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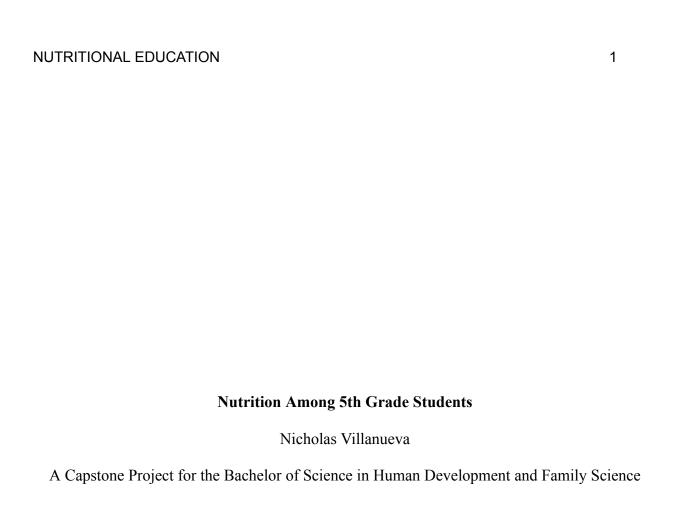
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Nutrition Among 5th Grade Students

Nicholas Villanueva

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Introduction

My capstone project focuses on Nutritional education for 5th grade students. Many elementary school children lack the knowledge of what a balanced portion looks like, as well as making healthier food choices. It is generally accepted that inadequate and unbalanced nutrition negatively affects the health of a society and hinders both social and economic development (Elmas & Arslan, 2020). Unhealthy eating habits can lead to severe health related issues. There are many factors on why some students do not understand the importance of nutrition. Some of these factors include environmental factors. Children who start observing poor eating habits at school can also develop poor eating habits. If schools integrate healthier food choices this can be a start to a healthier lifestyle. This will promote health and decrease the risk of future health related diseases. My project will educate fifth grade students on the importance of nutrition. I will develop multiple lesson plans over a period of two days that explains the fundamentals of nutrition education among 5th grade students. The workshop will include one main topic, followed by three subtopics. These subtopics include; understanding nutrition labels and what they mean such as terms on the nutrition facts of a food label, MyPlate food groups/portion sizes, and lastly physical activity integration. This project will be conducted at the East Valley Family YMCA center in San Jose, CA. My expected participants are fifth graders with the age range of 10-11 years old.

Needs Statement

Fifth grade students are constantly growing which means their appetites are increasing.

Children need a well balanced diet to have the energy to perform well in their academics and to live a healthy lifestyle. Nutrition refers to the use of nutrients for growth, development, survival,

and the promotion of health (Elmas & Arslan, 2020). Nutrition is an important part for a child's development because it allows them to stay healthy without any health related issues. It also helps them with their cognitive development. Fifth grade students lack knowledge of nutrition and it is an ongoing problem because it can lead to poor eating habits. Students lack knowledge of nutrition because they are not properly educated on nutrition. It's important we educate the youth on nutrition and not just show a quick lesson plan. Poor nutrition can leave students' susceptible to illness or lead to headaches and stomachaches, resulting in school absences (Brown, Beardslee, & Prothrow-Stith, 2008). It is important that we encourage schools to actively participate in educating students about nutrition and the importance of it.

There are many rising health problems for today's children. Some children are developing health related diseases such as Type 2 diabetes. Back then children would not develop this type of health concerns and were only found in adults. Now, about one-third of American youth are overweight, a problem closely related to the increase in kids with Type 2 diabetes, some as young as 10 years old (CDC). It is important to know the risk factors of Type 2 diabetes. Some risk factors include having a family member with Type 2 diabetes, poor diet, ethnicity, and having conditions related to insulin. Children need to start eating a well balanced diet, and being active to avoid health related diseases that can worsen as you age.

A student's nutrition can play an important role in their academic performance. Recent studies have shown that nutrition affects a students' thinking skills, behavior, and health. All these factors have a big impact on their academic performance. Research studies have proven that diets high in trans and saturated fats have a negative effect on a child's learning and memory. These types of deficiencies can later affect the cognitive development of school aged children, whereas access to nutritious food can improve energy levels, cognitive development, and

concentration levels. For example, one study found that 5th grade students with less nutritious diets performed worse on a standardized literacy assessment (Florence, Asbridge, & Veugelers, 2008). Another study discovered that 5th grade students who ate more fast food fared worse on math and reading scores (Li & O'Connell, 2012). Elementary schools who implement more nutritious food will see an incline on students' academic performance.

Understanding nutrition labels can be confusing at first. It's important to understand what you are reading behind every packaged food item. Nutrition labels are a tool you can use to understand what is inside every food item you purchase. Understanding nutrition labels allows you to make healthier food purchases and also healthier eating habits. In the overall United States (U.S.) population, use of nutrition labels on packaged foods has been related to healthier dietary choices (Campos et al., 2011). However, systematic reviews show that consumers may not frequently use nutrition labels to make food choices (Cowburn & Stockley, 2007). Specific vocabulary to look out for when reading food labels are calories, carbohydrates, proteins, and fats. Calories is a unit of energy. In nutrition, people receive their energy from calories by the food and drinks they consume. Carbohydrates, also referred to as "carbs" are sugar molecules. Carbs are one of the three main nutrients along with proteins and fats, which are found in food and beverages. Examples of carbohydrates include sweet potatoes, yams, bread, pasta, rice, beans, and bananas. Proteins are made of building blocks called amino acids. Amino acids are used to help repair and build muscles all over your body. Examples of proteins include milk and dairy products, chicken, fish, rice and beans, red meat, spinach, and broccoli. Lastly, fats are nutrients in food that your body needs to build cell membranes, nerve tissue, and hormones. Some examples of healthy fats are almonds, eggs, avocados, olive oil, and walnuts.

When serving our food sometimes we might over stuff our plate, or we stuff our food with unhealthy portion sizes. The USDA MyPlate Plan provides the amount of foods you can eat each day for a healthful diet (Hermann, 2019). According to the USDA MyPlate diagram, you are supposed to have a little bit of all five food groups. These food groups include grains, vegetables, fruits, proteins, and dairy products (Hermann, 2019). Portion control is important to keep a well balanced diet. On your plate it is recommended to have 6 oz of grains, 2 ½ cups of vegetables, 2 cups of fruits, 3 cups of dairy, and 5 1/2 oz of protein. When building a healthy diet it is important to remember to focus on a variety of nutritious foods, start with small changes to build healthier eating habits, and lastly eat and drink the right amount for you.

Physical activity and nutrition play a big role in staying healthy. Children are full of energy and it is important they eat nutritious food to have the energy to be active. Eating healthy fruits and vegetables allows you to receive the nutrients you need to have energy while you do your physical activities. Good nutrition is essential to healthy brain development in children which is, of course, critical to learning. Children who exercise regularly and eat healthily are likely to: perform better academically, feel better about themselves, cope with stress and regulate their emotions, and avoid feelings of anxiety, low self-esteem, and depression (American Psychological Association, 2023). As a parent it's important to feed your children the nutritious food they need to build a healthy lifestyle as they grow older into adulthood.

In California there are many programs/interventions to help children become knowledgeable about nutrition. A couple programs that help children learn about nutrition is NourishEd. NourishEd aims to improve children's health by increasing the demand for healthy food among families, students and schools, through student and family engagement, nutrition education and promotion, and district policies, systems and environments; as well as improving

the supply of healthy food for kids in schools by increasing the capacity of families and schools working together (family-school partnerships) to ensure schools serve as nutrition hubs (Action for Healthy Kids). NourishEd offers school meal programming, evidence-based nutrition education curriculum, Culturally responsive and age-appropriate experiential learning initiatives, and capacity building learning sessions. Another program that helps children become knowledgeable about nutrition is Common Threads Cooking for Life. Common Threads Cooking for life offers free online nutrition education and cooking classes for students and families. They offer a course named "Small Bites" which allows you to pick your age, and shows you basic cooking skills to create healthy food options. This is extremely beneficial because it allows children to make their own food instead of eating processed foods.

This capstone project will focus on 5th grade students from the ages of 10-11 years old. I will develop a lesson plan that will take two days. On day one, students will learn basic nutritional vocabulary. They will also learn how to read and identify nutrition fact labels. On day two, students will learn about the five food groups and portion sizes. They will also learn the importance of physical activity and how eating a proper diet can enhance their physical activity. Each lesson will be followed by activities to test their knowledge of what they have learned. Nutrition among 5th grade students should be taught more so they can create a healthy lifestyle at a young and can carry into adulthood.

Theory

Jean Piaget's theory suggests four stages of cognitive development. Cognitive development means how children think, explore, and figure things out. According to Piaget, his theory focuses not only on understanding how children acquire knowledge, but also on understanding the nature of intelligence (Hugar et al., 2017). Piaget's four stages include:

sensorimotor, preoperational, concrete operational, and formal operational. Piaget's sensorimotor stage includes children from the age of infancy to two years old. During this stage the child begins to interact with the environment around them. Second, is the preoperational stage. In this stage children range from the ages of two to six years and sometimes seven years old. During this stage the child begins to represent the world symbolically. Third, is the concrete operational stage. In this stage children range from the ages of seven to eleven years old. During this stage the child understands the world through logical thinking and categories. The last stage in Piaget's theory is formal operational. This stage includes the ages of twelve years old and onward. During this stage the child starts to understand the world through hypothetical thinking and scientific reasoning.

Piaget's concrete operational stage applies to my capstone because my participants' ages range from 10-11 years old. In the concrete operational stage children typically master six cognitive skills. These skills include seriation, classification, reversibility, conservation, decentering, identity, and transitivity. According to Piaget, during classification, children's experiences and vocabularies grow, they build schema and are able to organize objects in many different ways. They also understand classification hierarchies and can arrange objects into a variety of classes and subclasses (Paris et al.). At this age children can distinguish the differences between healthy food choices and unhealthy food choices. For example children at this age know eating fruits and vegetables are a better alternative than eating pastries and candies. At this age they are considered to be in the fifth grade. Concrete operational children can tell that food made you strong, healthy and made you grow, but they could not explain why or how this occurred (Zeinstra et al., 2007). At this age they understand that vegetables and fruits are good for you and the benefits you get from eating them. Some children during this stage might not be able to

understand the vocabulary being used behind a food label. Kids at this point in development tend to struggle with abstract and hypothetical concepts (Cherry, 2023). At this developmental stage kids are aware of other people's feelings. They are also aware that not everyone is going to share the same thoughts or ideas as them. The concrete operational stage influenced my lessons by showing my participants examples of different food groups and the benefits you get from eating them. I also explained how physical activity is important for your well being as a child.

Consideration of Diversity

My capstone focuses on fifth grade students that attend a YMCA program in San Jose, CA. In San Jose, CA the ethnicities that populate the city are very diverse. According to the world population review, 0.47% are Native Hawaiian and Pacific Islander, 0.84% are Native American, 2.93% are Black or African American, 12.4% are two or more races, 13.23% are other races, 31.99% are White, and 38.13% are Asian. The group of children that attend this after school program come from different ethnicities and are a mix of boys and girls. The age range for these groups of fifth graders are 10-11 years old. The cultural diversity of my participants includes; Chinese, Middle Eastern, White, and Hispanic. The YMCA provides a diverse program to their community that allows children from different ages and cultural backgrounds to participate in. According to the statistics found, all ethnicities share one common language. These lessons are designed to be introduced to all races and backgrounds, but I have made sure to speak in a language we all speak, which is English.

Nutrition should be important to all races and backgrounds. Each culture should have ways to make nutrition accessible to their children so they can eat a balanced diet of nutritious

foods. This capstone aims to educate fifth grade students from all cultures about the importance of nutrition.

Learning Outcome Statements

The focus of this project is to educate fifth grade students on nutrition education. Three lessons on nutrition were presented in a span of two days. These lessons will include the following learning objectives:

- 1. Students will be able to understand the 5 basic vocabulary words on a food label.
- 2. Students will be able to identify the five different types of food groups as well as portion sizes for each food group.
- 3. Students will be able to learn the importance of physical activity as well as give examples of different types of physical activities.

Methods

Location and Participants

This project on nutrition education was conducted at the East Valley Family YMCA in San Jose, CA. The participants consisted of 13 fifth graders, 6 boys and 7 girls. These children all attend Northwood Elementary which is also located in San Jose, CA. All participants come from a variety of different ethnicities and range from the ages of 10-11 years old. In my group of participants 15% were Middle Eastern, 15% were Hispanic, 31% were White, and 38% were Asian. Within the span of two days, three consecutive lessons were presented to the group of fifth grade students.

Procedures and Materials

The first lesson focused on introducing 5 important terms from a food label. I first introduced myself to the group of children and allowed them to introduce themselves to me by saying their name and favorite type of food. Second, we reviewed what we were covering in today's lesson. Day one of the lesson included: Doing vocabulary, what is a nutrition label, reviewing the nutrition facts of a fast food restaurant, and lastly we did an activity to assess their knowledge of what they learned. First, we went over the five most common words they would find behind a food label. These words included calories, sugars, carbohydrates, fats, and proteins. Students were given the definition of nutrition and why it is important. Second, we went over how to read the nutrition facts behind a food product. Third, we looked over an image regarding the nutritional facts of Subway sandwiches. Students also learned where to find the nutrition facts and how to obtain nutritional information using the fast food's website. Fourth, I showed a video regarding terms that are listed on food labels. Lastly, I conducted an assessment to understand their knowledge of what they learned during the lesson. I gave out a worksheet where students were asked to give one example of a protein, carbohydrate, fat, and a high sugar food (e.g., Appendices A).

The second lesson focused on reviewing what was covered on day 1. Next, students were introduced to the five good groups that include; fruits, dairy, grains, proteins, and vegetables. Students also learned different examples of the food groups as well as an ideal portion size to maintain a balanced diet. I conducted an activity where students used the palm of their hand to measure portion sizes. For example, for each meal to calculate how much protein should be consumed would equal out to the size of their palm. I then showed a clip that explained the five different food groups. Lastly, to assess their knowledge of the lesson, students were given a

worksheet where they needed to label the food groups on a Myplate diagram (e.g., Appendices B).

The third lesson focused on why physical activity is an important part of nutrition. Students learned many benefits on why physical activity is important for nutrition. Students were also given examples of different physical activities they can do while they're at school or even at home. I also showed a quick video regarding the importance of physical activity and why it is beneficial for your health. To assess their knowledge of the lesson, on a piece of paper students were given a small quiz where they needed to give me two examples of physical activities and two benefits of physical activity (e.g., Appendices C).

Results

The students were given three short quizzes to assess their knowledge of the three lessons. These three quizzes were given on a sheet of paper that was labeled with the lesson the students learned. Each student took each quiz individually. After completing the quiz I then collected all quizzes to further grade them.

Learning outcome 1 indicated that students would be able to understand certain terms from the nutrition facts off a food label. Students were introduced to the terms "calorie, sugars, carbohydrate, fats, and protein". After going over the definitions and showing the students different examples of each term they were given a small quiz to assess their understanding of the lesson. On a sheet of paper students were asked to list one example of foods that are fats, proteins, carbohydrates, and high in sugar. All 13 students were able to identify one example for each term. Therefore, learning outcome 1 was fully met.

Learning outcome 2 indicated that students will be able to identify the five different types of food groups as well as portion sizes for each food group. Students were introduced to a series

of slides about the five different types of food groups. They were also shown examples and a video regarding the Myplate diagram. A small quiz was given to the students after going over the five different types of food groups. On a sheet of paper with the Myplate diagram, students were asked to label the five different food groups to assess their understanding of the lesson. All students were able to label the five different food groups on a Myplate diagram which resulted. Therefore, learning outcome 2 was fully met.

Learning outcome 3 indicated that students will learn the importance of physical activity to maintain a healthy lifestyle. To assess their understanding of the lesson students were given a small quiz where they were asked to list one benefit of physical activity and one physical activity they can do to be active. All students were able to list one benefit of physical activity and one physical activity they can do to stay active. Therefore, learning outcome 3 was fully met.

Discussion

The focus of this project is to educate fifth grade students on the importance of nutrition. If students are not receiving enough curriculum on nutrition this can lead to students developing unhealthy eating habits. Unhealthy eating habits can start at a young age that can transfer over to adulthood. This can also lead to severe health related illnesses and diseases such as diabetes, high blood pressure, and high cholesterol.

For this project, all three learning outcomes were successfully met by the fifth grade students. Throughout the three lessons, students received information regarding nutrition.

Students learned about the Myplate diagram, portion sizes, terms on the nutrition behind a food label, and the benefits of physical activity. I believe this project was successful because of how knowledgeable the students were after the lessons. During the presentation the students were engaged in what was being introduced to them. They were well behaved and asked questions

when they did not understand something I mentioned during the lessons. Some students were already educated on some of the nutrition curriculum that was shown to them, but for some it was new. Overall, I believe the students benefited from my lessons I showed them, and can use this information for future references.

Although all three of my learning outcomes were fully met, I did experience some challenges. At first I experienced difficulties with google slides. I was not able to access google slides through my computer so I needed to find a different software to do the project. I then found Canva where I was able to start and finish my presentation. Another challenge I experienced was having to find a different location to conduct this project. I was set on a location but then scheduling did not work out. I then found East Valley Family YMCA where I was able to conduct this project.

Some ways this project could have been more successful was implementing hands-on activities. I believe the students would have benefited more if some type of activities were involved instead of just information from a powerpoint presentation. This would have allowed the students to be more engaged and have a better understanding of the curriculum. Another way this project could have been more successful was by involving the parents. I believe the parents should also be knowledgeable about nutrition and good eating habits so they can lead by example of a healthier lifestyle. Overall, I believe this project was successful. I hope all students can use the curriculum that was shown to them from both lessons to make healthier decisions. Doing so can be a start to a healthier lifestyle without any health related problems.

References

- American Psychological Association. (n.d.). *Diet and exercise for kids: Tips for acting boldly to create change*. American Psychological Association.

 https://www.apa.org/topics/children/healthy-eating
- Başkale, H., Bahar, Z., Başer, G., & Ari, M. (2009). Use of Piaget's theory in preschool nutrition education. *Revista de Nutrição*, 22(6), 905–917. https://doi.org/10.1590/s1415-52732009000600012
- Brown, J. L., Beardslee, W. H., & Prothrow-Stith, D. (2008). Impact of school breakfast on children's health and learning: An analysis of scientific research. Retrieved from the Sodexo Foundation website:

 http://www.sodexofoundation.org/hunger_us/Images/Impact%20of%20School%2

 OBreakfast%20Study_tcm 150-212606.pdf
- Campos S, Doxey J, Hammond D. Nutrition labels on pre-packaged foods: a systematic review. *Public Health Nutr.* 2011;14:1496–1506.
- Centers for Disease Control and Prevention. (2022, December 30). *Prevent type 2*diabetes in Kids. Centers for Disease Control and Prevention.

 https://www.cdc.gov/diabetes/prevent-type-2/type-2-kids.html
- Başkale, H., Bahar, Z., Başer, G., & Ari, M. (2009). Use of Piaget's theory in preschool nutrition education. *Revista de Nutrição*, 22(6), 905–917. https://doi.org/10.1590/s1415-52732009000600012

- Elmas, C., & Arslan, P. (2020). Effect of nutrition education received by teachers on Primary School Students' Nutrition Knowledge. *Nutrition Research and Practice*, *14*(5), 532. https://doi.org/10.4162/nrp.2020.14.5.532
- Florence, M. D., Asbridge, M., & Veugelers, P. J. (2008). Diet quality and academic performance. *Journal of School Health*, 78(4), 209-215.
- Food and Nutrition Information Center (FNIC). Food and Nutrition Information Center (FNIC) | National Agricultural Library. (n.d.).

 https://www.nal.usda.gov/programs/fnic#:~:text=Frequently%20Asked%20Questions%20(FAQs),Facts%20label%20on%20food%20packages.
- Hands-on Cooking & Nutrition Education Programs. Common Threads. (2023, March 17). https://www.commonthreads.org/programs/
- Cherry, Kendra. (2023, October 24). What is Piaget's theory of cognitive development? Verywell Mind.
 - https://www.verywellmind.com/piagets-stages-of-cognitive-development-279545
 7#:~:text=While%20thinking%20becomes%20much%20more,people%20might%
 20think%20and%20feel
- Nourished. *Action for Healthy Kids*. (2021, October 7). https://www.actionforhealthykids.org/nourished/
- Race and ethnicity in San Jose, California (city). *The Demographic Statistical Atlas of the United States Statistical Atlas*. (n.d.).
 - https://statisticalatlas.com/place/California/San-Jose/Race-and-Ethnicity

TodayShow. (2020, February 1). 5th Grade Nutrition Guide: Find Out What You Need to Know for your child. TODAY.com.

San Jose, California population 2024. (n.d.).

https://worldpopulationreview.com/us-cities/san-jose-ca-population

Zeinstra, G. G., Koelen, M. A., Kok, F. J., & de Graaf, C. (2007). Cognitive development and children's perceptions of fruit and vegetables; a qualitative study.

International Journal of Behavioral Nutrition and Physical Activity, 4(1), 30.

https://doi.org/10.1186/1479-5868-4-30

Appendices

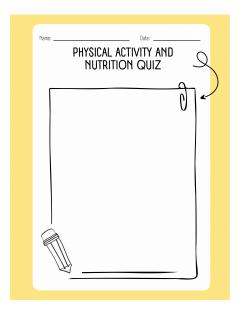
Appendices A:



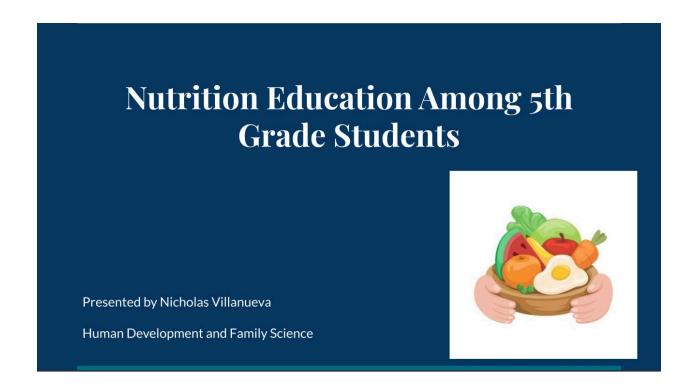
Appendices B:



Appendices C:



Appendices D:



Appendices E:

Introduction

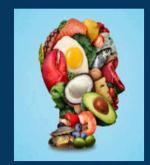
- Growing up, nutrition was not deeply explained and thought at school. Therefore, I did not know how my eating habits could potentially affect me as an adult.
- AA in Administration of Justice
- Tutored at Natividad Elementary School (After School Extended Program)



Appendices F:

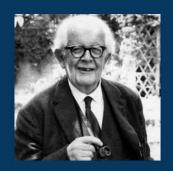
Needs Statement

- There are many rising health problems for today's children. Some children are developing health related diseases such as Type 2 diabetes.
- Recent studies have shown that nutrition affects a students' thinking skills, behavior, and health. All these factors have a big impact on their academic performance.
- There is a need for children to be able to fully understand nutrition labels in order to make healthier food decisions and healthier eating habits



Appendices G:

Jean Piaget's Theory



August 9, 1896 - September 16, 1980

Jean Piaget's theory of cognitive development suggests that children develop their way through four different stages of learning.

<u>Sensorimotor (Birth - 2 years)</u>: Understands world through sense and actions.

<u>Preoperational (2 - 7 years)</u>: Understands world through language and mental images.

<u>Concrete Operational (7 - 12 years)</u>: Understands world through logical thinking and categories.

<u>Formal Operational (12 years+):</u> Understands world through hypothetical thinking and scientific reasoning.

Appendices H:

Theory

- Piaget's concrete operational stage applies to my capstone because my participants' ages range from 10-11 years old.
- Children could tell you that food made you strong, healthy and made you grow, but they could not explain why or how this occurred (Zeinstra et al., 2007).
- At this age they understand that vegetables and fruits are good for you and the benefits you get from eating them.



Appendices I:

Learning Outcomes

I developed two lessons in a span of two days. These lesson plans included the following objectives:

- Fifth grade students will be able to define terms of nutritional facts on a food label.
- Fifth grade students will be able to identify the five different types of food groups as well as portion sizes for each food group.
- Fifth grade students will be able to learn the importance of physical activity as well as give examples of different types of physical activities.



Appendices J:

Location and Participants

Location

YMCA after school program at North

Wood Elementary in San Jose, CA.



Demographics

Students: 13

Gender: 6 girls & 7 Boys

Ethnicity: 15% Arabic / 31% White / 38% Chinese

/ 15% Hispanic

Appendices K:

Procedures & Materials

Day 1:

- Introduction
- Went over vocabulary behind a food label
- What is a food label
- Reviewed nutrition facts behind a food label
- Watched a video regarding nutrition facts/food labels
- Quiz

Day 2:

- Students were introduced to the five food groups. (Protein, dairy, vegetables, fruits, and grains.)
- Showed examples of foods of different food groups
- Students learned correct portion sizes
- Students learned the benefits of physical activity as well as different types of physical activity
- Video clip on exercising
- Quiz

Appendices L:

Assessment Results: LO 1

Fifth grade students will be able to define terms of nutritional facts on a food label.

- Students demonstrated knowledge of lesson by listing 1
 example of protein, carbohydrate, fat, and high added sugar
 foods.
- 2. Each student was given a quiz to assess their knowledge of the lesson.

This learning outcome was <u>successfully</u> met. 13/13 students understood the lesson.



Appendices M:

Assessment Results: LO 2

Fifth grade students will be able to identify the five different types of food groups as well as portion sizes for each food group.

- 1. Students demonstrated knowledge of lesson by labeling the five food groups on a MyPlate diagram.
- 2. Each student was given a quiz to assess their knowledge of the lesson.

This learning outcome was <u>successfully</u> met. 13/13 students understood the lesson.



Appendices N:

Assessment Results: LO 3

Fifth grade students will be able to learn the importance of physical activity as well as give examples of different types of physical activities.

- 1. Students demonstrated knowledge of lesson by listing 1 benefit of physical activity and 1 different type of physical activity.
- 2. Each student was given a quiz to assess their knowledge of the lesson.

This learning outcome was <u>successfully</u> met. 13/13 students understood the lesson.



Appendices O:

Discussion: Successes

- 1. All Learning Outcomes were successfully met
- 2. After school program has a guest speaker who comes regularly to speak to students and families about nutrition
- 3. Well behaved students



Appendices P:

Discussion: Challenges

- 1. Experiences difficulties with google slides
- 2. Find new location to do project
- 3. First time teaching multiple lessons



Appendices Q:

Future Directions

- 1. Provide hands on activities with students
- 2. Involve the families

