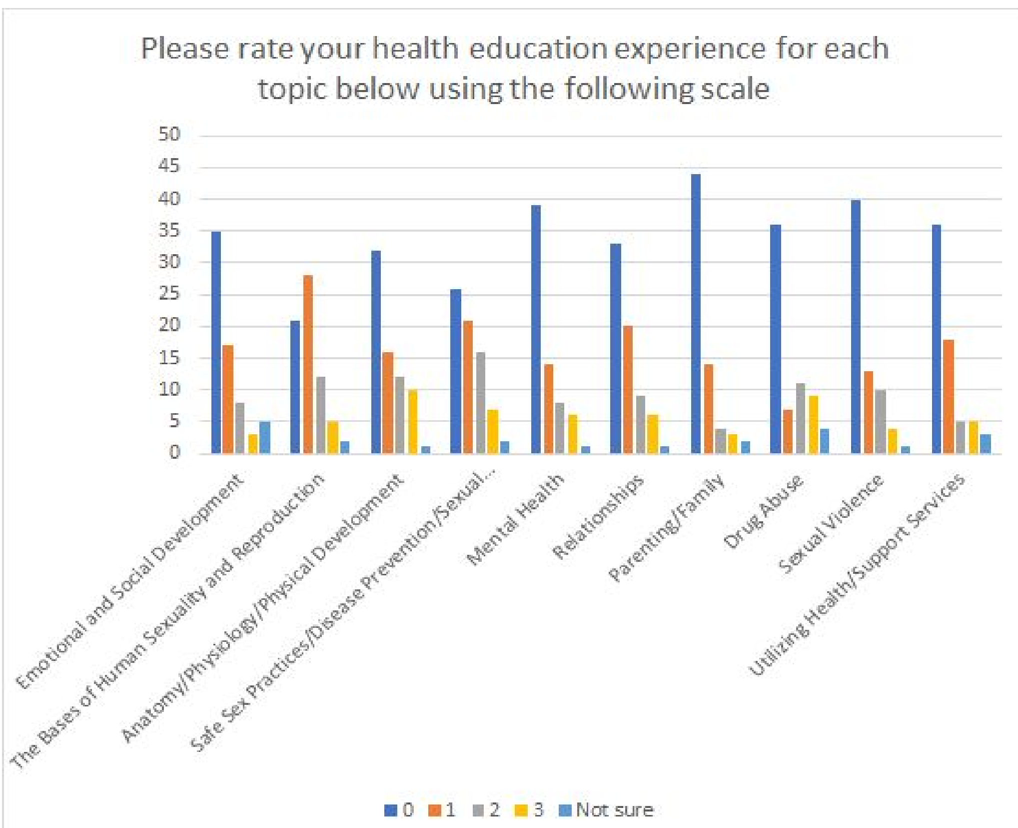


Table 2

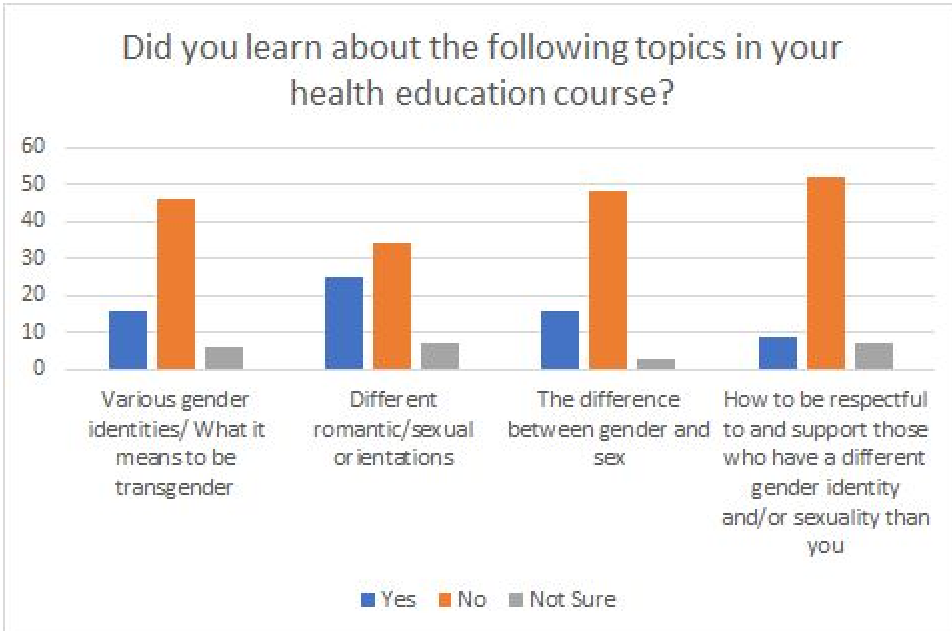


Table 3

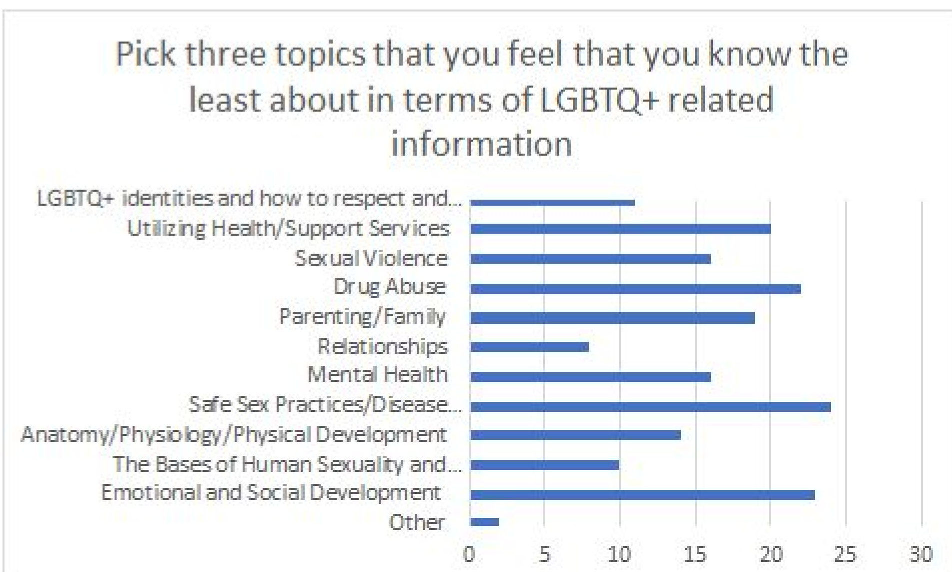
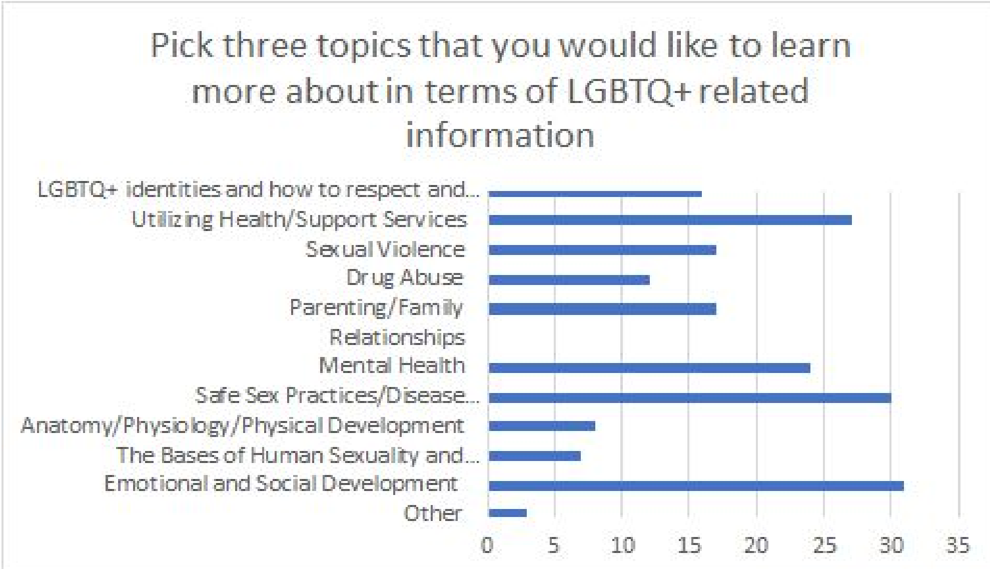


Table 4



<u>Qualitative Data:</u>

48% of survey participants either were interviewed or left additional comments at the end of the survey.

The first trends discussed will be those found in the domain which included participants' past experiences in health education courses. To start, the number of times that health teachers mentioning the LGBTQ+ community or inclusivity was mentioned in the responses was a little more than half of the times that health teachers not mentioning the LGBTQ+ community or exclusivity was mentioned. Of those inclusive mentions, a little less than 33% were followed by a qualifying statement that then mentioned a "but" statement such as, after stating that the teacher did mention what it meant to be transgender "but nonbinary genders weren't really discussed" or had a negative connotation associated with it such as "they skimmed over the LGBT community briefly."

These statistics above did not include mentions of outside sources brought into the classroom to teach about the LGBTQ+ community. 28% of the participants who were either interviewed or wrote in the text box participants reported learning LGBTQ+ related information from sources brought into the classroom specifically for that purpose. This was not one of the questions asked, so these mentions were unprompted. Organizations mentioned that were brought into classes include Planned Parenthood, Outright Vermont, Hope Works, and Women Helping Battered Women.

A common theme throughout responses was the discussion of health education teachers. 33% of the mentions of teachers followed the mentions of exclusivity discussed above and indicated that the teacher's lack of mention of the LGBTQ+ community was not out of malice but because of various other reasons. These reasons included: lack of class time- "… they really can't… go in-depth within a four-month period.", the teacher's lack of knowledge- ", I found that they wanted to be more inclusive but didn't have the information to be and didn't want to be giving out false information", and curriculum restrictions- "It seems that in some areas, the curriculum was dated and there was little she could do."

Of the overall number of mentions of teachers, whether following a mention of exclusivity or not, 60% were of the previously discussed nature and indicated that the exclusivity of the LGBTQ+ community was not the fault of the teacher. Half of the other 40% included "…the sex ed teacher told me "we'll get to that" but it was swept under the rug and never talked about." and, when discussing their teacher's reaction to a student mentioning and asking questions about gender, "The teacher said 'Oh yeah that's cool' and had no real reaction". The other 20% commended their teachers on how inclusive they made the class, saying things like

"My health teacher is progressive and wants to cover everything." and "She made it personal and wanted everyone to feel accepted."

Also in this section, students mentioned things that they were and were not taught. The three topics that students mentioned were brought up the most in health class were what it means to be gay lesbian, or bisexual, what it means to be transgender, and safe sex practices for all types of relationships. However, the amount that these three topics combined were mentioned is less than half of the times that students mentioned that their teachers did not bring up sexuality, gender, and safe sex practices.

The domain that included what participants would have liked to happen in their health class or what they would recommend for future classes produced some clear trends. The topics indicated that students would have liked to learn about were LGBTQ+ inclusive sex education at 36%, pronouns, different sexualities, and various gender identities at 14% each, and LGBTQ+ resources and how being LGBTQ+ affects someone developmentally and daily at 11% each. However, mentioned as many times as LGBTQ+ inclusive sex education was that there wasn't necessarily a certain topic that respondents would have liked to learn about that they didn't, but rather that they wish that LGBTQ+ people and things had been mentioned throughout class where relevant (such as in the unit on relationships) and normalized. One student, speaking about how they felt ostracized and unsure about themselves because of the lack of legal mandate to teach about the LGBTQ+ community, expressed the sentiment as "If we're not exposed to it in basic education then it can't be important, right?"

Discussion

From Table 1, one can see that students responded mostly with ones and zeros. Because the response scale was based on how much the participant feels like they know, this indicates that, overall, the respondents felt like they were lacking LGBTQ+ related knowledge in the health areas where there is LGBTQ+ relevant information. Table 2 supports this idea, for, as seen in the table, the large majority of respondents were not taught about topics crucial to an LGBTQ+ inclusive health education curriculum such as the difference between gender and sex and how to respect and support those who identify differently than you.

One can also see a trend of LGBTQ+ topics not being taught in health education courses in the results from the qualitative research. From the amount of times exclusivity was mentioned almost doubling the mention of inclusivity, to the almost one third of qualitative respondents who mentioned bringing in outside sources to teach LGBTQ+ topics, it is clear that, although some LGBTQ+ topics are being taught in some instances (because there were numerous mentions of inclusivity), they are not being taught in a widespread manner in Vermont.

In Tables 3 and 4, one can see that the two most chosen categories in both are ‘Emotional Development’ and ‘Safe Sex Practices/ Disease Prevention/Sexual Responsibility’. This concurs with the sentiment expressed during the qualitative research: students want to learn more about how being LGBTQ+ can affect your emotional development and want to have a more inclusive sex education experience. In addition, ‘Utilizing Health/Support Services’ was the fourth most chosen answer in Table 3 and the third most chosen answer in Table 4. This was another need present in the interviews and comments- students want to know places that they can learn more about themselves (or others) and their identities as well as places where they can be professionally assisted in figuring out and materializing that identity.

Through the qualitative data, the researcher found that what many students want to improve their health education experience is for the LGBTQ+ community to be normalized, both meaning that they want it to be normalized by being taught about it but also by having it be presented in a way that does not alienate it from other topics in health class. Teachers were seen to have the largest role in this lack of normalization and it was expressed that they are an avenue through which students would like to see more inclusivity.

Implications, Limitations, and Future Research

Now that the state of LGBTQ+ health education and the needs of students have been established, there are multiple things that can be done to address these them, but one seems the most direct and effective solution: educate health teachers on LGBTQ+ health matters. If the teachers are educated in these matters, they can then teach the class about them and answer any questions that students have, simultaneously addressing the issues of untaught content and normalization. This would require the teachers to put in the effort to be trained and, in some cases, would also require the money to be trained. The money would not necessarily be needed, however, because there are places like Outright Vermont which do trainings for free. The implications of the study are that the current health education laws and system in Vermont are flawed. Another way to address this issue would be to reevaluate the Vermont health education law and adjust it to meet all students' needs, which would also take much time and money.

There are multiple limitations to this research that need to be addressed. To start, the sample size is limited. The method of distributing the surveys made sense for the researcher in the context of this project, however future researchers would be recommended to produce widespread distribution when conducting a survey such as this. Also, the sample of people who took the survey and were interviewed was a subset of the student population of people who have taken or are taking health education courses because the survey was distributed via GSAs. Future researchers would be recommended to distribute a survey similar to this through schools rather than through one club in a school. Another limitation is the retrospectivity of the survey combined with its participants. Some participants, for example, were seniors reflecting on a class they took first semester year, so their results were probably not as accurate as those collected from sophomores who had done the same. Future researchers would be recommended to survey only those who had taken a health education class recently enough where they remembered the specifics of it.

Future research should be done to further the understanding of this topic. Although the researcher has established the current state of health education in Vermont and the needs of Vermont high schoolers in regards to the LGBTQ+-inclusivity of their health education, there are many aspects of the situation that have not been examined such as how realistic addressing these needs is, how LGBTQ+ inclusive health teachers view their curriculum to be and how inclusive those curricula truly are, the best way for these needs to be addressed, and the in depth effects of these needs not being met.

Works Cited

Centers for Disease Control and Prevention. (2012). Health Education Curriculum Analysis Tool. *Centers for Disease Control and Prevention*. Retrieved from https://www.cdc.gov/healthyyouth/HECAT/

Gowen, L. K., & Winges-Yanez, N. (2014). Lesbian, Gay, Bisexual, Transgender, Queer, and Questioning Youths' Perspectives of Inclusive School-Based Sexuality Education. *Journal Of Sex Research*, *51*(7), 788-800. DOI:10.1080/00224499.2013.806648

Guttmacher Institute. (2017). Sex and HIV Education. *Guttmacher Institute.* Retrieved from https://www.guttmacher.org/state-policy/explore/sex-and-hiv-education

Haas, A.P. , Eliason, M. , Mays, V.M., Mathy R.M. , Cochran S.D. , D'Augelli, A.R., & Clayton, P.J. (2010). Suicide and Suicide Risk in Lesbian, Gay, Bisexual, and Transgender Populations: Review and Recommendations. *Journal of Homosexuality*, 58:1, 10-51. DOI: 10.1080/00918369.2011.534038.

Human Rights Campaign.(2016). Highlighting Candidates' Records on LGBTQ Equality. *Human Rights Campaign.* Retrieved from http://www.hrc.org/2016republicanfacts

Kann, L., Olsen, E.O., McManus, T., Kinchen, S., Chyen, D., Harris, W. A., & Wechsler, H. (2011). Sexual Identity, Sex of Sexual Contacts, and Health-Risk Behaviors Among Students in Grades 9-12-- Youth Risk Behavior Surveillance, Selected Sites, United States, 2001-2009 [Abstract]. *Division of Adolescent and School Health, National Center for Chronic Disease Prevention and Health Promotion, CDC.* Retrieved from http://www.cdc.gov/mmwr/pdf/ss/ss60e0606.pdf

Kosciw, J. G., Greytak, E. A., Diaz, E. M., & Bartkiewicz, M. J. (2010). The 2009 National School Climate Survey: The experiences of lesbian, gay, bisexual and transgender youth in our nation's schools. *Gay, Lesbian, and Straight Education Network.*

Kok, G., van den Bornea, B., Mullenb, P.D. (1997). Effectiveness of health education and health promotion: meta-analyses of effect studies and determinants of effectiveness. *Patient Education and Counseling, 30,* 19-27.

Miles, J., & Gilbert, P. (2005). *A Handbok of Research Methods for Clinical and Health Psychology.* Oxford: Oxford University Press.

Mustanski, B. S., Garofalo, R., & Emerson, E. M. (2010). Mental Health Disorders, Psychological Distress, and Suicidality in a Diverse Sample of Lesbian, Gay, Bisexual, and Transgender Youths. *American Journal of Public Health*, 100:12, 2426–2432. DOI: 10.2105/AJPH.2009.178319

National LGBT Health Education Center.(2016). About Us. *Fenway Institute.*

Poteat, V. P. (2015). Individual Psychological Factors and Complex Interpersonal Conditions that Predict LGBT-Affirming Behavior. *Springer Science + Business Media New York, 44,* 1494-1507. DOI: 10.1007/s10964-015-0257-5

Tones, K. (1997). Health education: evidence of effectiveness. *Archives of Disease in Childhood, 77,* 189-191. http://dx.doi.org/10.1136/adc.77.3.189

Toomey, R. B., Diaz, R. M., Ryan, C., & Russell, S. T. (2011). High School Gay-Straight Alliances (GSAs) and Young Adult Well-Being: An Examination of GSA Presence, Participation, and Perceived Effectiveness. *Applied Developmental Science, 15:4,* 175-185. http://dx.doi.org/10.1080/10888691.2011.607378

Vermont Department of Health. (2015). The 2015 Vermont Youth Risk Behavior Survey. *The Vermont Department of Health and the Agency of Education.* Retrieved from: http://www.healthvermont.gov/research/yrbs/2015/documents/2015_yrbs_full.pdf

Vermont General Assembly. (2016). *Title 16: Education, Chapter 001: Administration Generally, Subchapter 007: Comprehensive Health Education.* Accessed on 09/12/16. Retrieved from http://legislature.vermont.gov/statutes/section/16/001/00131

Vermont Secretary of State. (2016). Official Report of the Canvassing Committee For Republican Party Presidential Primary, March 1, 2016. *Vermont Secretary of State.* Retrieved from https://www.sec.state.vt.us/media/750020/2016PresPrimaryCanvassRep.pdf

Academic Paper

Sample: D
1 Understand and Analyze Context Score: 6
2 Understand and Analyze Argument Score: 6
3 Evaluate Sources and Evidence Score: 6
4 Research Design Score: 7
5 Establish Argument Score: 7
6 Select and Use Evidence Score: 6
7 Engage Audience Score: 2
8 Apply Conventions Score: 6
9 Apply Conventions Score: 3

HIGH SAMPLE RESPONSE

Making Health Education LGBTQ+ Inclusive in Vermont High Schools

Content Area: Understand and Analyze Context — Row 1
The response earned 6 points for this row because the paper has a clearly identifiable topic and focus. See page 4, paragraph 3: "Due to the state of the health of LGBTQ+ youth and the lack of health education laws attempting to address this issue, the question driving the research presented in this paper is 'How LGBTQ+ inclusive are Vermont high school health education courses and what needs do students have in relation to the level of inclusivity present?'". In addition, the student effectively identifies a gap in knowledge that the paper is designed to fill - see page 6, paragraph 3: "Although studies like this have been conducted, the researcher plans to fill a gap in knowledge with the study being presented...". Finally, the paper's introduction clearly sets its specific focus of inquiry within a broader context and discussion.

Content Area: Understand and Analyze Argument — Row 2
The response earned 6 points for this row because multiple perspectives are provided by the student. These include bullying (as leading to long-term damage), physical abuse, substance abuse, and questions of educational and legislative policy. In addition, these sources are put into conversation with each other and with the student's inquiry - for example, on page 7, paragraph 1: "On the other hand, according to the 2015 Vermont High School Youth Risk Behavior Survey..."

Content Area: Evaluate Sources and Evidence — Row 3
The response earned 6 points for this row because the sources cited in the literature review are relevant and credible, and also closely connected to the topic of inquiry. See especially pages 5 and 6, which cite a study conducted at Boston College and the CDC's Health Education Curriculum Analysis Tool. On pages 6 and 7, the student also points out that despite Vermont legislation being LGBTQ+ - inclusive, there are no current educational laws supporting the same.

Content Area: Research Design — Row 4
The response earned 7 points for this row because the paper provides a detailed account of its method on page 7, paragraph 2: "The researcher took a mixed-method approach and both distributed a survey to and conducted interviews with high school students across Vermont". The student then discusses the survey at length and proceeds into a discussion of results with a separate defense of the descriptive-interpretive method of analysis on page 11, paragraph 2.

Academic Paper

Content Area: Establish Argument — Row 5
The response earned 7 points for this row because the paper conveys a complex, logical argument linking evidence to claims derived from original research. The conclusion of the paper is given on page 18, paragraph 2: "...it is clear that, although some LGBTQ+ topics are being taught in some instances (because there were numerous mentions of inclusivity), they are not being taught in a widespread manner in Vermont". In addition, the paper includes a discussion of implications and limitations of the study (see pages 19 and 20).

Content Area: Select and Use Evidence — Row 6
The response earned 6 points for this row because the paper provides ample, relevant and sufficient evidence to undergird its argument and claims. (See pages 13, 14, and 15 for detailed discussions and depictions of the results of the student's inquiry: for example, on page 13, paragraph 2: "Tables 3 and 4 demonstrate the results when..."). The paper also makes an effort to summarize qualitative data to derive a sense of larger themes in the survey responses to supplement the information derived from quantitative analysis (see pages 15 to 17). Finally, the paper also makes a point of discussing the limitations of the data in relation to the student's inquiry and future investigations.

Content Area: Engage Audience —Row 7
The response earned 2 points for this row because the paper is organized effectively and leads the reader through introductory argumentative and summary discussions clearly and effectively. It also includes design elements such as tables and headings that serve to facilitate communication. The response did not earn 1 point because these elements do not detract from the paper's message. The response did not earn 3 points because the tables included are not explained as fully as needed (see pages 13 to 15) - they lack explanatory legends which would have clarified the data presented, and the axes of Table 1 (page 13) are not labelled to provide additional information.

Content Area: Apply Conventions —Row 8
The response earned 6 points for this row because the paper provides accurate, credible and consistent citation and attribution with only a few very minor errors which do not detract from its confident command of citation form. The student is especially adept at clearly distinguishing the student's voice from those of sources (see pages 18 and 19, where the student deftly summarizes original research data while maintaining a distinct and confident voice).

Content Area: Apply Conventions — Row 9
The response earned 3 points for this row because the paper is well written, with especially strong "Context" and "Literature Review" sections to draw the reader in, moving nicely into the student's complex argument and clear descriptions of how the study was conducted and interpreted. Of special note for this paper is the care taken by the student in using precise language to discuss the subject of inquiry.

2022

AP® CollegeBoard

Paper #5: Capturing the Art of Lighting Design: A Creative Approach

AP® Research Academic Paper

Sample Student Responses and Scoring Commentary

Inside:

Sample A

- ☑ Scoring Guidelines
- ☑ Student Samples
- ☑ Scoring Commentary

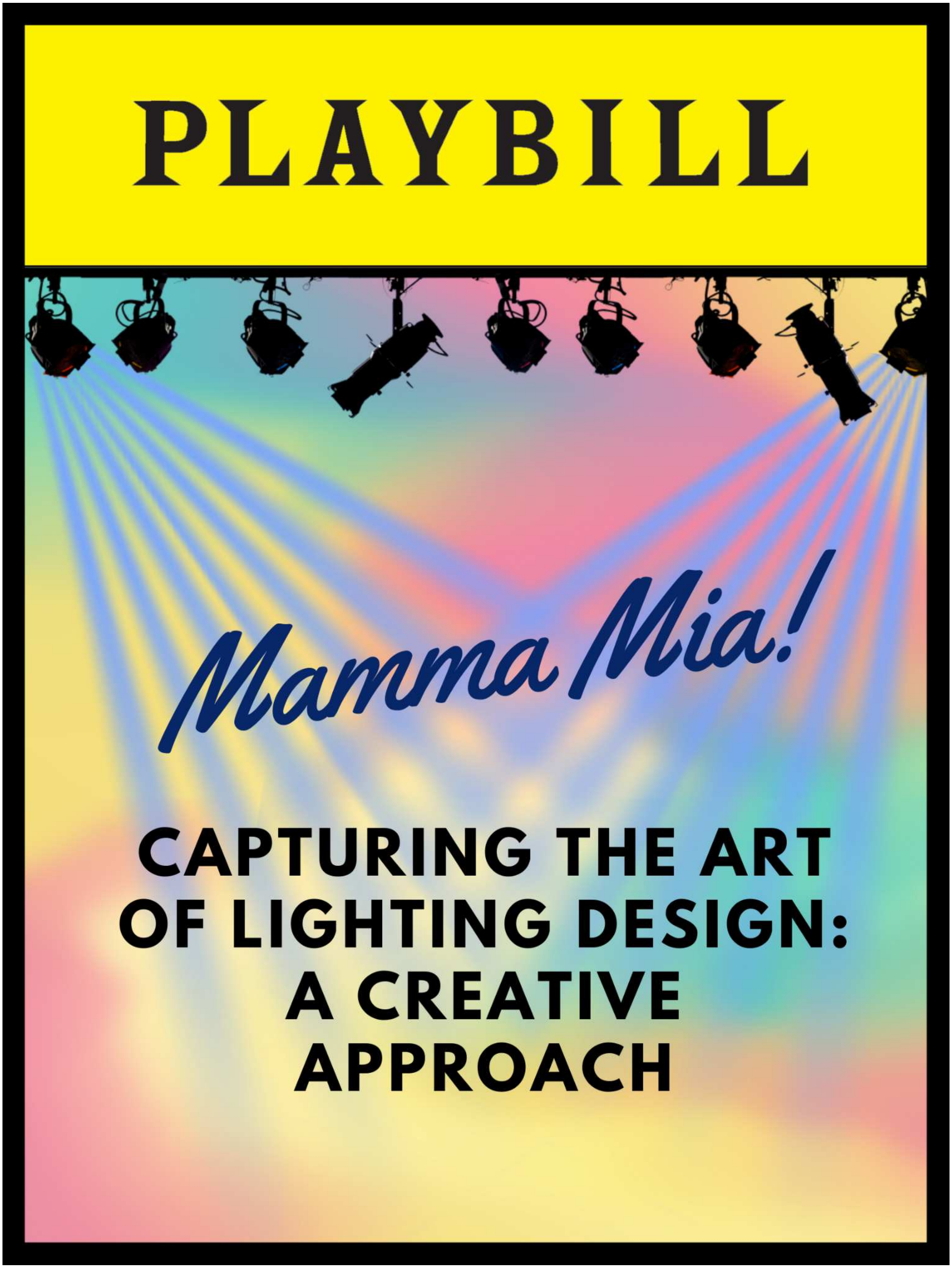
The Response…				
Score of 1 Report on Existing Knowledge	**Score of 2** Report on Existing Knowledge with Simplistic Use of a Research Method	**Score of 3** Ineffectual Argument for a New Understanding	**Score of 4** Well-Supported, Articulate Argument Conveying a New Understanding	**Score of 5** Rich Analysis of a New Understanding Addressing a Gap in the Research Base
Presents an overly broad topic of inquiry.	Presents a topic of inquiry with narrowing scope or focus, that is NOT carried through either in the method or in the overall line of reasoning.	Carries the focus or scope of a topic of inquiry through the method **AND** overall line of reasoning, even though the focus or scope might still be narrowing.	Focuses a topic of inquiry with clear and narrow parameters, which are addressed through the method and the conclusion.	Focuses a topic of inquiry with clear and narrow parameters, which are addressed through the method and the conclusion.
Situates a topic of inquiry within a single perspective derived from scholarly works **OR** through a variety of perspectives derived from mostly non-scholarly works.	Situates a topic of inquiry within a single perspective derived from scholarly works **OR** through a variety of perspectives derived from mostly non-scholarly works.	Situates a topic of inquiry within relevant scholarly works of varying perspectives, although connections to some works may be unclear.	Explicitly connects a topic of inquiry to relevant scholarly works of varying perspectives **AND** logically explains how the topic of inquiry addresses a gap.	Explicitly connects a topic of inquiry to relevant scholarly works of varying perspectives **AND** logically explains how the topic of inquiry addresses a gap.
Describes a search and report process.	Describes a nonreplicable research method **OR** provides an oversimplified description of a method, with questionable alignment to the purpose of the inquiry.	Describes a reasonably replicable research method, with questionable alignment to the purpose of the inquiry.	Logically defends the alignment of a detailed, replicable research method to the purpose of the inquiry.	Logically defends the alignment of a detailed, replicable research method to the purpose of the inquiry.
Summarizes or reports existing knowledge in the field of understanding pertaining to the topic of inquiry.	Summarizes or reports existing knowledge in the field of understanding pertaining to the topic of inquiry.	Conveys a new understanding or conclusion, with an underdeveloped line of reasoning **OR** insufficient evidence.	Supports a new understanding or conclusion through a logically organized line of reasoning **AND** sufficient evidence. The limitations and/or implications, if present, of the new understanding or conclusion are oversimplified.	Justifies a new understanding or conclusion through a logical progression of inquiry choices, sufficient evidence, explanation of the limitations of the conclusion, and an explanation of the implications to the community of practice.
Generally communicates the student's ideas, although errors in grammar, discipline-specific style, and organization distract or confuse the reader.	Generally communicates the student's ideas, although errors in grammar, discipline-specific style, and organization distract or confuse the reader.	Competently communicates the student's ideas, although there may be some errors in grammar, discipline-specific style, and organization.	Competently communicates the student's ideas, although there may be some errors in grammar, discipline-specific style, and organization.	Enhances the communication of the student's ideas through organization, use of design elements, conventions of grammar, style, mechanics, and word precision, with few to no errors.
Cites **AND/OR** attributes sources (in bibliography/ works cited and/or in-text), with multiple errors and/or an inconsistent use of a discipline-specific style.	Cites **AND/OR** attributes sources (in bibliography/ works cited and/or in-text), with multiple errors and/or an inconsistent use of a discipline-specific style.	Cites **AND** attributes sources, using a discipline-specific style (in both bibliography/works cited **AND** in-text), with few errors or inconsistencies.	Cites **AND** attributes sources, with a consistent use of an appropriate discipline-specific style (in both bibliography/works cited **AND** in-text), with few to no errors.	Cites **AND** attributes sources, with a consistent use of an appropriate discipline-specific style (in both bibliography/works cited **AND** in-text), with few to no errors.

Academic Paper

Overview

This performance task was intended to assess students' ability to conduct scholarly and responsible research and articulate an evidence-based argument that clearly communicates the conclusion, solution, or answer to their stated research question. More specifically, this performance task was intended to assess students' ability to:

- Generate a focused research question that is situated within or connected to a larger scholarly context or community;
- Explore relationships between and among multiple works representing multiple perspectives within the scholarly literature related to the topic of inquiry;
- Articulate what approach, method, or process they have chosen to use to address their research question, why they have chosen that approach to answering their question, and how they employed it;
- Develop and present their own argument, conclusion, or new understanding while acknowledging its limitations and discussing implications;
- Support their conclusion through the compilation, use, and synthesis of relevant and significant evidence generated by their research;
- Use organizational and design elements to effectively convey the paper's message;
- Consistently and accurately cite, attribute, and integrate the knowledge and work of others, while distinguishing between the student's voice and that of others;
- Generate a paper in which word choice and syntax enhance communication by adhering to established conventions of grammar, usage, and mechanics.


PLAYBILL
Mamma Mia!
CAPTURING THE ART OF LIGHTING DESIGN: A CREATIVE APPROACH

Based on the theories of professional lighting design, how do I develop lighting playbacks and cues for *Mamma Mia!* using high school rigs and technology?

Word Count: 4996

"In spite of popular notions of lighting as a 'glitzy' framing for dance… lighting is not just a decorative facility: it is essentially an illustrative medium, which is certainly not the same thing. Lighting is a scenic art concerned not only with the evoking of atmosphere and ideas, but also with the definition of space and 'body form' in relationship to space" (Mumford 46).

INTRODUCTION

Theatrical lighting design is known as the art of the unknown (Greenberg). In the TED talk, "Science and Magic, Illuminating the Stage with Lighting Design", Greenberg expressed, "As a lighting technician the only way for the audience to notice your existence is when a mess up occurs" (Greenberg). Light programming is one of the most critical parts of technical theatre, a challenge I have enjoyed throughout my high school experience.

As I began my last season in theatre, I welcomed the chance to analytically study this artform of light that I love. In the words of Hobgood, "Theatre is a complex art of intrinsic cultural passion that deserves detailed studies" (Hobgood 6). Therefore, in my final musical I welcome the art of stage lighting.

Role of a Lighting Operator

The operator's job is to shape the environment in which the performance is taking place by creating a visual direction for the audience's perception of a specific area. When recording cues, a lighting designer must consider, "...time of day, the action, the mood, the direction of the main or motivating light, the "flow," the shape of the visual frame, the focus of the audience attention, the focus of the actor's attention, pattern, balance, what's happening offstage, the effect of mixed colors, movement…" (Kaluta 200). Lighting may sound simple to many since some think lighting design is just turning a light on and off to illuminate the actors, props, and set, but poor lighting has a negative impact on the performance because the audience would not be able to make an emotional connection.

LITERATURE REVIEW

For my own creative process, I realized I needed to review key fundamentals including stage geography, stage design, and booth operations before I could approach the application of stage lighting. Additionally, to push my creative process beyond the standard of high school theatre, I realized that I needed to understand how color and aspects of lighting theory impact my work.

Fundamentals of Theatre: Stage Geography

Before one could think about scenery intelligently, one must understand stage geography thoroughly. Two of the most important parts of stage geography are sightlines and available equipment. Sightlines represent the audience's vision from their perspective location. (**Figures 1-2** are visual representations of a vertical and a bird's eye view of a sightline).

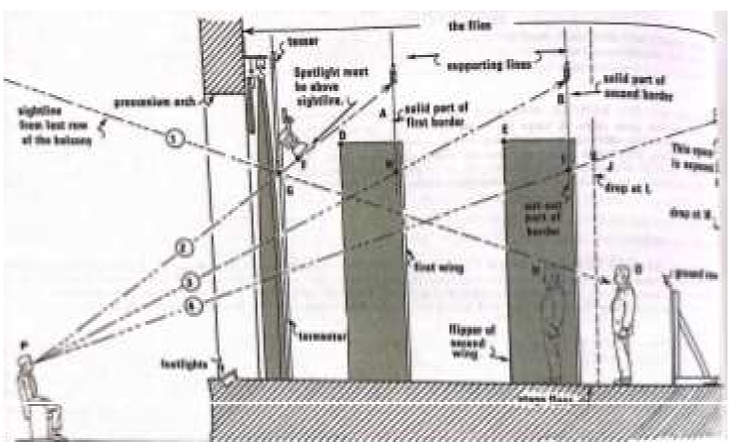


Figure 1, Vertical sightlines for exterior (Nelms 26)

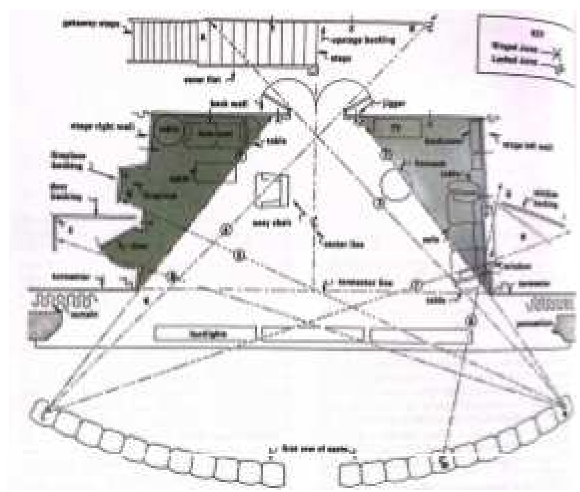


Figure 2, Example set showing sight line (Nelms 12)

The available equipment in conjunction with sightlines is important because the equipment represents the audience's ability to see the stage. Flippers, tormentors, and teasers are all examples of curtain equipment (**Figure 3**). Flippers are narrow pieces that hold tormentors in place, and tormentors mask the sides of the stage (Nelms 11). Once one understands the stage geography of a stage, they could begin to learn about set-designing.

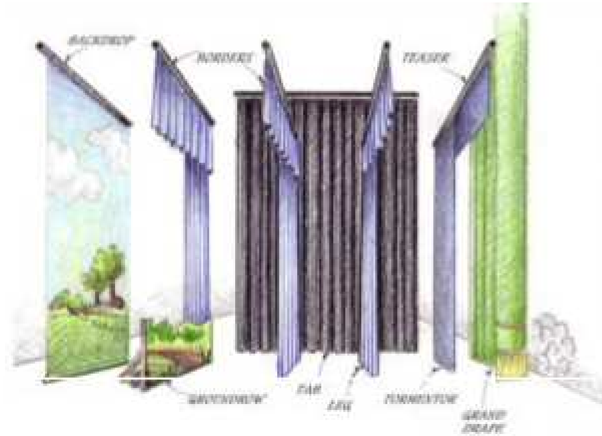


Figure 3, Different types of theater curtains
(Sew What? Inc.)

Fundamentals of Theatre: Stage Design

The basics of stage design encompass anything that goes into the creation of a stage performance. Stage design involves set, props, lighting, and sound design. All of these elements help create and solidify the purpose of a theatrical performance. The book *Set-Design* by Henning Nelms is about transposing script to the performance. Nelms indicates how a set should tell the audience what the play is about as soon as the curtains open (Nelms 9). Set and prop design go hand in hand as they are the physical representation of the setting of the performance along with the time period. The stage design influences the basics of lighting as a lighting operator has to design lights in conjunction with the placement of the set, props, and rhythm of the music.

Fundamentals of Theatre: Booth

Booth lighting and sound control are two of the hardest technical activities to perform correctly. A lighting designer illuminates the storytelling by enhancing the text, movement, and emotional context. Lighting flows with actors and is dependent on characteristics such as: their skin tones, costumes, and height. When creating lights for a show, one of the most important instructions are found within script requirements. For example, the script may have instructions on how the lights should look in the scene. A light cue is a single lighting display that is played out to the stage by the touch of a button or triggered, while a light playback could be a single memory or several sequential lighting configuration(s) controlled by a slider.

In a play, sound control will be used for sound effects and transition music; in a musical, sound control is used for microphone control, music, sound effects, and transition music. An important idea about sound control in correlation to lighting is the rhythm of the music in relation to the timing of cues and playbacks. Light-Emitting Diodes (LED) have created an expansion of the relationship between lights and sound as LED lights are able to change colors and create effects within the light board system (Rubin). After understanding the basics of working in the booth, I can finally focus on understanding lighting in depth.

Theory of Lighting

The theory of lighting, developed by DeLeon, begins by coming to the conclusion: the purpose of lighting is defined by the illustration of performances caught by the human eye (De Leon). Aristotle's theory of vision states, "the sense was made possible by the eyes' ability to receive information from the observed object" (De Leon). Aristotle elaborates upon the vital role sight has in the development of one's surroundings, specifically: color.

In addition to Aristotle's theory, I learned that timed lighting impacts the audience as well. The task of a lighting designer is to attract the audience's attention, convey an emotion, and set a time of day and location (Shimizu 418). For example, a 15-second cue could cause tension for the audience to understand an important moment is about to occur, and zero-timed cues are unexpected as they rapidly happen in relation to the beat of the music. A timed cue works by the seconds a light is delayed to fade in or out.

Finally, a light programmer controls the mood of a scene by matching the lighting color with the timing of the show to embolden certain emotions within the audience. Color psychology indicates that "Certain colors are associated with different moods" (illuminated integration). For example, the color red excerpts a feeling of aggression or anger, and the color yellow portrays happiness and fulfillment (van Braam). Isolations (ISO) are small defined areas of light. Isolations are a way to move the audience's attention, allowing the light programmer to control the direction of the focus on stage. These theories will be elaborated on further in my analysis. Following, after understanding these theories I will focus on how I could apply my understanding to musical theatre.

Application of Lighting in Musical Theatre

Musicals are a way to portray emotions and stories through acting, singing, dancing, and corresponding color lighting. Unlike straight plays, musicals require more time to design as musicals typically have complex cues, greater variety of color, and difficult settings due to character movement. An important aspect of technical theatre in a musical is learning to create lighting for dancing (Mumford). As a lighting operator, a main job is controlling the bodies' relation to space, and the kind of lighting that will relate to musical movement. Musicals were created with the purpose of entertaining an audience. Our body releases dopamine, which is the pleasure chemical in our body (SCL Health). The audience is able to release dopamine because of the connection to the music. Audience members are able to create a strong emotional connection as music is able to make us relax, incite us, astound us, and entertain us. Therefore, when creating light configurations for musicals the main idea is to entertain an audience. As a light operator, I am able to entertain the audience by using color. Through the use of color, I am able to establish emotion and generate the feeling of comfort, passion, anger, nature, and ambition through the use of LED lights in the cove. The cove is an elevated recessed area for light fixtures. Moving on to the base of my creation, *Mamma Mia!*, the musical in which I will design lights and demonstrate later on the importance of my creation.

Mamma Mia!

The story takes place on a mythical Greek island in the present day, with Sophie wishing for her father to walk her down the aisle. The problem begins with Sophie having no clue who her father is, as her mother Donna fell in love with three men around the same time. The possible fathers, Sam, Bill, and Harry were invited to the wedding in the hope of figuring out who is the real father. Next, we meet Sky, her fiance, trying to cheer, while his friends are trying to take him away to have a traditional bachelor party. At Sophie's party, she convinces Sam, Bill, and Harry to play a game of “Who is the father”; which ends with her being hopelessly confused as the party continues. In the end, the wedding begins with Donna giving the bride away to the altar. Sophie abruptly ends the wedding as she says that she just is not ready to get married, then Sam tells Donna about his 20-year love for her, as they get married. The show ends with Sophie and Sky leaving as their future together awaits. While working on the show, I focused on John H. Purnell’s-professional lighting operator of *Mamma Mia!*- interpretation of how he was able to capture the rock concert feeling, and emotional attachment the characters had to the music. I will elaborate more on Purnell's inspiring ideas in my analysis.

Gap of High School Lighting

As one can see from the review of literature, professional theatrical lighting is a complex world of theory and application. High school shows are not held to a professional standard since they are practiced within a short period of time, do not have the same capabilities and materials,

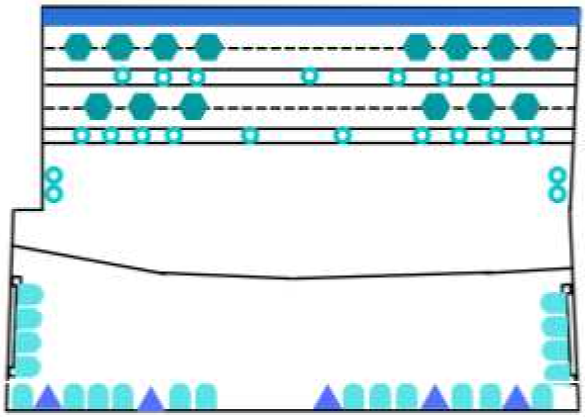


Figure 4, Birds Eye View/Light plot. Note: Each light in stage or on the cove is define by a shape in **Figure 5.**

Figure 5, Representation of lights through shapes. Note: definition of lights is given underneath each light.

and they are not being paid for their work. My school struggles with keeping up with modern rigs as we are unable to afford modern equipment. The main types of modern equipment are Source 4 LEDs and mover lights. On my school's rig, or lighting set-up, I have only 47 lights available for stage lighting, and although 47 lights may sound numerous, it is a small number compared to professional Broadway rigs. **Figure 4** is a high school light fixture accompanied with a concise definition of every light available at my school (**Figure 5)**.

If one compares **Figure 4**, a high school light plot, to **Figure 6**, a light plot from a professional set, they will notice the large difference between lighting rigs available between the two, as well as the different types of lighting and placement of lighting fixtures available between both locations. Clearly, the professional lighting plot hosts over five times the number of lights, making any professional version of *Mamma Mia!* not reproducible at the high school theatre. Therefore, my goal of building our configuration to a professional standard will require research to build my skills as a lighting programmer. Therefore, my curiosity sparked as I began to ask myself the question: "Based on the theories of professional lighting design, how do I develop lighting playbacks and cues for *Mamma Mia!* using high school rigs and technology?" This question has evolved to become the central focus of my creative process.

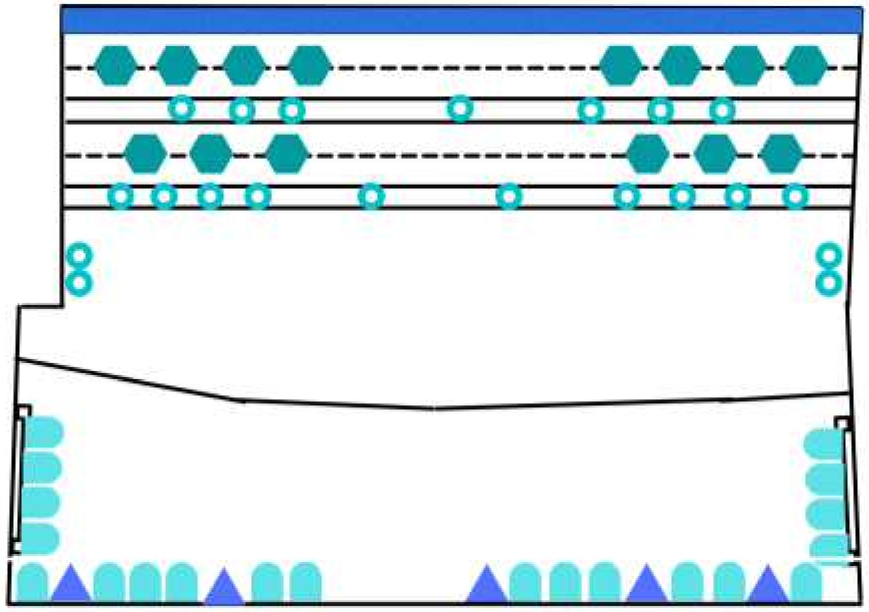


Figure 4, Birds Eye View/Light plot.
Note: Repeated to allow for comparison to **Figure 6.**

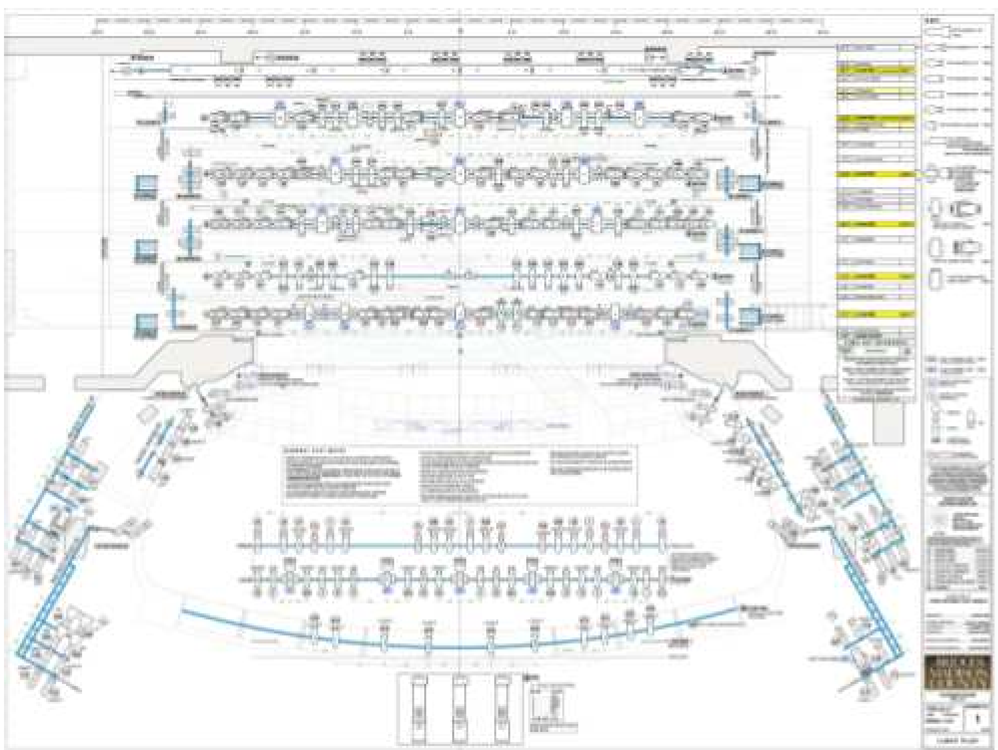


Figure 6, Professional lighting plot for Tony award winner The Bridges of Madison County (*Vectorworks, Inc.*)

Additionally, when referring to theatre in high school, Hobgood states, “Clearly, strategies employed to bring about students interface with art would vary according to the percept of theatre held by any teacher” (Hobgood 175). High school students are mostly held to teachers’ ideals towards art, which in my research I am able to break out of the standard and follow my own decision making supported by experts. If a teacher is not as advanced in theatre lighting as they are in the pedagogy of theatre, then this creates a gap as there is a lack in formal education for students like me who are passionate in the study of lighting design. Therefore, conducting this creative research process will increase my knowledge of how to professionally build lighting playbacks and cues without the equipment or education often provided to professional lighting designers.

CREATIVE APPROACH

My main creative framework was inspired by Evan Shimizu’s work, “Exploratory Stage Lighting Design using Visual Objectives.” My main focus is to analyze, proceed to evaluate, create cues and playbacks used for the musical *Mamma Mia!* at my school (see **Figure 7**, for a visual representation of my creative process based on Shimizu’s framework). Due to the aforementioned gap, I wanted to create my lighting programming at a professional standard while relying on high school equipment. I formulated this approach by applying methods used by professional lighting designers and being able to adapt these to the lighting capabilities and limitations found at a high school theatre compared to a professional setting. My hope is that this approach will not only impact my personal creative process but may also serve as a guide to future high school lighting designers who are interested in elevating their approach to lighting design.

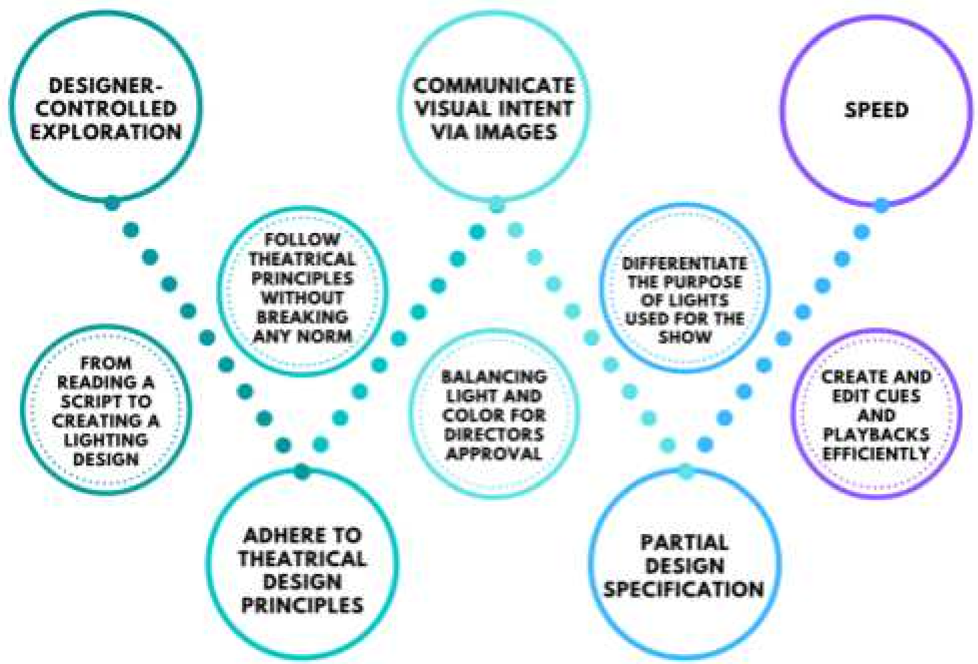


Figure 7, Methodology steps use for cue programing (Shimizu)

Designer-Controlled Exploration

To approach the understanding of a play, one should begin by reading the script. Shimizu cautions against jumping directly into constructing lighting cues, as the script should be the central focus of a light designer's work (Shimizu 419). While doing so, a designer should brainstorm ideas of how lighting capabilities could be implemented. A proper design takes around 3-5 read-throughs of a script. One should firstly focus on reading the script for personal attraction, then the designer should start thinking about the mood, tone, theme, and intent of the author. Finally, the reader should focus on their specific task, which requires the designer to find lighting requirements in the script. For anyone to be able to do a formal job when designing lights in theatre; reading the script is the most critical part of designing as the script holds all the information needed (Kelly). That is the process a designer must follow in order to transmit designing ideas from the script onto a lighting board.

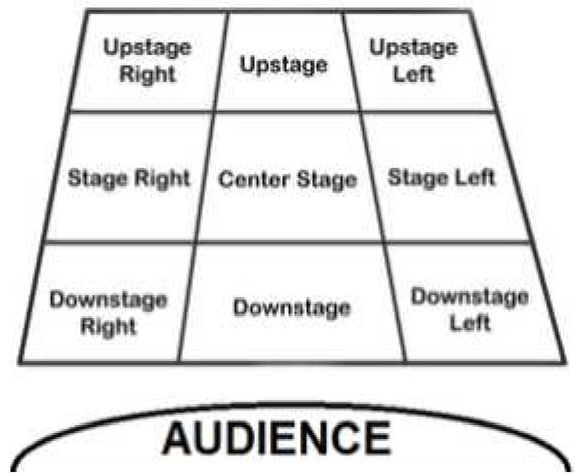


Figure 8, Stage Directions (Flores)

After reading the script and learning the character blocking and movement, one is able to set and align the position of every light zone needed. Lighting zones are areas in which lights are angled (As in **Figure 8** zones are represented by location on the stage) to the stage. By aligning the light one is capable of creating isolation lights for specific zones. With the equipment at my school, the process consists mainly of using ellipsoidal reflector spotlights to create isolation on the cove of my theatre, and parnels to help out with any shadows.

Adhere to Theatrical Design Principles

Once all key lights have been recorded, the remaining lights, also known as fill lights, are used to fill in the dark zones on stage to create a general zone. Shimizu states, "[The operator] should understand relationships between key and fill lights and respect the designer-provided light groups" (Shimizu 419). Fill lights are the remaining lights available to create a General-Wash. A General-Wash is a full stage illumination. Subsequently, I created two light groups, Gen 1 and Gen 2. Gen 1 is a small and more concise zone, and Gen 2 is a complete all-stage light. Gen 1 is mainly used for acting scenes and small movements, while Gen 2 is primarily used for big dancing numbers and all-cast scenes.

Communicate Visual Intent via Images

Having differentiated my key and fill lights and created my General-Washes, I started designing each scene. A major role in lighting design is learning how to balance a light as if many lights put together look like one singular light on; therefore, I began by playing with different light intensities until I was able to find a balance. I used the research about three perceptual dimensions of color by Wilms and Oberfeld, being Hue (Green, Red, Blue), Saturation (Low, Medium, High), and Brightness (Dark, Medium, Bright). According to Wilms and Oberfeld, "The effect of a given color on emotion is not determined by, for example, the hue alone, but by the combination of hue, saturation, and brightness" (896). As I am able to find a middle ground and a combination of the three dimensions to have an effect on the audience.

Color is loaded with symbolism. Individuals relate color to symbols, emotions, and objects, as Kaya states, "The color red has been associated with excitement, orange has been perceived as distressing and upsetting, purple as dignified and stately, yellow as cheerful, and blue has been associated with comfort and security" (Kaya). The majority of the population have an emotional response towards principal hue colors. This idea, along with the information in **Figure 9**, helped me design what colors I used for my creation towards an emotional connection.

Using the recommendations of Wilms and Oberfeld as well as Kaya, I typed in a document the cue number and the kind of light (Such as Gen-Wash, Blue Floor, Down-Center, etc). I was able to move from fill lights to colors as I am able to focus on the emotion being portrayed by the actors on the stage, then I can begin to create cues as I am able to design scenes. As I have all my lights positioned and angled, and color relation to emotion has been set.

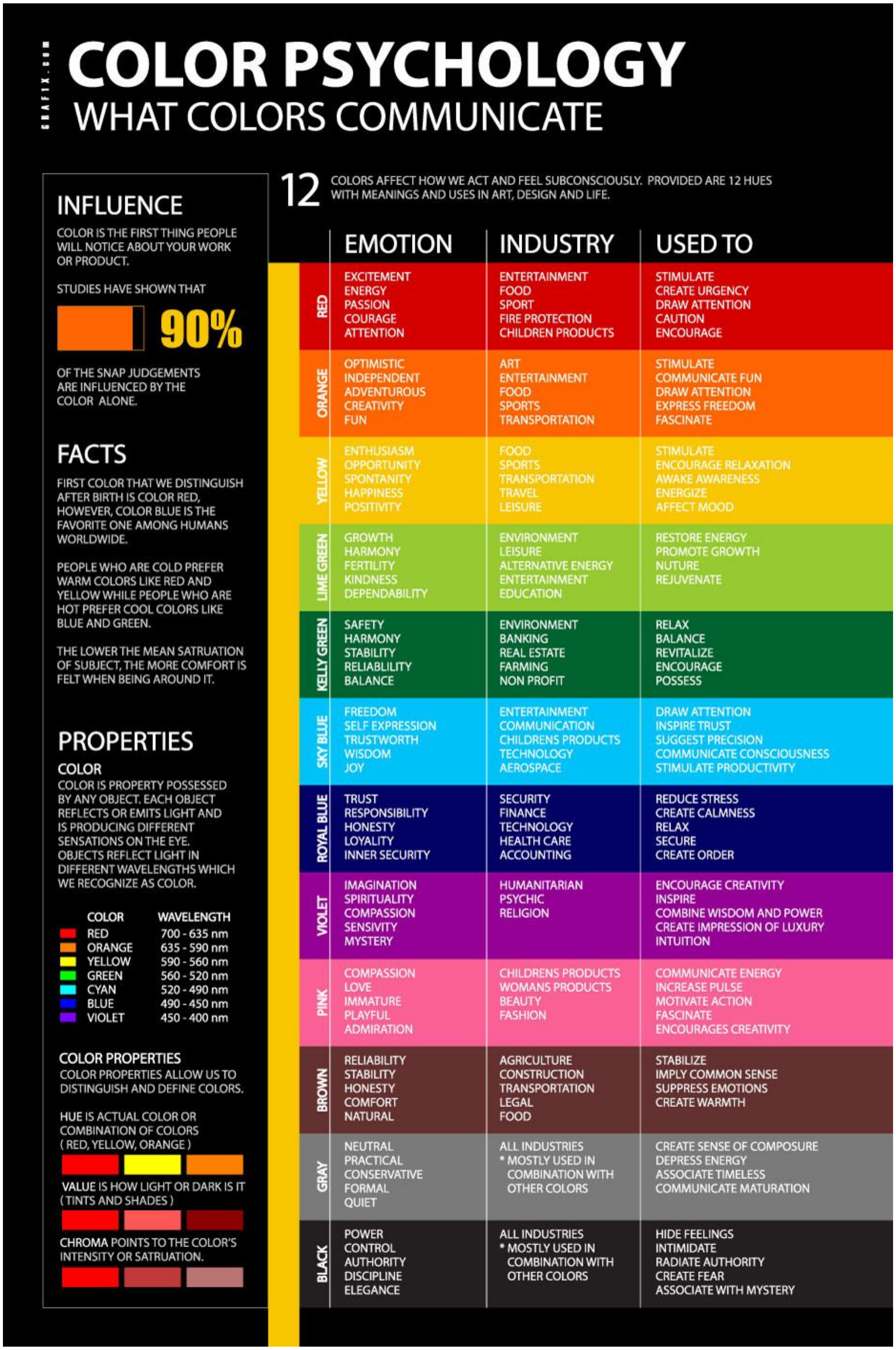


Figure 9, Color psychology chart (Avoleoo)

Partial Design Specification and Speed

For this step, one has to differentiate cues and playbacks away from each other without them affecting one another. Designers' decision-making matters as they are able to control the audience's perspective. Shimizu elaborated on influencing the audience with light control when he said "...a designer may only wish the system to generate changes to a specific stage region, leaving the rest of the stage unchanged" (Shimizu). A designer is able to analyze the intent shown, suggested ideas, and visualize the result while keeping a formal pace. Furthermore, I am capable of working at an efficient pace, by being able to design and edit cues or playblacks rapidly (Shimizu).

CREATION

For my own lighting design, I created a piece of art that was full of color and meaning portrayed through light effects. My creation is divided into a cue sheet along with cue/playback programming. The cue sheet illustrates a cue or playback number filled by the color of the light, a description of the light programmed, and a line on the script, movement, name of song, or setting of the musical to make the light go off. The cue/playback programming includes one-hundred and thirty cues, five playback memories, and two playback sequences. To view this creation in its entirety, please see **Appendix A**.

ANALYSIS

I gained most of my inspiration from professional lighting designer, John H. Purnell, who designed lights for Mamma Mia! in the Annapolis Summer Garden Theater. As Purnell said during an interview, "The "reality" part of the design must convey daytime, sunset, and evening light looks for the Taverna courtyard, beach and dock while keeping the actors well-illuminated" (Green). In this interview, Purnell, emphasizes the importance of being able to differentiate the different times of day through light in dialogue parts of the show. This is due to the musical being set in a period of twenty-four hours. I also gained ideas from watching other programs' interpretations of Mamma Mia! to help amplify my understanding.

In my analysis, I chose three scenes from the script to elaborate on my interpretation and decision-making for my creation. I portrayed my decision-making via the emotional relationship to color while using isolation control to shift audience perspective. By exploring these techniques, I am able to demonstrate a greater understanding of the importance of my research. In each scene, I will discuss the cue sheet for the specific scene, a certain cue from the scene with a rendering from the audience perspective, a light board perspective, and a birds eye view. To view two additional scenes which were redacted from my analysis due to word count, please view **Appendix B** and **C**.

Scene III, Act I: The Courtyard

In Scene III, the three fathers sing “Thank You For The Music” alongside Sophie, which later leads to Donna being frustrated by their presence as she sings “Mamma Mia” (Johnson 19-26). According to Mumford, “The lighting designer's ideas are now integral to the creation of many new dances; very often these ideas are developed even before rehearsal has begun, and they can influence the making of the choreography” (Mumford 53). As explored in my literature review, I focused on expanding my understanding on lighting dance as I gained knowledge through Mumford’s ideas. Since my creation is done before the rehearsal schedule I am able to work among choreographers and influence ideas through lighting design. “Thank You For The Music” has a slow, beautiful, and melodic start to the song, therefore, I used a slow time in of 10 seconds for cue #26 (**Table 2**) to establish the mood of sweetness. Throughout the scene, there are many transitions from singing to dialogue which is why I changed the color of the lights in cues #25 through #33 (**Table 2**).

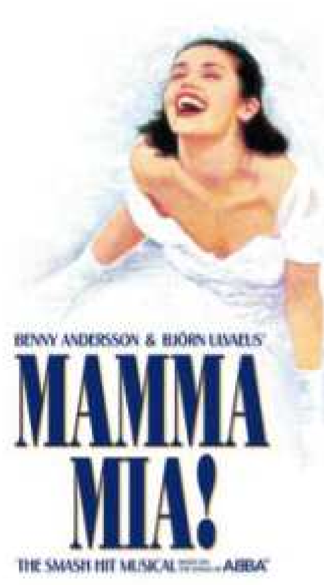


Figure 10, *Mamma Mia!* broadway poster (Harriman-Smith)

The song, "Mamma Mia," embodies the color orange and red through the emotion of playfulness and disappointment (Avoleoo); however, I used the color blue because of the association of the musical poster (**Figure 10**) since the song, "Mamma Mia," is the core of the musical which is set on an island surrounded by crystal blue seas of Greece connecting to Purnell's need to use lighting to establish place (Green). Per Kaluta's recommendations, I created a cue for an isolation on the windows of the set when the characters sing, "Mamma Mia, here I go again, my, my, just how much I missed you." (Johnson 26) towards focusing the audience's perspective on the characters.

#25		G1 + blue	courtyard
#26		G1 + blue	Thank you
#27		G1 + blue	courtyard
#28		G1 + blue	Thank you
#29		G1 + blue	courtyard
#30		G1 + blue	Thank you
#32		ISO SR + blue	Thank you
#33		G1 + blue	courtyard
#34		DSR + blue floor	Time freezes
#35		DSR & SR+ blue floor	Time freezes

#36		DC + blue floor (ISO on window)	Mamma Mia!
#37		DC + blue floor	Yes, I've been
	#3	Windows	Mamma mia
#38		DC + blue floor (ISO on window)	Mamma Mia!
#39		DC + blue floor	Yes, I've been
	#3	Windows	Mamma mia
#40		G1 + blue	courtyard
#41		B/O	Men exit

Table 2, Cue Sheet from Scene 3, Act 1

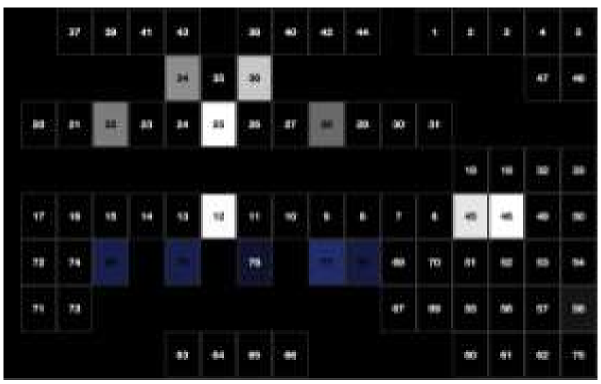


Figure 11, Light board perspective for Cue 36. Light 22, 28, 34, 36 are PAR lights above the stage that represent mock window isolations; Light 25 operates as a ghost light; Lights 45 and 46 are mock side lights. Lights 76 through 80 are LED lights.

Figure 12, Mock rendering of light effect from audience perspective for Cue 36. Windows on stage and side lighting are mock representations of lights.

Cue #36

This cue (see **Figure 11**) takes place in the middle of the song "Mamma Mia," setting off as soon as the beat slows down and Donna says, "Mamma Mia, here I go again, my, my, just how much I missed you" (Johnson 26). In this cue I wanted to generate the sense of freezing time and isolate each window on set (**Figure 12**). Using isolations for each window and downstage center, I was able to light each ensemble character singing alongside Donna. This cue is a zero timed in and three second timed out to really capture the audiences' perspective and make the scene flow by not just going back and forth with the timing of lights but easing back into the song to enhance the flow of the song. **Figure 13**, shows I used four PAR lights above the stage to isolate the windows and the location of the side lighting used to shift lights on Donna. I incorporated Mumford's ideas in this cue by talking to the choreographers to have Sophie in the downstage-center area and have ensemble members singing in the windows of the set (Mumford 54).

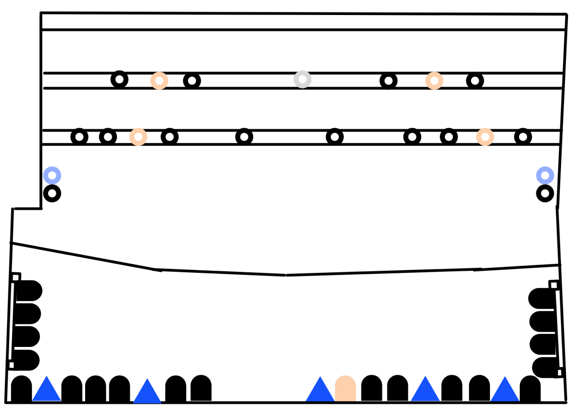


Figure 13, Light plot/Bird's Eye View of Cue 36 with operating lights on. Note: Ghost light is white but I made it a shade of gray for visibility. Lights on the sides of the proscenium are used for side lighting.

Scene IV, Act I: Donna's Room

Scene IV, Act I, the song "Chiquitita" is set in Donna's room as Rosie and Tanya are trying to emotionally support her as friends. According to lighting principles, there should not be any isolations inside houses or colors as that would not happen in a real house (Shimizu 419). In color theory and psychology, the use of a color combined with the perfect balance of brightness and saturation helps the audience create an emotion (Wilms & Oberfeld 905; van Braam). This contradiction, of lighting theory versus color theory, forced me, as the creator, to choose between the two theories.

For this scene, I chose color theory as the musical *Mamma Mia!* is based on a supernatural story. For the song, “Chiquitita,” I used the color pink in cue #43 (**Table 3**) as Donna’s friends are being compassionate and encouraging their friend who is feeling sorrow. Later on, they appear to be starting a party singing “Dancing Queen” as I created a playback sequence to resemble the multi-color disco lights of a party.

#42		Gen 1	Donna
#43		MSR ISO + pink	As they move towards the bed
#44		Gen 1	Donna
	# 4	Disco + Gen	Dancing queen
#45		Ghost	End of dancing queen

Table 3, Cue Sheet from Scene 4, Act 1

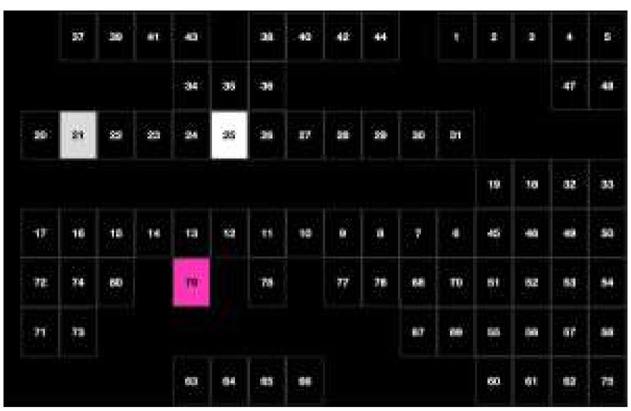


Figure 14, Light board perspective for Cue 43. Light 21 is a PAR light above the stage; Light 25 operates as a ghost light; Light 79 is an LED light.

Cue #43

Rosie and Tanya are cheering up Donna after she finds out her three ex-boyfriends are all on the island. This cue (**Figure 14**) is the start of the song Chiquitita, which involves a pink LED light, a PAR light right above the bed at a 90-degree angle, and the ghost light for backlighting (**Figure 15**). These lights complement each other as I was able to cover the shadows of the stage.

As examined in my literature review, I am able to establish an emotion while following the ideology of color psychology as van Braam said, “Pink is a color that represents hope, but sometimes it can be associated with not seeing the negative aspects of reality” (van Braam) through the use of LED lights. Following Wilms and Oberfeld's ideology of color theory, while balancing *hue* through the use of pink, *saturation* through a dark hot pink, and *brightness* through the intensity level used on each light (896; see **Figure 16**). Channel 79 was at max intensity so that the color pink would not get lost between the use of the other two lights (see **Figure 14** for channel numbers).

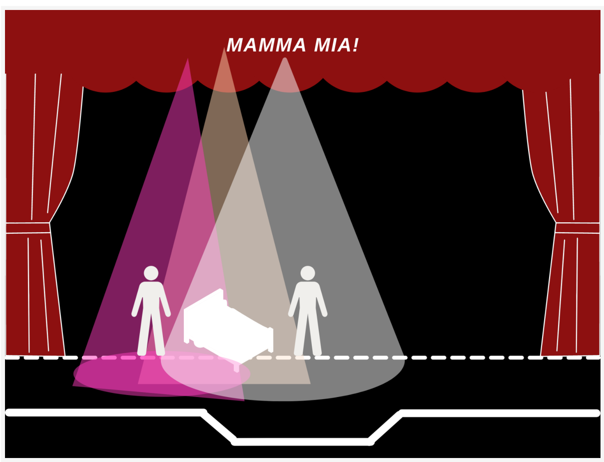


Figure 15, Rendering of light effect from an audience perspective for Cue 43.

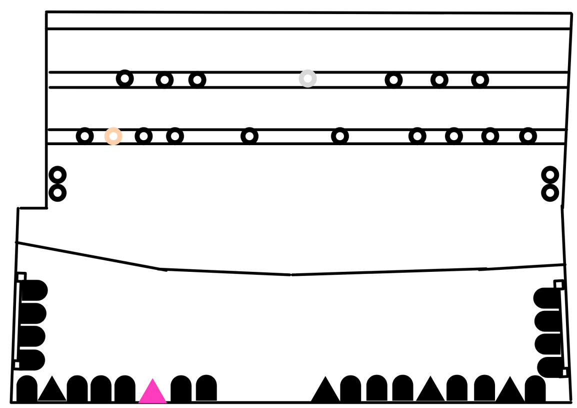


Figure 16, Light plot/Bird’s Eye View of Cue 43 with operating lights on. Note: Center stage ghost light is white but I made the light a shade of gray for visibility.

Scene I, Act II

Scene I, Act II is a nightmare scene which is the most unrealistic part of the musical; therefore, I wanted to create a special image with lights as I had the most technical freedom in this scene. In the scholarly article, “From Candle Light to Contemporary Lighting Systems: How Lighting Technology Shapes Scenographic Practices” Gröndahl said, “If light could be compared to the artist's camera, paintbrush or chisel, it would be an active agent capable of creating new visions" (Gröndahl 21). Thus, these practices help my research as I am able to open up audiences' perspectives through the use of the art of lighting design.

In the song, Sophie has many movements which required me to create different isolation cues around the stage to not lose the feeling of nighttime (**Table 5**). I could have just brought up a general wash for one of my cues but I would have lost the darkness on the stage. I used the theory of color by Wilms and Oberfeld, to have a dim dark purple background (Wilms & Oberfeld 896), by following the balance of saturation, brightness, and hue. Therefore, I was able to establish the feeling of nighttime. Sophie's emotions demonstrate the nature of blue because "...color blue over other colors tend to be too cautious, anxious, and they are reluctant to give up control" (van Braam). I also added the low green LEDs for texture and changed the main color from purple to blue in this part of the song as she is not in an isolated light and she is letting go as she says, "Under Attack I'm being taken about to crack defenses breaking" (Johnson 53). In this part of the song, Sophie is letting go as she is unable to keep going.

#80		Ghost (Front light) purple F Red cyc	Sophie's nightmare
#81		Ghost (Front light) purple F Red cyc n Floor	Under attack
#82		Zones DSC and DSL purple F	Under Attack
#83		Purple F Red cyc	This is getting crazy
#84		G1 low Green LEDs Blue floor Red cyc	Under Attack
#85		DC purple F (red center) Red floor Red cyc	End of I wouldn't know how

#86		G1 low Green LEDs Blue floor Red cyc	Under Attack
#87		Purp F (small) Red floor (C) DC Ghost (red cyc)	Thinking nothing can stop
#88		B/O	

Table 5, Cue Sheet from Scene 1, Act 2

Cue #80

Cue 80 (**Figure 17**) is focused mainly on the center of the stage as seen in **Figure 18**. I followed my stage directions as said in the script, "a shaft of light hits SOPHIE's bed", therefore I used channels 13, 10, and 8 (**Figure 17**) to illuminate the bed (Johnson 53). As I focus mainly on the bed, I expanded the light pool with three LEDs colored purple and a red cyc to have a bit of light as her fathers approach the bed.

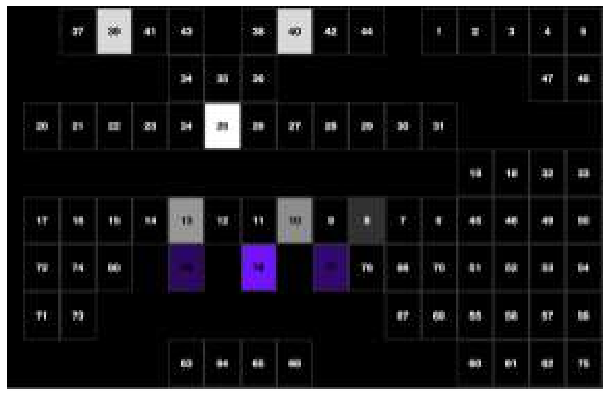


Figure 17, Light board perspective for Cue 80. Lights 39 and 40 yellow cyc; Light 25 operates as a ghost light; Lights 12, 10, 8 are ERS lights on the cove; Lights 77 through 79 are LED lights.

I explored scenographic practices by Gröndahl which helped me elaborate on my artistic design for this cue (Gröndahl 20). Due to the exaggerated colors in this cue, I created a new vision by making light play a role by making the audience see meaning in the lighting. I implemented this practice through the colors purple and red because of color psychology as I

Figure 18, Rendering of light effect from audience perspective for Cue 80.

was trying to resemble the nature of a nightmare. The color red negatively represents the feeling of danger, and the color purple negatively represents the nature of mystery (van Braam). In this part of the song, Sophie stays in her bed and the ensemble has yet to make an appearance, thus there is no need to expand the lights up on the cove (**Figure 19**) to expand the stage.

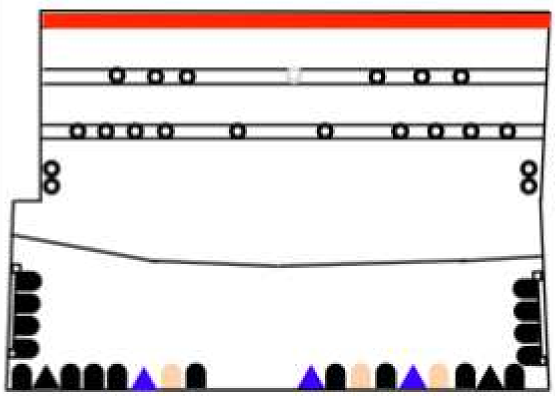


Figure 19, Light plot/Bird's Eye View of Cue 80 with operating lights on. Note: ghost light is white but I made the light a shade of gray for visibility. Red cyc in the back is connected to color psychology.

Creative Limitations

My creative process will not technically end until the very last night of our show. After taking directors' feedback into consideration, I will be required to make adjustments. In *The Perfect Stage Crew,* Kaluta indicates, "During the tech, most of the flaws will become apparent and, hopefully, fixed. Then improvements are made through the dress rehearsals, then you are on, and improvements are still made all the way to closing night" (Kaluta 199). Therefore, when practicing running the show and performing during show nights, I will take notes on any error or significant event that has to be modified.

Additional limitations to my creative approach are: the set not being finished, the actors not being on stage, and lacking official soundtracks. The set, being incomplete, holds back a light designer as one is only capable of imagining what is needed. For example, some cues that I have yet to finish are cue #36 and cue #38. Both cues rely on window isolations and these windows are not fully built. Once the set design for the show is finished, I will be able to design cues while understanding a character's movement of a set piece that might result in editing the cue.

Cast members not being on stage affects lighting decisions as actors have different skin tones and heights. Different colored LEDs light lighter skin tones compared to darker skin tones. From my experience in prior shows, the color green is problematic as this color makes people of lighter skin tones look sick and nauseous. Additionally, actor placement impacts lighting. For example, an actor who is tall might have to take a step forward so that the light could have the same effect as someone shorter. Stepping forward into an isolation light is also influenced by height as the angle of the light will not light up an actor's face as effectively.

My last limitation is not having the official soundtracks. Not having the official tracks affects the timing of my cues and I am unable to synchronize the timing of light to sound. Additionally, from my experience, most official high school soundtracks are dissimilar from Broadway tracks publically available. This will affect the timing of cues for our high school production, as I have only been able to access Broadway tracks for timing.

CONCLUSION

Throughout this study, I explored the relationship of colored lighting to emotion established by Kaya, van Braam, and Willms and Oberfeld, as well as Shimizu's methodological steps that professional lighting designers follow. My approach was created upon the necessity of amplifying knowledge of lighting operators in the high school setting. This is a necessary step towards improving as high school students will not just design cues and playbacks based on their own knowledge, but rather a new standard created for high school students to follow towards designing a show. My research question: "Based on the theories of professional lighting design and color psychology, how do I develop lighting sequences and cues for *Mamma Mia!* using

High School rigs and technology?", has allowed me to create a professional lighting design for the musical *Mamma Mia!* by using high school rigs.

As stated throughout my paper, this research was focused to help students overcome the gap in professional equipment and a lack of knowledge regarding professional lighting techniques in the high school setting. The new standard of professional high school lighting will lead to students creating more advanced pieces of art when programming cues and playbacks for their respective musicals. My hope is that this paper will help students learn the fundamentals of technical and musical theatre and be able to understand advanced lighting techniques and terminology. Additionally, this paper demonstrates how students can use advanced theories and the methodology of professionals to apply these theories to their respective designs. Finally, my hope is that students will be able to use my research as a template in which they are able to use examples gathered from my analysis and use my creative rationale as a blueprint for future lighting programming using high school rigs.

Works Cited

Avoleoo. “Graf1x.Com.” *Posters for Artists, Designers, Teachers*, 14 Sept. 2014, https://graf1x.com/color-psychology-emotion-meaning-poster/.

“Custom Stage Drapes, Theatre Curtains, and Softgoods.” *Sew What? Inc.*, 31 Jan. 2020, https://sewwhatinc.com/products/stage-drapes/.

“Design-Build Audio Video Lighting.” *Illuminated Integration*, 10 Feb. 2022, https://illuminated-integration.com/.

De Leon, Manuel. “The Mathematics of Light: Aristotle.” *OpenMind*, 8 Aug. 2018, https://www.bbvaopenmind.com/en/science/mathematics/the-mathematics-of-light-aristotle/#:~:text=According%20to%20Aristotle's%20theory%20of,observed%20object%20(its%20color).&text=Aristotle%20is%2C%20of%20course%2C%20one,the%20giants%20of%20Western%20thinking.

Flores, Yavet. “Stage Directions and Drama Terms.” *Juicy English*, https://www.juicyenglish.com/blog/stage-directions-in-plays#comments.

Green, Charles. “Lighting Designer John H. Purnell Discusses 'Mamma Mia' at Annapolis Summer Garden Theatre.” *DC Metro Theater Arts*, 18 Aug. 2019, https://dcmetrotheaterarts.com/2019/08/17/john-purnell-mamma-mia-annapolis-summer-garden-theatre/.

Greenberg, Jessica. “Science and Magic : Illuminating the Stage with Lighting Design.” *Jessica Greenberg: Science and Magic : Illuminating the Stage with Lighting Design | TED Talk*, https://www.ted.com/talks/jessica_greenberg_science_and_magic_illuminating_the_stage _with_lighting_design.

Gröndahl, Laura. “From Candle Light to Contemporary Lighting Systems: How Lighting Technology Shapes Scenographic Practices.” *Nordic Theatre Studies*, vol. 26, no. 2, July 2014, pp. 20–33. *EBSCOhost*, https://doi.org/10.7146/nts.v26i2.24305.

Harriman-Smith, George. “Mamma Mia!” *Musical Heaven*, 22 Aug. 2016, https://www.musicalheaven.com/m/mamma-mia/.

Hobgood, Burnet M. *Master Teachers of Theatre: Observations on Teaching Theatre by Nine American Masters*. Southern Illinois University Press, 1988.

Johnson, Catherine. “Mamma Mia! .” 6 Apr. 1999.

Kaluta, John. *The Perfect Stage Crew*. Allworth Press, 2016.

Kaya, Naz, and Helen H. Epps. “Relationship between Color and Emotion: A Study of College Students.” *College Student Journal*, vol. 38, no. 3, Sept. 2004, pp. 396–405. *EBSCOhost*, search.ebscohost.com/login.aspx?direct=true&db=pbh&AN=14669489&site=eds-live&scope=site.

Kelly, Jeff. Personal interview with high school theatre teacher and director. 20 December 2021.

Mumford, Peter. “Lighting Dance.” *Dance Research*, vol. 3, no. 2, Winter 1985, pp. 46–55. *EBSCOhost*, https://doi.org/10.2307/1290557.

Nelms, Henning. *Scene Design: A Guide to the Stage*. Dover Publications Inc., 1975.

Shimizu, Evan, et al. “Exploratory Stage Lighting Design Using Visual Objectives.”

Computer Graphics Forum, vol. 38, no. 2, May 2019, pp. 417–429. *EBSCOhost*, doi:10.1111/cgf.13648.

SCL Health. “How Listening to Certain Songs Can Impact Our Brain and Affect Our Mood.” *How Listening to Certain Songs Can Impact Our Brain and Affect Our Mood | SCL Health*, https://www.sclhealth.org/blog/2019/04/how-listening-to-certain-songs-can-impact-our-brain-and-affect-our-mood/.

“Tony Award Winner Lights The Bridges of Madison County.” *Vectorworks, Inc.*, https://www.vectorworks.net/en-US/customer-showcase/tony-award-winner-lights-the-bridges-of-madison-county.

Rubin, Joel. “Led Source Lighting in Theatrical Production.” *TD&T: Theatre Design & Technology*, vol. 48, no. 4, Fall 2012, pp. 19–23. *EBSCOhost*, https://search.ebscohost.com/login.aspx?direct=true&db=ibh&AN=83754981&site=eds-live&scope=site.

van Braam, Hailey. “Color Psychology.” *Color Psychology*, 3 Jan. 2022, https://www.colorpsychology.org/.

Wilms, Lisa and Daniel Oberfeld. “Color and Emotion: Effects of Hue, Saturation, and Brightness.” *Psychological Research*, vol. 82, no. 5, Sept. 2018, pp. 896–914. *EBSCOhost*, https://doi.org/10.1007/s00426-017-0880-8.

Works Referenced

"A Close Look at Musical Theatre." *Performing Arts & Entertainment in Canada*, vol. 32, no. 3, Aug. 1999, p. 37. *EBSCOhost*, https://search.ebscohost.com/login.aspx?direct=true&db=aqh&AN=2416431&site=eds-live&scope=site.

Brockett, Oscar Gross, and Robert Findlay. *Century of Innovation: A History of European and American Theatre and Drama since the Late Nineteenth Century*. Allyn and Bacon, 1996.

"Colorpick Eyedropper." *Google*, Google, https://chrome.google.com/webstore/detail/colorpick-eyedropper/ohcpnigalekghcmgcdcenkpelffpdolg.

Grant, Adam. *Think Again: The Power of Knowing What You Don't Know*. W H Allen, 2022.

Hoggett, Chris. *Stage Crafts*. Heinemann, 2001.

Leedy, Paul D. & Jeanne Ellis Ormrod. *Practical Research: Planning and Design*. Pearson, 2016.

"RGB Color Codes Chart." *RGB Color Codes Chart* , https://www.rapidtables.com/web/color/RGB_Color.html.

APPENDIX A

Complete Cue Sheet for *Mama Mia!*

Cue#	Playback #	Purpose	Line/Movement/Song/Other
	#1	Opening House	N/A
#0.1		Speech	N/A
#0.2		Speech Joke	
#1		B/C	We are in darkness
#2		ISO	I HAVE A DREAM
#3		Stretch ISO	Stands and walks to the post
#4		B/O	Good Luck
#5		Gen 1	Sophie!!
#6		ISO (Red F)	Honey Honey
#7		Zone AB (Red F)	As she moves from spot
#8		Gen 1	So this guy
#9		ISO (Red F)	Honey Honey
#10		Gen 1	Oh my god Soph
#11		Gen 1 (Red)	
1 2		Yellow cyc & Blue Fl (DC)	I heard about you
#13		B/O	Me……
#14		Gen 1 + blue	Scene 2 (courtyard)
#15		Red SR ISO	
	#2	Flash	Ain't it sad?
	#2	Flash	That's too bad
#16		Low G1, DC and Reds	
#17		Red floor DC	AHA AHA
	#2	Flash	Ain't it sad?

#18		Stretch DC red floors	A man like
#19		G1 Reds	So I must
#20		DC & Ghost Reds	My Life will
#21		Gen 2 Purple	
#22		Purple with DC n Ghost	As she is center
#23		Ghost	End of song
#24		B/O	
#25		G1 + blue	courtyard
#26		G1 + blue	Thank you
#27		G1 + blue	courtyard
#28		G1 + blue	Thank you
#29		G1 + blue	courtyard
#30		G1 + blue	Thank you
#32		ISO SR + blue	Thank you
#33		G1 + blue	courtyard
#34		DSR + blue floor	Time freezes
#35		DSR & SR+ blue floor	Time freezes
#36		DC + blue floor (ISO on window)	Mamma Mia!
#37		DC + blue floor	Yes, I've been
	#3	Windows	Mamma mia
#38		DC + blue floor (ISO on window)	Mamma Mia!
#39		DC + blue floor	Yes, I've been
	#3	Windows	Mamma mia
#40		G1 + blue	courtyard
#41		B/O	Men exit
#42		Gen 1	Donna

#43		MSR ISO + blues	As they move towards the bed
#44		Gen 1	Donna
	#4	Disco	Dancing queen
#45		Disco light + ghost	End of dancing queen
#46		Orange G1	Beach
#47		Reds and G1	I wasn't jealous
#48		Orange G1	Beach
#49		Purples G1	I've had a few
#50		Dark blue small G1	Night time
	#5		
#51		DC	After Playback is done
#52		DC Ghost Blues	Wishing every show
#53		G1 blues	So i'll be there
#54		Small Blue DC Ghost	Super trouper (5 second)
#55		Ghost blue floor	Bump of sound
#56		Dark blue small G1	Night time
#57		Dark blue small G1 add yellow cyc	Is there a man
#58		Blue floor and SL	Sorry to drag
#59		Dark blue small G1 add yellow cyc	Is there a man
#60		Blue floor and SR	Fancy Donna with
#61		Dark blue small G1 add yellow cyc	Is there a man
#62		Blue floor and SR	Can I be noisy
#63		Dark blue small G1 add yellow cyc	Is there a man
#64		B/O	

#65		SR blue	Jetty
#66		SR n MSR blue	But sophie
#67		Small Ghost blues disco	People everywhere
#67.1		Small Ghost blues disco / yellow cyc	Glowing in the dark
#68		Add blue SL for the boys disco	And here we go again
#69		G2 purple f blue cyc disco	voulez-vous
#70		SL blue floor	Sophie, I don’t
#71		G2 purple f blue cyc disco	voulez-vous
#72		SR blue floor	Oh, my God
#73		G2 purple f blue cyc disco	voulez-vous
	#6	Disco (BND)	C’est
#74		DC Blues and Disco	
#75		B/O	
ACT II	**ACT II**	**ACT II**	**ACT II**
#80		Ghost (Front light) purple F Red cyc	Sophie's nightmare
#81		Ghost (Front light) purple F Red cyc n Floor	Under attack
#82		Zones BC and C purple F	Under Attack
#83		purple F Red cyc	This is getting crazy
#84		G1 Green LEDs Blue floor Red cyc	Under Attack

#85		DC purple F (red center) Red floor Red cyc	End of I wouldn't know how
#86		G1 Green LEDs Blue floor Red cyc	Under Attack
#87		Purp F (small) Red floor (C) DC Ghost (red cyc)	Thinking nothing can stop
#88		B/O	
#89		Night time	Courtyard
#90		Blue cyc G1 n Peach floor (LED)	One of us
#91		Night time	Courtyard
#92		Darker (LED) blue cyc	S.O.S
#93		SL & SR ISO Dark blues	So when you're
#94		Night time	Courtyard
#95		DC plus C plus Ghost blues	So when you're
#96		B/O	
#97		Orange-G1	Beach
#98		Pink G1 and Red cyc	You're so hot
#99		Pink G1 (lower) and Red cyc	Dance break
#100		DC purple F & cyc	I can see
#101		purple F & cyc add G1	Now you're so cute
#102		Pink G1 and Red cyc	You're so hot
#103		Blue & Red Floor Ghost n Cyc	END of song
#104		Orange-G1	Beach
#105		MSR & SR Red	Breakin' up
#106		MSR & SR yellow	Knowing me
#107		B/O	SLOW
#108		G1	Donna's room

#109		Green/blue F g1	I can still recall
#110		Blues g1	And now you're
#111		G1	Donna's room
#112		Orange g1 n yellow cyc	Schoolbag
#113		G1	Donna's room
#114		Blues and G1 yellow cyc	Sleep in your eyes
#115		Blues DC	School bad
#116		B/O	
#117		G1	Donna?
#118		Red F (Small) CH 14/15/35	I don't wanna talk
#119		Red dc	When he leaves
#120		B/O	SLOW
#121		Blue G1	courtyard
#122		Blue F yellow cyc G1	If you change
#123		Blue G1	courtyard
#124		Purp f	As they walk our
#125		Night time	jetty
#126		B/O	
	#10	bows	
#127		Purp n yellow G1	
#128		G1 bows	

APPENDIX B

Redacted Scene from Analysis: **Scene 2, Act 1: The Courtyard**

For Scene 2, I focused on the powerful message by Donna in the song "Money, Money, Money." My goal was to establish the sense of passion; therefore, according to the psychology chart (**Figure A**) the color red is the most appropriate for the sense of passion, I applied this color in cues 15-20 (see **Table Z)**. Throughout the song Donna is located in different parts of the stage where I used Kaluta's ideology to "shape the visual frame" to focus the audience's perspective on Donna (Kaluta). I shaped the stage by designing isolation cues around the stage to focus on Donna; I also did this on cues 15-20.

Due to the request of my director, I created a flash playback to quickly light the stage when the ensemble sings with Donna to create tension within the audience and move their perspective towards the whole stage. By flashing the whole stage I am able to expand the audience's perspective of the stage. Towards the end, I changed colors from red to purple as Donna has an imaginary tone as she uses the word 'If' more often. As seen in **Figure A**, the change of color allows me to shift the audience's emotion from passionate to imaginary.

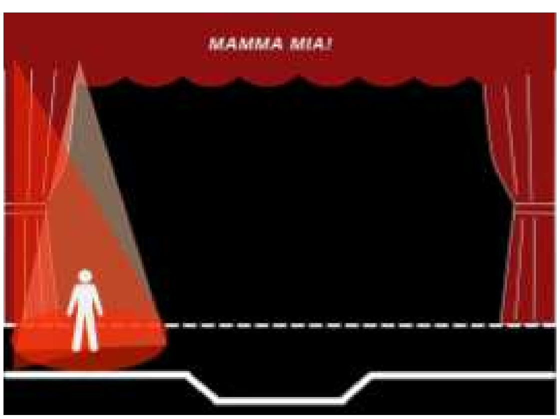
#14		Gen 1 + blue	Courtyard
#15		Red SR ISO	I work all night
	#2	Flash	Ain't it sad?
	#2	Flash	That's too bad
#16		Low G1, DC and Reds	Money, Money, Money
#17		Red floor DC	AHA AHA
	#2	Flash	Ain't it sad?
#18		Stretch DC red floors	A man like

#19		G1 Reds	So I must
#20		DC & Ghost Reds	My Life will
#21		Gen 2 Purple	Money, Money, Money
#22		Purple with DC n Ghost	As she is center
#23		Ghost	End of song
#24		B/O	

Table Z, Cue Sheet from Scene 2, Act 1

Cue #15

This cue represented in **Figure B**, the start of the song "Money, Money, Money" and the reason for this cue is to continue gathering the audience's attention by using Kaluta's ideology of shaping the stage (Kaluta) by the use of an isolation downstage right (see **Figure C**). Channel 17 is a ERS light with a gel color of R02 and channel 80 is a source 4 LED with a hex color-code of FD2800. I have channel 17 at 70 percent and channel 80 at 100 percent so that the color red could be highly saturated and highly visible. I used the light on the stage right part of the theater for frontal lighting instead of side lighting (see **Figure C**).



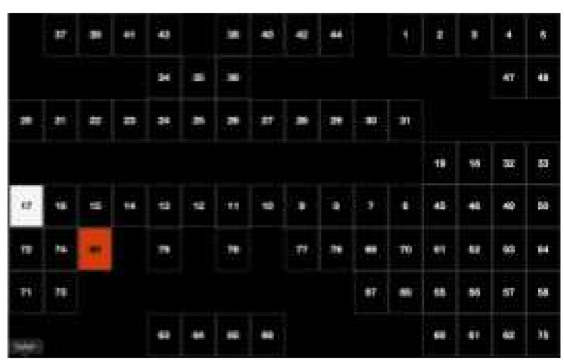


Figure B, Light board perspective for Cue 15. Light 17 is an ERS light on the cove; Light 80 is a LED light.

Figure C, Rendering of light effect from audience perspective for Cue 15.

Therefore, I am able to light her whole body and still have the sense of passion through the use of the color red. While creating this isolation light I had to focus on bleeding light. Bleed of light is a large pool of unnecessary light and is avoided by a more narrow angled barrel. This is a simplistic but important light as isolation lights are able to shape the stage the best.

APPENDIX C

Redacted Scene from Analysis: **Scene 8, Act 1: The Courtyard**

For Scene 8, Act 1, I knew based on the script I needed to capture the responsable nature of the three men as they approached Sophie to walk her down the aisle. Therefore, I explored color theory to make sure I captured the aspect of responsibility as I portrayed this to the audience. The color theorist, Hailey van Braam, states that, “In a similar vein, purple has a long-standing association with dignity” (van Braam). This largely impacted my decision to utilize the color purple for the scene. After not being in Sophie's life for 21 years each one of the men want to step up to finally become her father and be part of Sophie's life. Thus, the importance demonstrates the use of the color purple to portray the nature of dignity. Additionally, as this was the last scene of Act 1, I wanted to make sure the audience could picture all the characters clearly. Therefore, I made sure to use isolations when time freezes. According to Shimizu, I am able to convey the audience's emotions by persuading their attention by focusing on a certain area in the stage (Shimizu). Therefore, in cues 70, 72, 74 (**Table Y**), I made sure to use isolation lights with a dim blue floor for the actors that are not being focused on. As a lighting designer I try my best to avoid cues that include decimals, but as I move forward with my creation and I make edits to my cue sheet I have to find space for new cues within the other cues. I try my best to avoid decimals to avoid any confusion with a stage manager and decimals also take longer to say through a microphone. Thus, I used a decimal number to include the cues such as cue #67.1.

#65		SR blue	Jetty
#66		SR n MSR blue	But sophie
#67		Small Ghost blues disco	People everywhere

#67.1		Small Ghost blues disco / yellow cyc	Glowing in the dark
#68		Add blue SL for the boys disco	And here we go again
#69		G2 purple f blue cyc disco	voulez-vous
#70		SL blue floor	Sophie, I don't
#71		G2 purple f blue cyc disco	voulez-vous
#72		SR blue floor	Oh, my God
#73		G2 purple f blue cyc disco	voulez-vous
	#6	Disco (BND)	C'est
#74		DC Blues and Disco	
#75		B/O	
ACT II	**ACT II**	**ACT II**	**ACT II**

Table Y, Cue Sheet from Scene 8, Act 1

Cue #67.1

In this cue (**Figure D**) I wanted to keep the sense of a party as the song "Voulez-Vous" takes place in Sophie's party outside in the courtyard late at night. As said by Purnell, when creating the setting of each scene one must create a different feeling when differentiating time zones in the musical (Green). My inspiration for this cue was based on his creation as I used dark blue color LED lights (**Figure E**). I was also inspired to keep the cue dim as there is no dialogue in this part of the song. I added the yellow cyc because of the correlation between the script as it says, "Your eyes are glowin' in the dark" (Johnson). As well as using the disco light to keep the audience attention towards the theme of a party for this song, and using channel 25 the ghost light for backlighting to create a small silhouette for the actors and help out to diminish shadows (**Figure F**).

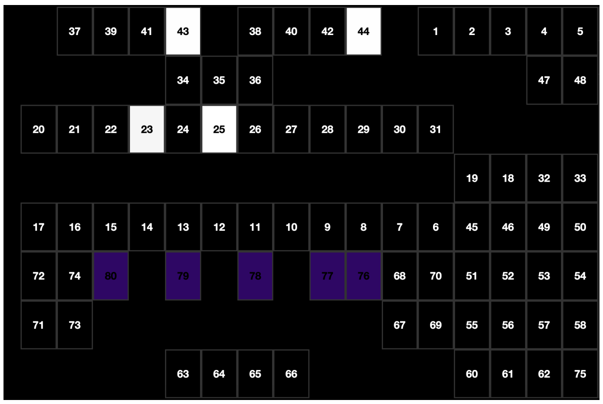


Figure D, Light board perspective for Cue 67.1. Lights 43 and 44 yellow cyc; Light 25 operates as a ghost light; Light 23 is a disco light; Lights 76 through 80 are LED lights.

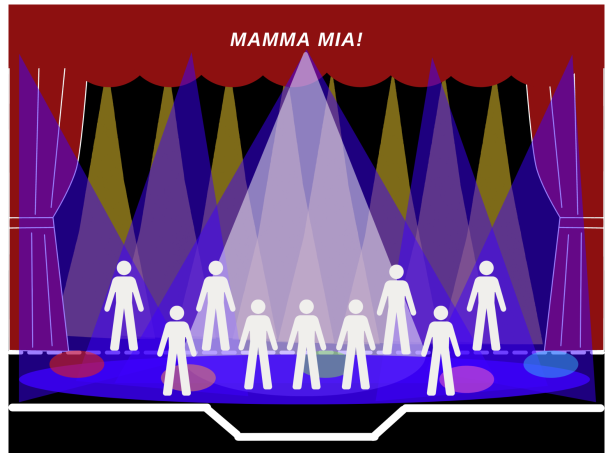


Figure E, Rendering of light effect from audience perspective for Cue 67.1. Note: Dots on ground indicate Ch. 23 as a disco light.

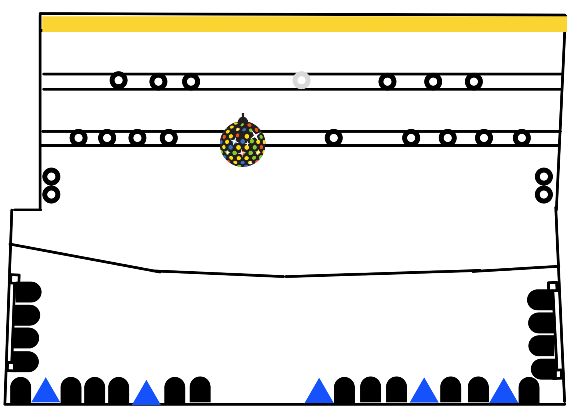


Figure F, Light plot/Bird's Eye View of Cue X with operating lights on. Note: cyc light in back is yellow to connect with lyrics from song in Scene 8, Act 1.

Academic Paper

Note: Student samples are quoted verbatim and may contain spelling and grammatical errors.

Sample: A
Score: 5

This paper earns a score of 5. There is a clear, focused topic of inquiry that is carried out through the methods and conclusion. The research question is presented on page 10: "Based on the theories of professional lighting design, how do I develop lighting playbacks and cues for *Mamma Mia!* using high school rigs and technology?" The paper presents a clear gap as it is asking if a professional standard of lighting can be accomplished using only high school-level equipment (also page 10). The paper presents a step-by-step method (pages 11-16), and this method is logically defended in multiple places. For instance, the paper discusses how "the creative framework was inspired by Evan Shimizu's work" on page 11, showing logical defense based on the literature. On page 14, the paper justifies the color design choices based on color psychology by Avoleoo, displayed in Figure 9 on page 15. The result of the creative process (the finding) is discussed on page 16, and the full creation can be found in Appendix A, which is referenced in the main body of the paper.

The paper also analyzes the creation of lighting design on pages 16-18. In the analysis, the paper outlines the creative choices and rationale for those choices. The paper presents the limitations of the conclusion on pages 25-26. Specifically, the paper notes that the creative process will not be done until the last night of the show (page 25), the limitation of the set not being finished and impacting final lighting choices (page 25), and the fact that the creation was designed without actors on the stage and thus doesn't accommodate for different heights and skin tones (page 26). Implications are outlined on page 27. These implications include that this creation demonstrates that high school level productions can design lighting utilizing advanced color theory and that this creation can serve as a template for future students to design lighting using high school equipment. The paper is written in a style that is easy to understand, and the design choices, including many charts, graphs, and visuals, help to enhance the communication of the paper.

This paper does not earn a score of 4 because the new understanding is justified through a logical progression of inquiry choices. The paper justifies each step of the creative process and then shows through a critical analysis how the creation of the lighting design was made and justified. There are clear limitations on the conclusion (pages 25-26), and a discussion of the implications for the community of practice (other high school lighting designers) can be found on page 27. The paper also does not earn a 4 because the many design choices, clear figures, and strong writing help to enhance the communication for the reader.