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Increasing Knowledge Through Nutrition Education in Adolescents and Children in Klaten, Indonesia

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**INCREASING KNOWLEDGE THROUGH NUTRITION EDUCATION IN
ADOLESCENTS AND CHILDREN IN KLATEN, INDONESIA**

By

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A proposal submitted in partial fulfillment of the requirements for the degree

of

MASTER OF PUBLIC HEALTH

in

Public Health Nutrition

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INTRODUCTION

The problem

Food insecurity continues to plague developing countries all over the world.¹ According to the Food and Agriculture Organization (FAO), over 840 million people suffer from food insecurity.¹ An insufficient food supply can lead to malnutrition which is defined as a lack of proper nutrition caused by not having enough food to eat or consuming food lacking in essential nutrients.¹ If not corrected immediately, malnutrition can cause long term adverse health effects.² Malnutrition can impact physical and mental development as well as increase risks of morbidity and mortality.²

Women of reproductive age and pregnant women are heavily affected by malnutrition as it can lead to health complications for the mother as well as the infant.³ Women in developing countries often have difficulty getting adequate nutrition for themselves; but during pregnancy when nutrition needs are greater, it can be extremely harmful⁴. Maternal malnutrition can lead to anemia, increased risk of hemorrhaging, and pregnancy disorders such as pre-eclampsia in the mother.⁴ The infant may suffer complications such as low birth weight, neural-tube defects, and intrauterine growth impairment.⁴

Malnutrition has the greatest impact on children and adolescents. According to Raymond et al, 45% of child preventable deaths in developing deaths are related to the lack of adequate nutrition.¹ Children suffering from malnutrition may experience stunting (low height for age) or wasting (low weight for age).⁵ In 2013, 68 million children suffered from moderate to severe wasting with the highest prevalence in Asia at 71%.⁵ In the same year, over 161 million children suffered from stunted growth with the

highest prevalence also in Asia at 56%.⁵ Malnutrition can lead to a defective immune system increasing risk of infection and other diseases found in developing countries such as malaria, cholera, typhoid fever, tuberculosis, and HIV.¹ Inadequate nutrition during childhood and adolescence can lead to impaired cognitive development.⁴ This can lead to learning difficulties, poor academic performance, and a lower education level.⁴ These issues can carry over into adulthood which can lead to poor job opportunities with low wages that are unfit to provide adequate food for one's family; thus, continuing the cycle of food insecurity and malnutrition.⁶

There are a variety of factors that contribute to malnutrition related to food insecurity in developing countries. The main factor is poverty; in developing countries, most people are living on less than two U.S. dollars a day.¹ On such low incomes, families are forced to purchase inexpensive foods to ensure there is enough food to eat, and still oftentimes family members still go hungry.¹ Diet quality is also a contributing factor to malnutrition. Inexpensive foods often lack essential nutrients and diversity to maintain a healthy diet.⁷ Grains such as rice are used as a main food source which does provide some nutrition but the nutrients in rice alone cannot sustain the body.¹ Inexpensive foods are often high in sugar, salt, and fat which can contribute to weight gain and obesity which can also lead to malnutrition.⁷

Indonesia is the fourth most populated country in the world with roughly 237 million inhabitants with an estimated 32 million inhabitants living in impoverished conditions.⁸ The average impoverished family is living off of twenty-two U.S. dollars a month.⁸ Around 70% of the population lives in rural areas, which is where the high poverty levels are located.⁸ The food market in Indonesia fluctuates frequently resulting

in unstable food prices.⁸ This can contribute to poverty.⁸ High food prices lead to purchasing of inexpensive calorie-dense food and decreased consumption which increases risk of malnutrition.⁸ An estimated 37% of children in Indonesia suffer from stunting and wasting and one quarter of women of reproductive age are suffering nutrient deficiencies related to malnutrition.⁹

To help combat malnutrition and food insecurity, more developed countries have provided food relief to impoverished areas.¹ Therapeutic foods high in nutrients are often used to help improve the nutritional status, but they are only a band-aid to the overall issue.¹ Families cannot afford to purchase therapeutic foods on their own and when the supply is gone, the malnutrition slowly creeps up again. Food-aid is only a temporary solution to a major global issue.¹ The intervention must be specifically focused on the impoverished area of need using a variety of intervention tools such as nutrition education on local nutrient dense foods, home food production, and local agriculture.¹ This method can help decrease food insecurity and malnutrition and help improve the quality of life.¹

Nutrition Education Ending Malnutrition (NEEM) is a Utah based program of dietitians with a mission of working with local villages in Indonesia to help reduce malnutrition.¹⁰ NEEM provides nutrition education to women on the importance of good nutrition, local nutrition-dense foods, growing food at home, and environmental sustainability to increase diet quality as they are the family foundation for adequate nutrition.¹⁰ NEEM also provides nutrition education to adolescents and children to encourage health habits early in the life cycle to prevent food insecurity persisting into adulthood.¹⁰ This program can provide the tools and support that have the potential to

increase the knowledge and diet quality while reducing food insecurity and malnutrition of the NEEM participants in Indonesia.

Study objectives and hypothesis

The objectives and hypothesis of the study include:

1. To determine the acceptance of the NEEM nutrition education materials on the adolescent program participants. It is hypothesized the education materials will help increase overall knowledge on basic nutrition habits in the adolescent participants. The acceptance will be assessed through observation of the volunteers during the nutrition education presentation.
2. To determine the acceptance of the NEEM food safety and sanitation education materials on the adolescent program participants. It is hypothesized the education materials will increase overall knowledge on basic food safety and sanitation in the adolescent participants. The acceptance will be assessed using observational data taken during the food safety and sanitation presentation.
3. To determine the acceptance of the NEEM permaculture and gardening education materials on the adolescent program participants. It is hypothesized the education materials will increase overall knowledge on permaculture and gardening in the adolescent participants. The acceptance will be assessed using observational data taken during the permaculture and gardening presentation.
4. To determine the acceptance of the NEEM environmental awareness and sustainability education materials on the adolescent program participants. It is hypothesized the education materials will increase overall knowledge on

sustainability and environmental awareness in the adolescent participants. The acceptance will be assessed using observational data taken during the environmental awareness and sustainability presentation.

5. To determine the acceptance of the NEEM food identification education materials on the program children ages ten and under. It is hypothesized the education materials will increase overall knowledge of food items and food groups of the program children. The acceptance will be assessed using observational data taken during the food identification activities.

Study rationale and significance

The significance of this study includes:

- This study will assist NEEM in creating effective education materials which will be used to help improve health and nutrition status in developing countries.
- This study will assist NEEM in determining the most effective methods of presenting the education materials that will have the most impact on knowledge.
- This study will add to the literature regarding the impact of nutrition, food safety, and sanitation education in impoverished areas in developing countries.
- This study will add to the literature regarding the impact of agriculture, sustainability, and environmental awareness education in impoverished areas in developing countries.
- This study will add to the literature regarding the impact on knowledge by using visual food group and food identification games with children under the age of ten in developing countries.

LITERATURE REVIEW

Food assistance is a short-term solution

To help combat food insecurity, countries around the world provide food assistance. For example, the United States is one of the main providers of food assistance to developing countries.¹¹ The U.S. ships food products to countries in need. However, this method of food assistance is costly as food shipments sent by the U.S. are required to be sent under vessels sailing U.S. flags.¹¹ The high cost results in less food being sent overseas to aid developing countries. This method of food assistance is also less effective at providing adequate nutrition. Food products in the shipments are often U.S. commodities which usually consist of corn or grain products.¹¹ These food products can provide some nutrients needed, but they do not fulfill all required nutrients to improve nutrition status.¹¹

Developed countries provide food assistance through the use of therapeutic foods or supplementation.¹² Therapeutic foods are nutrient dense food items such as the Plumpy-Nut bars provided to malnourished individuals to help improve nutrition rapidly.¹² Nutrient supplementation consists of a powder or liquid substance families can add to food at home to help improve nutrition status.¹² This method can be beneficial for correcting malnutrition quickly, but it does have its shortcomings. A study conducted by Kodish *et al* monitored the effects of micronutrient powder and liquid lipid supplementation on the nutrition status of children in Malawi and Mozambique. The results concluded the supplementation was not as effective as hypothesized as 87% of the participants did not use the supplementation as directed.¹² Families would overuse or underuse the supplementation while others did not use it at all as the men of the

household did not believe the supplementation was culturally appropriate.¹² Compliance must take place for therapeutic foods and supplementation to be effective which means this food assistance is only beneficial when compliance is met.¹² This type of food assistance can be costly to families; individuals and families who cannot afford therapeutic foods will go without and the food insecurity and malnutrition will continue.¹² There are food relief programs available that do provide therapeutic foods and supplementation for no cost, but supplies can be limited.¹ Food assistance can be beneficial to help improve nutrition short-term, but it is not an effective method to improve long-term nutrition status.

Impact of using a local food-based approach in developing countries

The long-term solution for fighting malnutrition and food insecurity in developing countries lies within the local food source.¹ According to the World Health Organization, the use of locally sourced foods is the most important method of ensuring optimal health and nutrition for infants and children in developing countries.¹ Umi Fahmida *et al* conducted a study in the East Lombok district in Indonesia monitoring the effects of an affordable complimentary feeding recommendations (CFRs) on nutrient intake, growth, and development of children.¹³ The CFRs focused on locally based foods in the sub-villages of the district and used local fortified foods were used to increase intake of calcium, iron, zinc, and folate.¹³ After the 6-month intervention, nutrient densities and diet diversity were significantly higher in the CFR group compared to the control group.¹³ The study improved mothers' knowledge on the nutrition benefits of locally sourced foods and how it can impact child growth and development.¹³

Impact of nutrition education on adolescents and children in developing countries

Locally sourced foods can help fight malnutrition and food insecurity in developing countries, but lack of knowledge on the benefits of good nutrition from local foods can hinder the reduction of malnutrition and food insecurity.¹⁴ Nutrition education needs to be incorporated into interventions in impoverished areas to help residents understand the importance of good nutrition and how it affects health. In Southeast Asia, diets are often high in grains and most individuals meet less than 50% of the recommended intake of fruits, vegetables, proteins, and legumes.¹⁴ This lack of diversity is believed to be due to insufficient knowledge on nutrition and its relationship to health.¹⁴ A systematic review of twenty studies using nutrition education as the intervention focus concluded nutrition education increased knowledge and increased diversity within the diet among the study participants.¹⁴

According to the WHO, poor parental feeding practices contribute to a high percentage of child deaths under the age of five.¹⁵ Parental knowledge on the benefits of good nutrition can help decrease the number of undernutrition related deaths in children and adolescents.¹⁵ L.F. Musapi *et al* conducted a study in South Africa on the impact of nutrition education on the feeding practices of caregivers with children. After the nutrition education intervention, caregivers in the experimental group increased the feeding frequency for their children and child intake of vegetables containing beta-carotene increased from 28% to 96%.¹⁵ Overall vegetable intake in the children increased to three to five times a week.¹⁵ Nutrition education paired with a local food-based approach is a strategy that can help fight food insecurity and malnutrition in

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developing countries. Nutrition education can increase knowledge on healthy eating habits while locally sourced foods can provide the adequate nutrients needed for adequate nutrition and health.

METHODS

NEEM high school and children's reading house presentations

To improve knowledge on good nutrition habits to decrease food insecurity, NEEM conducted a series of nutrition education presentations in the village of Klaten in the Central Java province of Indonesia. NEEM partnered with a local high school in the village and a local reading program for children under the age of twelve.

The high school presentation was a two-hour presentation covering the four main topics of basic nutrition and health, food safety and sanitation, permaculture and gardening, and environmental awareness and sustainability. The presentation was given through a series of presentation slides and group activities in each of the four categories. The presentation was given in English but translators were present throughout the presentation to prevent any information being missed due to a language barrier.

The reading house presentation took place at a local community center. Children ages twelve and under will be attending the presentation. The presentation included a series of interactive activities aimed at food identification and food groups: fruits, vegetables, dairy, grains, and proteins. The children learned the English names for food items, the food color, and the food group. Education materials consisted of photos of food items and other game items for the activities. The children were assigned to groups with NEEM members in each group to help with the activities. There were translators to assist with the presentation and assist the children with the English learning portion during the activities.

Study design

The NEEM project started on July 29, 2019 and went through August 7, 2019. The high school presentation took place on the first day of the project while the reading house presentation took place on one of the last days of the program. Participants were asked questions throughout the presentations to assess understanding of the material. Photos were taken during each presentation to help assess knowledge level. No written identifying information was gathered during this research. Photos taken during the presentation were used for research purposes.

Data and Instrumentation

All participants were exposed to the same material during the presentations. When participants worked in groups during the interactive activities, each group was given the same instructions for each activity. During the presentations, interactive questions were asked to participants to assess the understanding of the material. Participants asked questions to clarify any information or gain additional information. Due to time constraints, observational data was the primary data collected during this research. Observational data can be beneficial for answering research questions when other data collection methods are unavailable or inappropriate.¹⁶ For example, in study groups with a high language barrier, written surveys or data collection may be construed as the participants may not understand what is expected of them.¹⁶ Simple questions can be answered by the raise of hands and results documented by the researcher or captured by photography.¹⁶ Researchers took photos and written notes during the

presentations. The observational data may help develop data collecting methods for NEEM for future programs.

Analysis

Observational data taken from the NEEM presentations was reviewed and transferred to Word documents. Using the written and visual observational data, researchers were able to discuss the findings and the conclusion of the project.

RESULTS AND IMPACT

Two classes of high school students participated in the NEEM nutrition education class on July 29, 2019. The student age range was between fifteen to seventeen years old. Each classroom held around thirty students. About 75% of the

Figure 1: NEEM High School Presentation July 29, 2019



students were female in both classrooms. The NEEM volunteers were split into two groups to present to each class room. Each volunteer presented three slides. The classrooms did not have projection screens, so the Power-point was presented on either a white-board or the back wall (see figure 1).

Figure 2: NEEM Nutrition Games August 1, 2019



On August 1, 2019, NEEM visited a local reading house in Klaten. This organization provides books and a reading space for impoverished children in the area. There were around twenty children with an age range from five to twelve.

There was an even distribution of girls and boys within the group. The nutrition games were played outside of the reading house so the children had adequate room to interact with the volunteers (see figure 2). The volunteers split up into groups of five and each group worked with three to four children.

NEEM high school presentation

The high school students were very participative during the presentation. An interpreter was not needed during the presentation. The students spoke very good English; they were able to understand the material presented and ask clarifying questions. The students took detailed notes, and answered questions offered by the volunteers. During the stretching activities, all the students participated and enjoyed the activity (see figure 3).



Figure 3: NEEM Stretching Activity July 29,2019

The volunteers provided information on general healthy nutrition practices using photos of food local to the Klaten area. After the nutrition portion of the presentation, the



Figure 4: NEEM Food Identification Activity July 29,2019

volunteers conducted a nutrition activity was a food identification game. Students were shown a photo group and the students were asked to identify which foods were high in fat or sugar and which foods were healthy food choices as seen in figure 4.

The students correctly identified all the healthy food choices in each food group. While discussing healthy produce options during the presentation, the students provided information on their school garden. The school grows a variety of produce to use for the school lunch program. The students grow peppers, spinach, and a variety of spices.

While discussing ways to help the environment, one of the students mentioned



Figure 5: Student Using Reusable Bottle July 29, 2019

using a reusable water bottle to help reduce plastic use. It was observed during the presentation that some students had access to reusable water bottles (see figure 5). The volunteers discussed a variety of ways for the students to recycle

materials to avoid waste on the ground. Unfortunately, there is not a government recycle program; however, the students said they could reduce waste on the ground by putting their waste into a trash bin. The group activity for the environment portion of the presentation was dividing the students into groups and design a poster about different ways to help the environment to post in their school (see figure 6). The groups were allowed to use available resources such as school materials,



Figure 6: Environmental Poster Project July 29, 2019

books, and their mobile devices to research ideas for their posters. Once the posters were finished, each group came to the front of the class and presented their poster. The students all participated either by looking up ideas or they took turns adding images to the posters. Overall, the students were very eager to share their posters with the volunteers. After the activity the volunteers challenged the students to pick up ten

pieces of trash on their way home from school. The class supported the challenge and were very polite in thanking the volunteers for the presentation.

NEEM reading house activities

The children at the Klaten reading house did not speak English, so three interpreters were used for this activity. One was part of the reading house organization and two were provided by NEEM and its local partner E-Fun Institute.



Figure 7: Hesitation August 1, 2019

When the nutrition activities started, the children were initially hesitant to participate (see figure 7). The reading house leaders had to bring the children to where

Figure 8: Joining the Fun August 1, 2019



the volunteers were sitting and help separate them into groups for the activities. For the first activity, the volunteers still had difficulty getting the children to participate, but once a child started to play the game, more felt confident to join in (see figure 8).

The last two activities, “Healthy Hopscotch” and “Fruit Scootin’ Veggies,” received the highest participation rate. Volunteers guided the children through these activities to help the children learn about the different food items on the boards (see

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figure 9). During Healthy Hopscotch, the children successfully identified the food item the rock landed on in English and in Javanese and were eager to learn more food items listed on the hopscotch board. During the “Fruit Scootin’



Figure 9: Healthy Hopscotch August 1, 2019

Veggies” musical produce activity, the children were able to correctly identify the name and color the produce item listed on the card with little to no help. The children were very engaging during this activity and even taught the volunteers the Javanese words for the produce on the game cards.

DISCUSSION

The objectives of the nutrition education material and activities created for NEEM were to determine effectiveness of the nutrition education material on basic nutrition habits, food safety and sanitation, permaculture, and sustainability on adolescents and determine effectiveness of food identification activities in children. The pilot use of the materials in Klaten, Indonesia allowed NEEM to determine which portions of the material were appropriate for Indonesia and which sections to remove or improve for future trips.

During the high school presentation, the education material discussing different ways to recycle was not applicable information in Indonesia as there is no government recycling program in place. There are some private recycling companies, but most require travel to dispose of recycling material which is not always plausible in Klaten due to lack of adequate transportation or containers to hold the material. During the reading house activities, the activities were played with the children, but there was no further education or explanation on the benefits of the healthy food items in the games. Due to a shortage of coloring materials and number of color sheets, the “Color Your Plate” activity was not added to the activity agenda for the reading house.

The effectiveness of the education material and activities was noted during both the high school presentation and the reading house activities. The students and children were able to see the materials and interact during activities. The high school students were able to identify healthy food choices and researched ideas on how to improve the environment in their community. Though there was initial hesitation to participate, the children were able to successfully identify the foods in each activity.

Future implications

NEEM will continue to use the education material and activities for future Indonesia trips and other countries; the material will be updated to reflect the local foods of the new countries. Due to the lack of a government recycling program, the recycling education material will be removed from the presentation for Indonesia as it is not applicable. This information will be stored as it may be helpful for different countries NEEM visits. For the reading house activities, more of a nutrition focus should be added to the program. For example, briefly discussing the benefits of healthy foods to help the nutrition activities be more applicable. Also, there was a reading session where volunteers read children's books. Adding some nutrition story books for children could help discuss nutrition in an engaging way for the children.

To better determine the effectiveness of the nutrition education, NEEM needs to incorporate a pre and post assessment of the participants. By implementing a preassessment, NEEM can determine what the participants already know about nutrition. The post assessment will help determine if the participants learned new information from the nutrition presentations.

If possible for future trips, food samples should be utilized whenever possible. Providing food samples allows the students and children to see, touch, and taste different healthy food options, which can help strengthen the knowledge provided in the presentation and nutrition activities.

NEEM also provided nutrition education to mothers in a local village; this portion was not covered in this project. However, during one of the sessions, a grandmother asked how they could get breastmilk from the mothers and safely store to avoid giving

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infants solid foods too early or a substitute such as juice. While the question was answered by the team lead, this brought to realization the need to reach out to local healthcare professionals to gather a needs assessment. This would help NEEM gather information on the areas with the greatest need for nutrition education so the program can tailor their materials to the specific needs of the area.

CONCLUSION

Malnutrition and food insecurity are heavily impacting developing countries. Mothers, adolescents, and children are suffering permanent health effects due to undernutrition. The resolution must come from a local food-based approach combined with nutrition education. This helps provide a diverse diet from local sources while increasing knowledge on the importance of adequate nutrition. Nutrition Education Ending Malnutrition focuses on providing nutrition education to children and adolescence to increase knowledge about the nutrition benefits of local food sources. The nutrition education materials and activities were effective in increasing knowledge about nutrition, health and sanitation, and the environment and sustainability in adolescents in Klaten. The nutrition activities helped the children of the Klaten reading house identify different healthy food items. Increasing knowledge of the younger population can help break the cycle of malnutrition and food insecurity which will bring the world one step closer to a world without hunger.

RESOURCES

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Basic Nutrition Education



Who is NEEM?



Nutrition Education Ending Malnutrition

- Based in Utah, U.S.A
- Provide nutrition assessments
- Nutrition education for mothers, youth, and children
- Reduce malnutrition
- Work with local villages
- Help serve in the community



What does “healthy” mean to you?

Things that affect our health

- Nutrition/Diet
- Genetics
- Physical Activity
- Sleep
- Stress
- Exposure to Disease/Infections (Sanitation/Safety)



Nutrition/Diet



There are 5 food groups that are very important

1. Grains
2. Meat/Legumes
3. Vegetables
4. Fruit
5. Dairy

Each group is made up of different nutrients

- Fiber
- Carbohydrates
- Protein
- Fat
- Vitamins/Minerals



Can you give an example of foods you eat in these 5 food types?

1. Grains
2. Meat/Legumes
3. Vegetables
4. Fruit
5. Dairy



Fruits and Vegetables

- Protects your heart
- Keeps your eyes, bones, and skin strong
- Helps keep your gut healthy
- Helps maintain healthy weight
- Prevents diseases
 - Diabetes
 - Cancer
 - Heart disease



Grains

- Protects your heart
- Helps keep you gut healthy
- Healthy weight



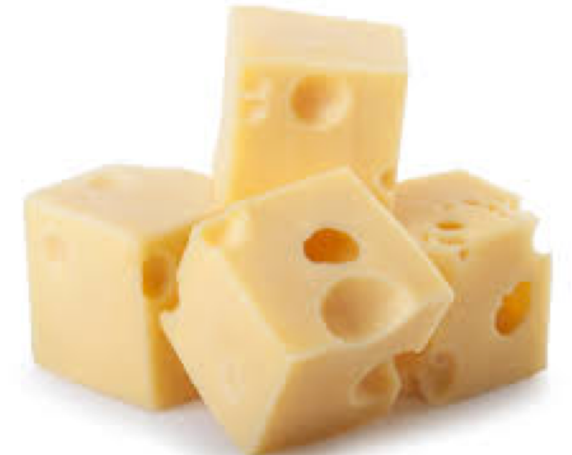
Meat/Legumes

- Protect your heart
- Helps with growth
- Builds muscle
- Helps prevent illness



Dairy

- Strengthens bones
- Helps with growth
- Helps keep blood pressure healthy
- Helps prevent diabetes



Carbohydrates (fuel)

Carbohydrates give you quick energy so you can work and play.

Foods with carbohydrates:

- Fruit
- Rice
- Potatoes
- Tempeh
- Beans



Protein (builder)

Protein gives you lasting energy. It promotes growth of cells, tissue, and muscle.

Protein helps you stay healthy and fight illness.



Fiber (helper)

Keeps you feeling full for longer

Promotes regular movement and health in the gastrointestinal system (when paired with adequate fluid intake)



Fats

There are “healthy” kinds of fats and “unhealthy” kinds of fat. Eating foods that have healthy fats instead of unhealthy fats is going to help prevent health problems.



Healthy fats are
good for your heart!

The **healthy fats** come from foods such as: nuts, ghee/butter, avocados, eggs, and fish. Canola oil is a good option too.



The **unhealthy fats** include things like:

- Margarine
 - The better cooking option would be ghee/butter or olive/canola oil
- Deep-fried snacks & foods
 - Fried chicken
- Bakery products



Vitamins/Minerals



Vitamins & minerals make our body systems work properly (vision, immunity, bone strength, etc).



All whole foods including fruits, vegetables, dairy, eggs, legumes, whole grains have different vitamins and minerals.

Nutrient-Dense is Best!

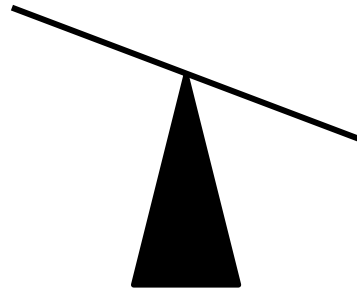
- ↑ High Calories ↓ Low Nutrients



- ↓ Low Calorie ↑ High Nutrients



- Heart Problems
- Diabetes
- Gastrointestinal Issues
- Gallstones
- Inflammation



- Heart Health
- Better blood sugar control
- Promotes good digestion
- Supports body functions and immune system



Foods to limit

- Fried food
- Foods with a lot of sugar
- White bread
- Sugar sweetened drinks
- Unhealthy fats
- High salt foods



Moderation in all things

If you really love foods that are low in nutrients, it is okay to have them sometimes, just try to decrease how often you eat them.

Try to limit these foods in your diet.



More or Less Activity

(Hold up each picture of food & they'll tell you if they should eat MORE or LESS.)



Eat colors!

- The more colors you have on your plate, the more kinds of nutrients you will have.
- Aim for at least 2-3 different colors on your plate.



Drink Clean Water

Sometimes harmful germs in water can't be seen with our eyes.

Drinking unsafe water can cause:

- Diarrhea
- Stomach pain
- Dehydration



Boiling water or filtering water is the best way to ensure that you are drinking clean water.

Drinking clean water will keep you safe from germs that make you sick.

Recommendation is to drink 2 liters (8 cups) of fresh water a day.



Signs & Symptoms that you are not drinking enough water

- Short-Term
 - Dark color urine, low urine output
 - Headaches
 - Dizziness
- Long-Term
 - Pinching the skin test
 - Jaundice
 - Constipation
 - Muscle weakness & joint pain
 - High blood pressure
 - Kidney stones



Physical Activity



Staying Active

- Helps maintain a healthy weight
- Helps keep immune system strong
- Helps improve your mood
- Helps you sleep
- Can help improve performance in school
- Helps prevent diseases
 - Heart disease
 - Diabetes
 - Cancer



What are some
physical activities you
like to do?



Remember to stay
active at least 30
minutes - 1 hour
everyday.



Stretching/Breathing Activity



Sanitation and Food Safety



Wash Your Hands

You can prevent yourself and others from getting sick by washing your hands often and properly.

Wash hands with soap and clean water.

Wash for at least 20-30 seconds.

Make sure you clean in-between fingers,
jewelry and nail beds.



Wash Your Hands

- Wash your hands before
 - Eating and touching food
 - Helping someone who is sick
 - If you get a cut or a wound
- Wash your hands after
 - You sneeze or cough
 - Using the toilet
 - Touching trash
 - Helping someone with a wound
 - Touching animals
 - Being with someone who is sick



Handwashing/UV light activity



Use Food Safety

- When unsafe, food can make you sick
- Can cause
 - Diarrhea
 - Stomach pain
 - Vomiting
- Unsafe food can contaminate other food





**WASH HANDS AND
SURFACES OFTEN**



**SEPARATE RAW MEATS
FROM OTHER FOODS**



**COOK TO THE RIGHT
TEMPERATURE**



**REFRIGERATE FOOD
PROMPTLY**

Permaculture and Gardening



What is permaculture?

It's the connection between people and the natural world.

It helps families and communities gain self-sufficiency and live in balance with the world around them.

It involves food, water, energy, shelter, and other needs produced in a sustainable way.



What does Permaculture do?

- Helps care for the earth

Protect natural systems

and

rebuild degraded ones



Keeping water and air clean, soils rich and forests intact. We need these to live!

Why is this important?

1. Better Health!

- a. Permaculture helps improve the soil to have more nutrients.
- b. More nutrients in the food which improves our health
- c. More strength, energy, and a longer life



Growing Your Own Food

- Improve overall health
- Provide nutritious foods
- Social connection
- Gives back to the earth and sustains natural systems.

Tell us about your school garden!



Foods You Can Grow

- Sawi Hijau/Chinese Cabbage
- Bayam Hijau/Green Spinach
- Ketumbar/Coriander
- Adas/Fennel
- Adas Sayur/Dill
- Tomat Lokal/Local Tomato
- Arugula/Rocket



- Bayam Merah/Red Spinach
- Tomat Ceri Kuning/Yellow Cherry tomato
- Bunga Matahari/Sunflower
- Buncis/Green bean
- Rosella
- Kacang Panjang/Long Bean
- Mentimun/Cucumber



After the Harvest

- Keep food in a cool, dry place or in clay pots covered with a damp cloth.
- Fruits and vegetables can be preserved as pastes, sauces, pickled, and as jams
- Foods can also be preserved by drying and then rehydrating later when ready to use.



Sustainability and Environmental Awareness



Exposure to a Hazardous Environment

Exposure to a hazardous environment affects your health

1. Drinking polluted water can make your sick
2. Eating contaminated food can make you sick
3. Polluted soil cannot be used to grow food
4. When trash is now thrown away, it can hold bacteria and germs that make you and other animals sick
5. Trash can injure animals



How can we help?

Remember the three Rs:

1. REDUCE what you buy
2. REUSE what you have
3. and then RECYCLE.

Reducing can help avoid unnecessary waste

Reusing items reduces waste and reduces amount of trash thrown out

Recycling helps turn materials into new usable items



REDUCE
REUSE
RECYCLE

BROOME COUNTY DIVISION OF SOLID WASTE MANAGEMENT RECYCLING QUICK GUIDE



RECYCLE | EMPTY & RINSE



**BOTTLES, JUGS
& CONTAINERS**



GLASS



**METAL CANS &
CONTAINERS**



**CARDBOARD &
CARTONS**



**PAPER &
NEWSPAPER**



DO NOT RECYCLE



**PLASTIC BAGS
& WRAP**



STYROFOAM



**NO FOOD LEFT
IN CONTAINERS**



**TANGLERS
(HOSE, WIRE, ROPE)**

Discussion Questions:

1. Have you ever heard about recycling?
2. Does your school have recycling available?

Help your school recycle

Create your own recycle bins to use at school to help reduce waste



Reduce waste through composting

Composting is a natural process of recycling earthly material which then turns into rich soil that can be used for gardening and other agricultural uses.

Benefits:

- Saves water
- Protects plants against droughts
- Contains nutrients to help plants grow



What can you compost?

YES ✓



Raw Fruit,
Veggie Scraps



Bread, Grains,
Pasta, Crackers



Egg
Shells



Coffee Grounds,
Filters, Tea Bags



Beans, Nuts
Seeds

NO ✋



Glass, Metal,
Plastic



Meats,
Fish Bones



Dairy
Products



Fats &
Oil



Liquids



Pet Waste
Feces or Litter

What else can you do to help the environment?



N.E.E.M. Challenge!

After school today, spend 10 minutes picking up any trash you see outside. Let's improve our environment! We will help you ou!



Activity: Help the Environment Posters

Groups of 4-5: Create signs to hang in your school about helping the environment



Questions?



A-sorted Garden Goodies!



Rules

- There will be 6-7 baskets with with a color label
- There will be an assortment of fruits/vegetables
- The students will pick a food item, name it and its color, and place it into the correct basket.





RED

A wooden bucket with a yellow label that says "ORANGE". The bucket is made of light-colored wood with vertical staves and horizontal bands. The label is a bright yellow rectangle with a black border, centered on the front of the bucket.

ORANGE

A wooden bucket with a yellow label. The bucket is made of light-colored wood with vertical staves and horizontal bands. The label is yellow with a black border and contains the word "YELLOW" in white capital letters.

YELLOW

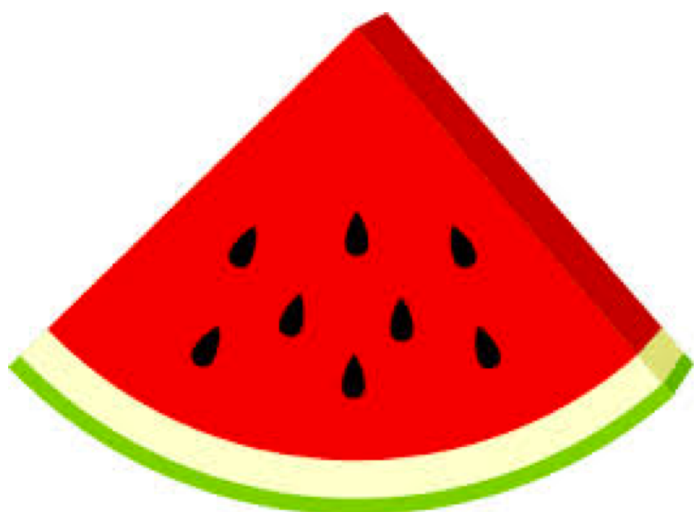
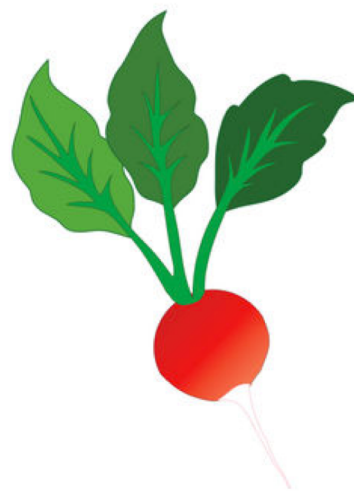
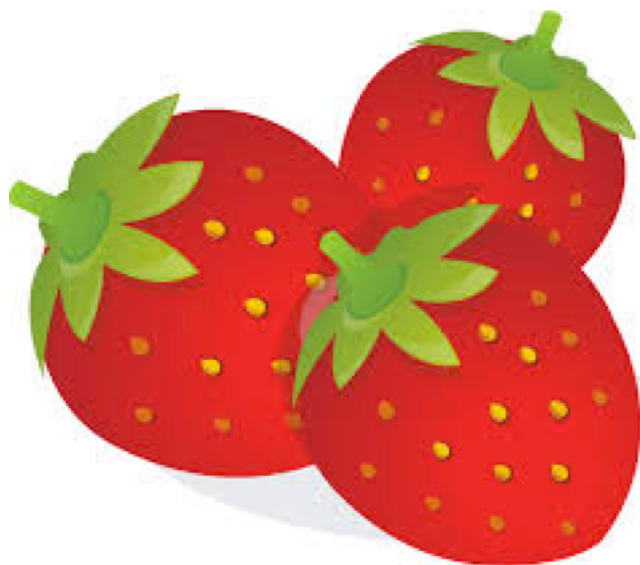


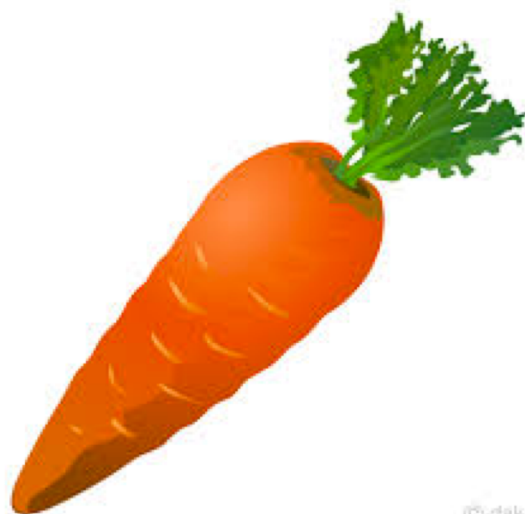
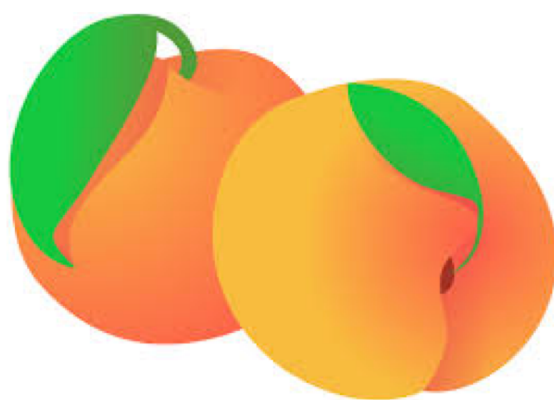
A wooden bucket with a purple label. The bucket is made of light-colored wood with vertical staves and horizontal bands. A purple rectangular label with the word "PURPLE" in white capital letters is centered on the front of the bucket.

PURPLE

A wooden bucket or tub, constructed from vertical staves held together by horizontal bands. The wood is a light, natural color. The bucket is shown from a slightly elevated, three-quarter perspective.

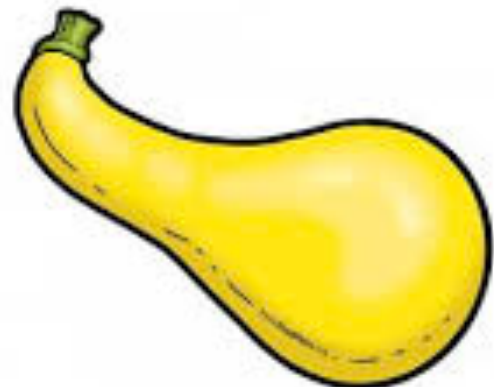
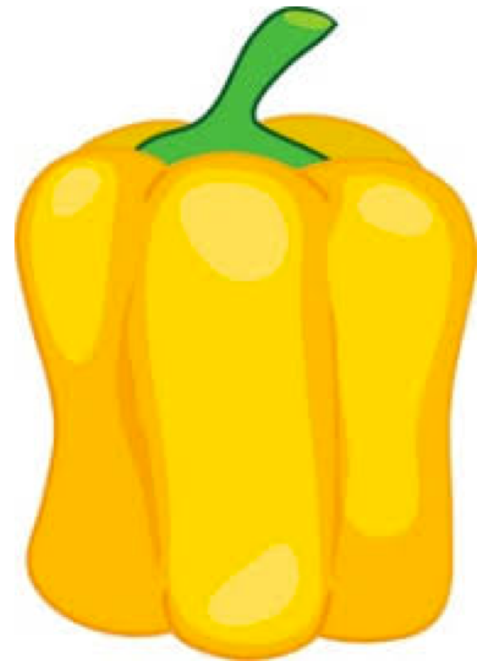
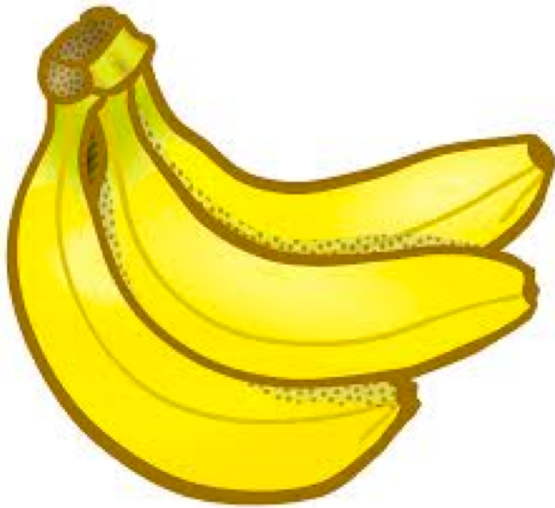
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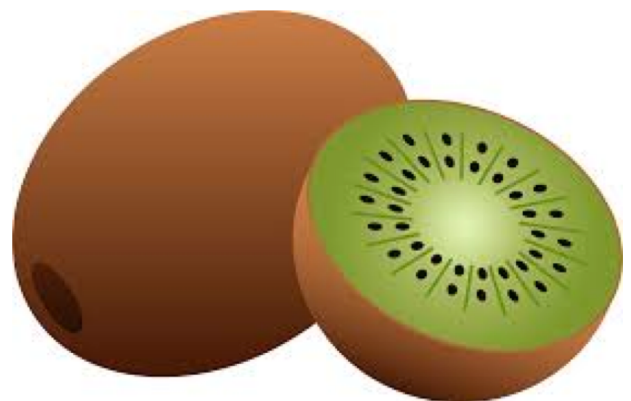
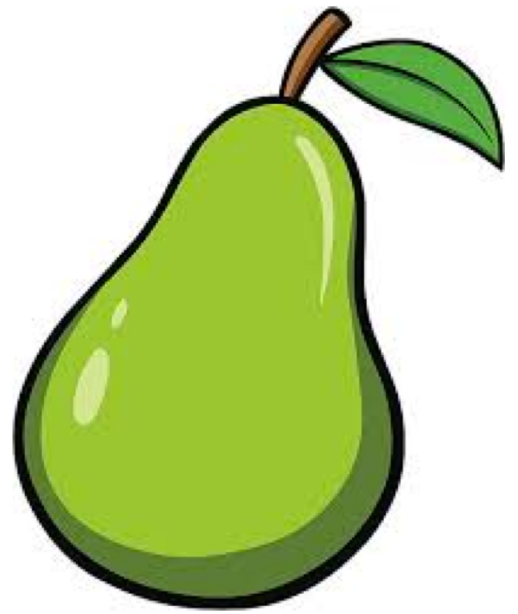
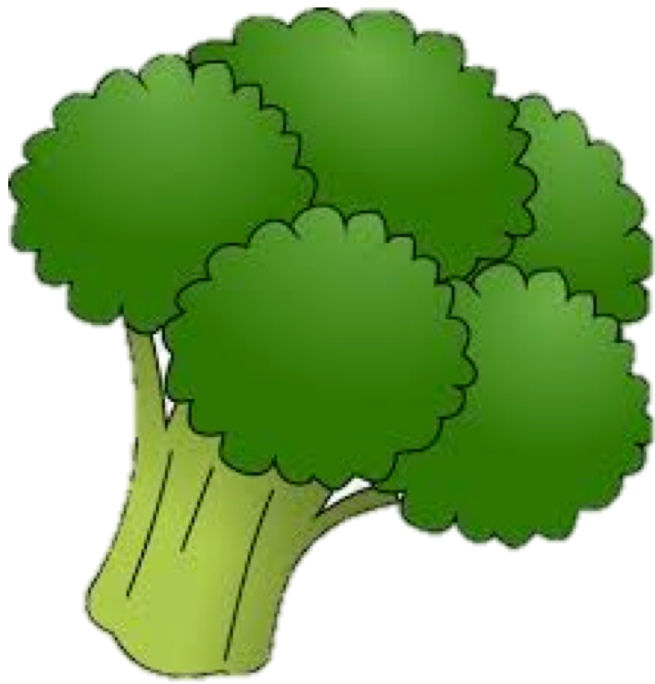


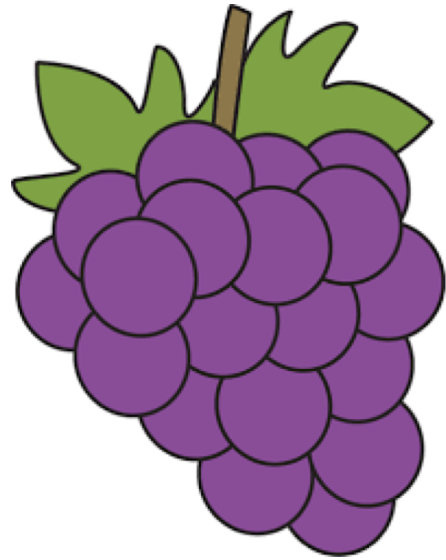


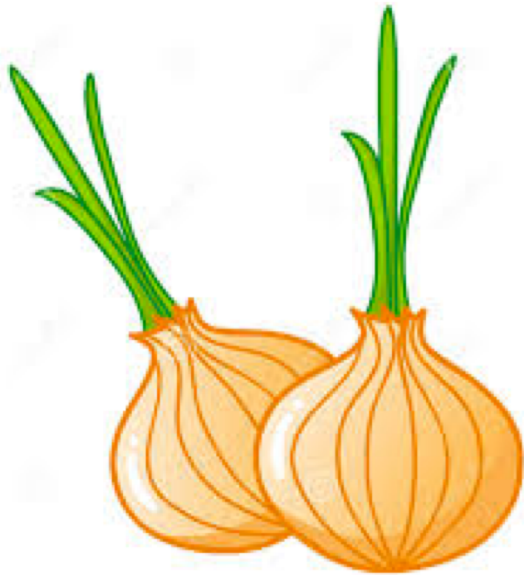
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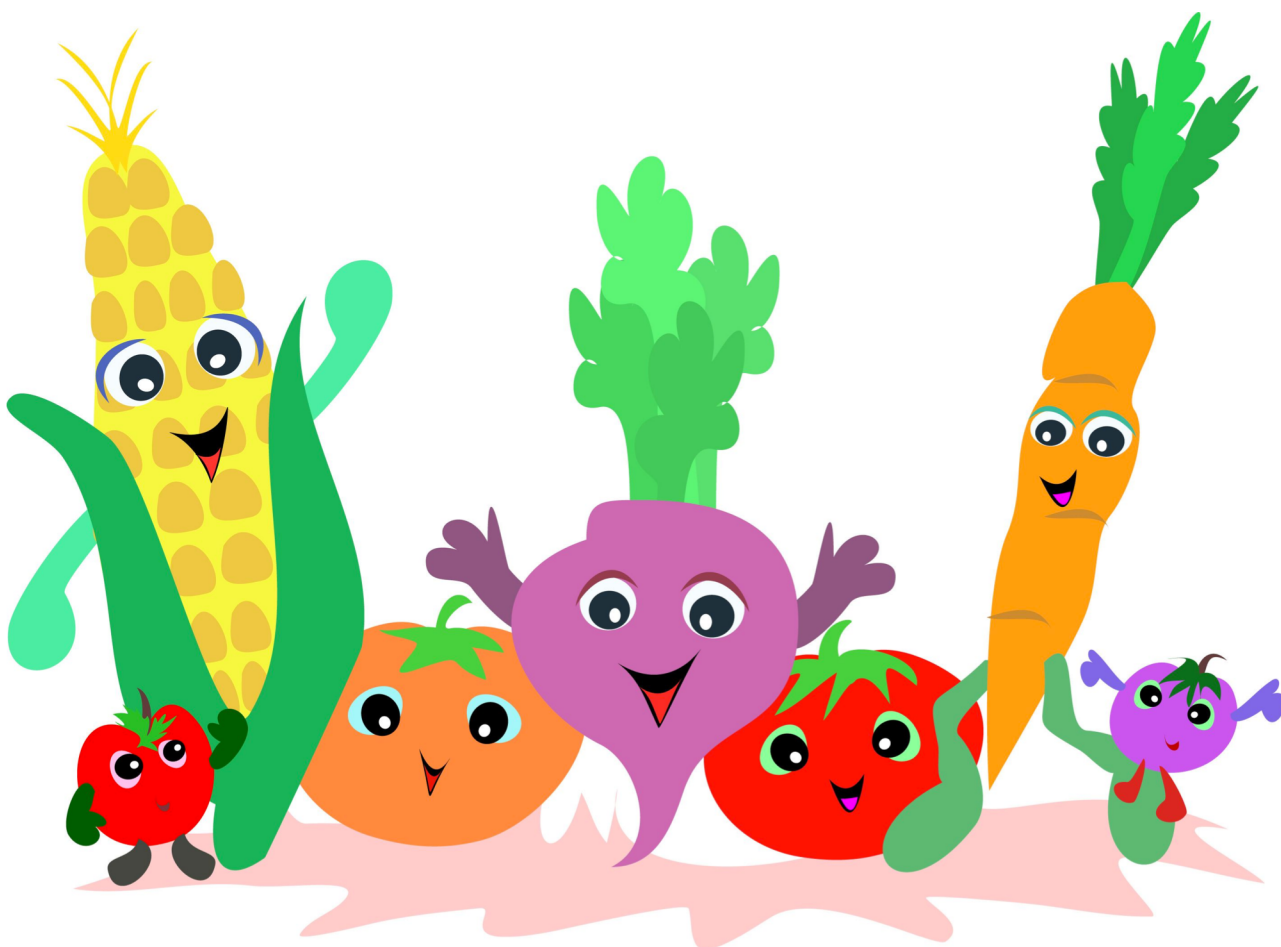








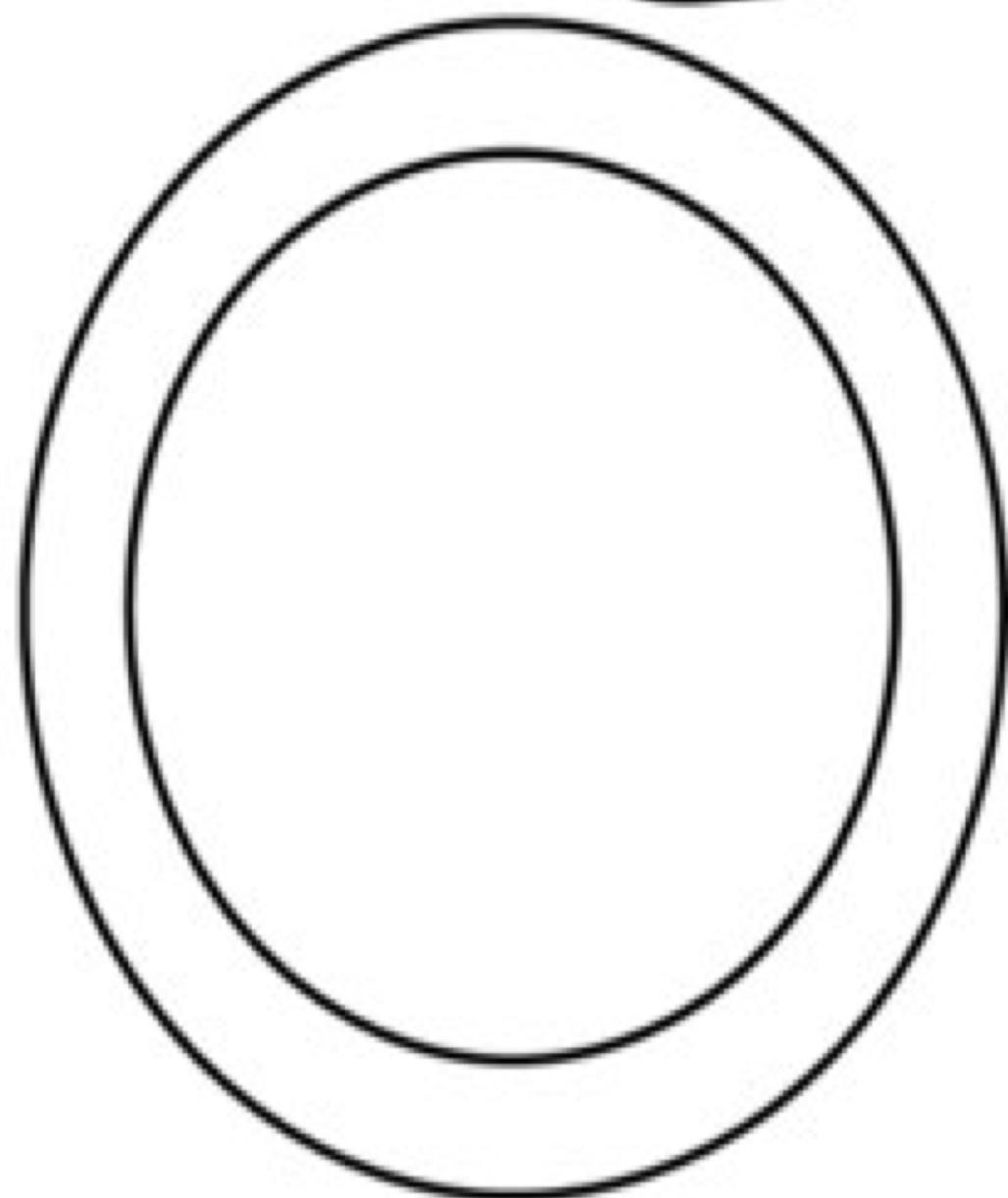
Color Your Plate!



Rules

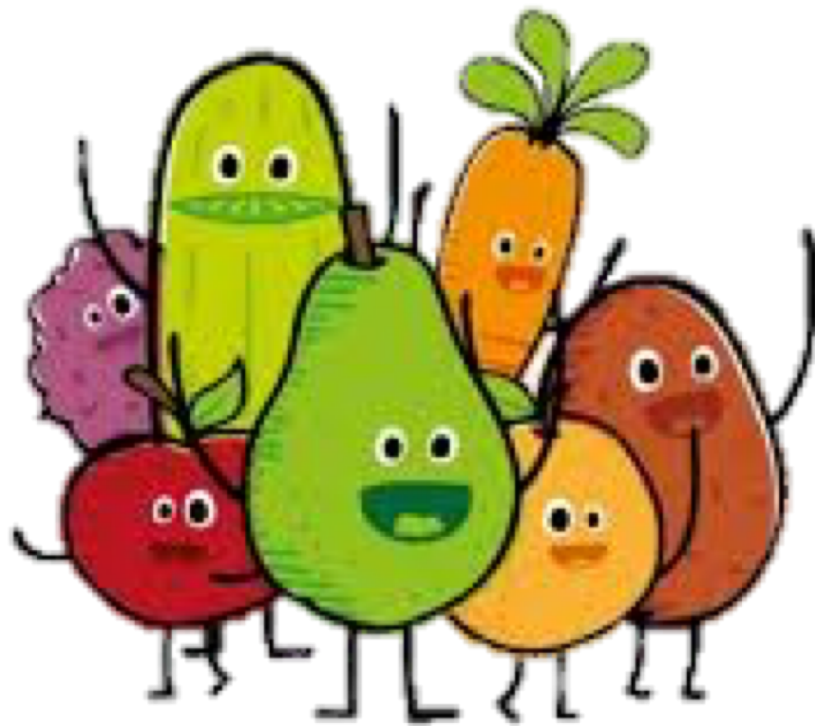
- Each student will get a plate coloring sheet
- Students will color a meal of their choice that includes all the food groups.
- Name each food item on the plate.





Fruit Scootin' Veggies

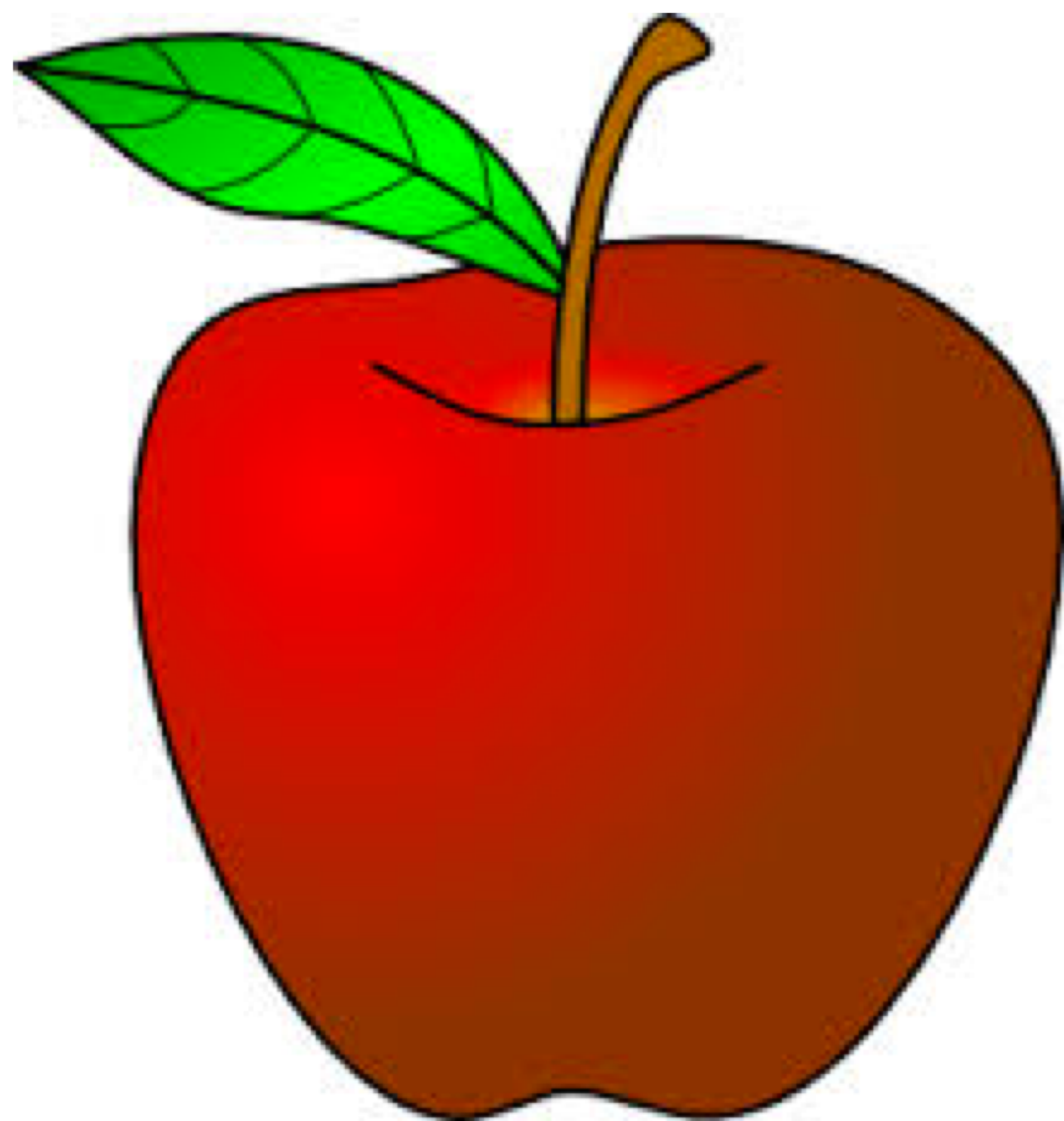
(Fruit/Veggie Musical Chairs)



Rules

- 1. Students will each pick a food item to stand on.
- 2. When music starts, students will walk in a circle.
- 3. When music stops, students will stop on a food item.
- 4. Each student will identify which food they are standing on.
- 5. If the students gets the food item incorrect—they will do 5 jumping jacks.
- 6. One food item will be removed each round and the student left without a food item to stand on is out.
- 7. Last student wins!





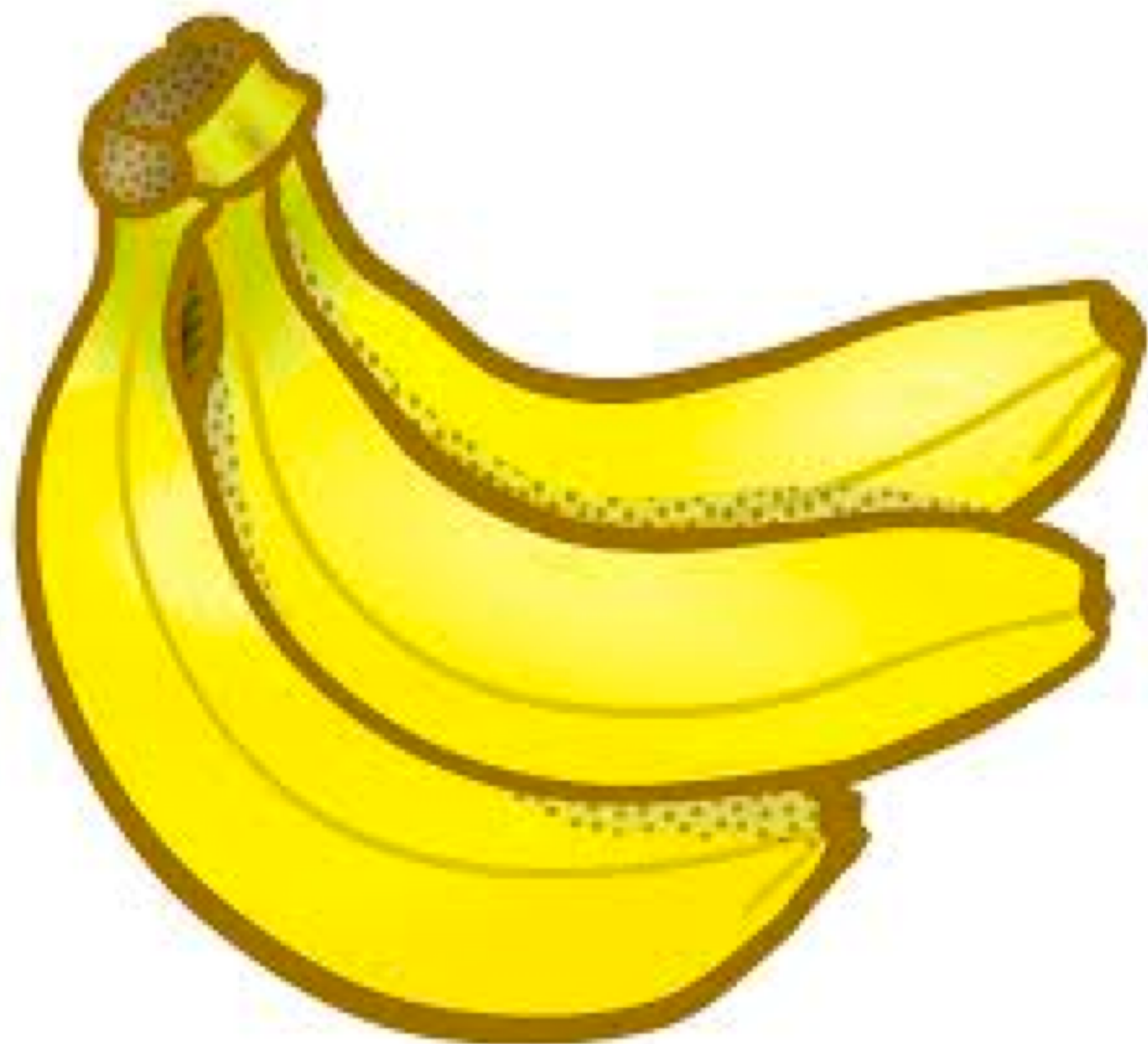










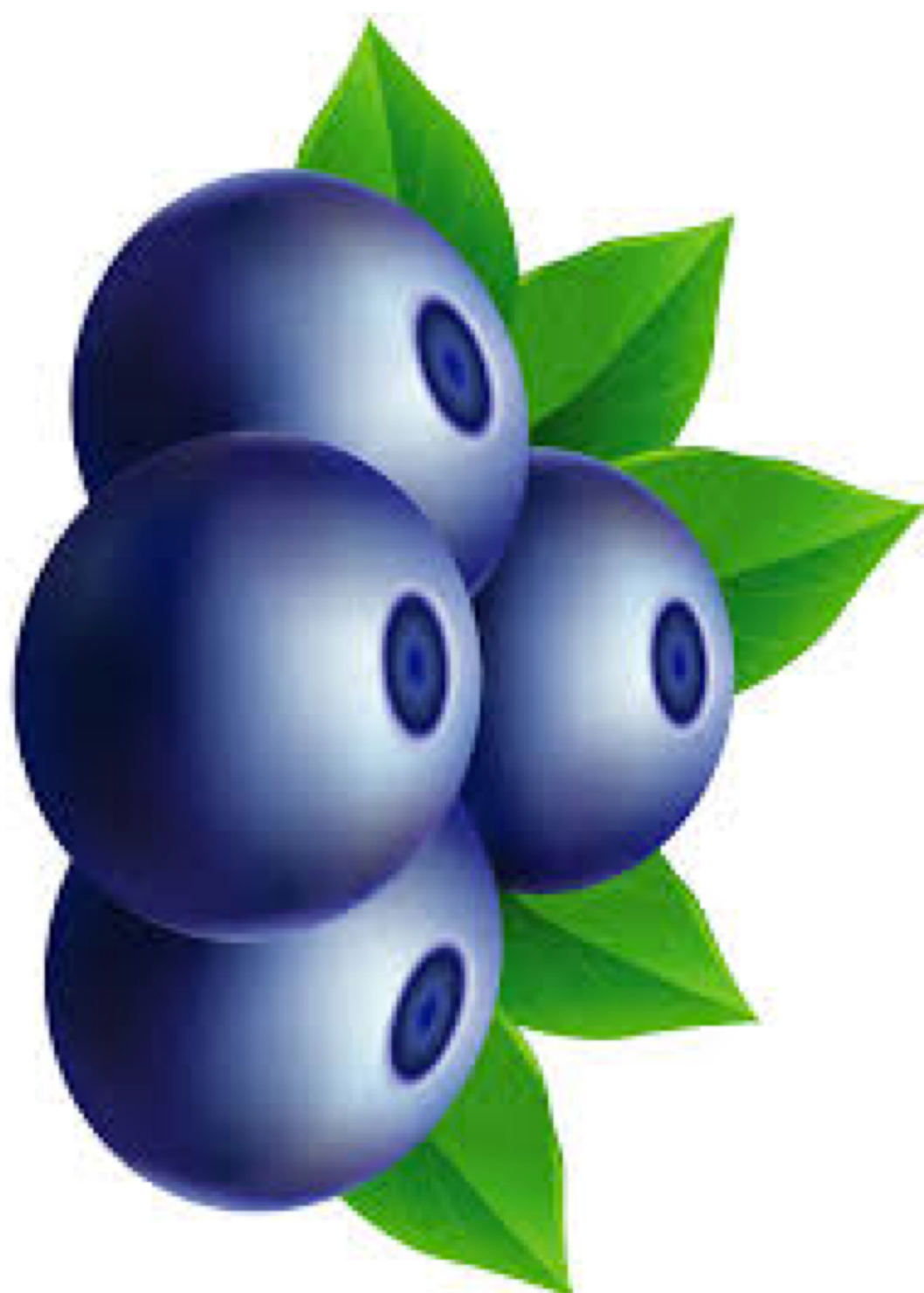








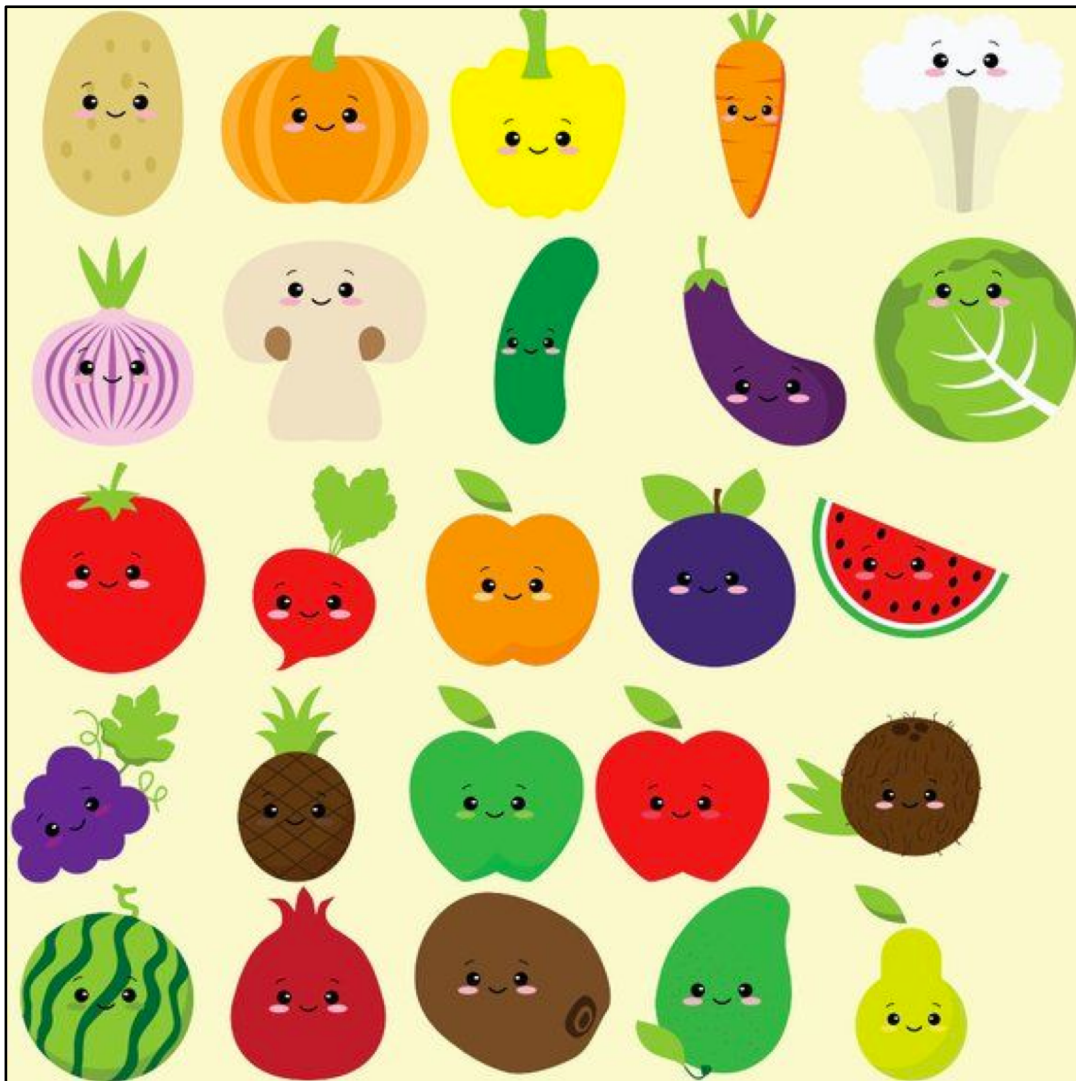








Healthy Hopscotch

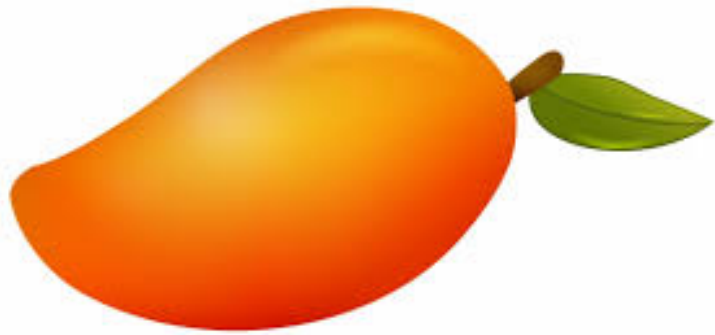


Rules

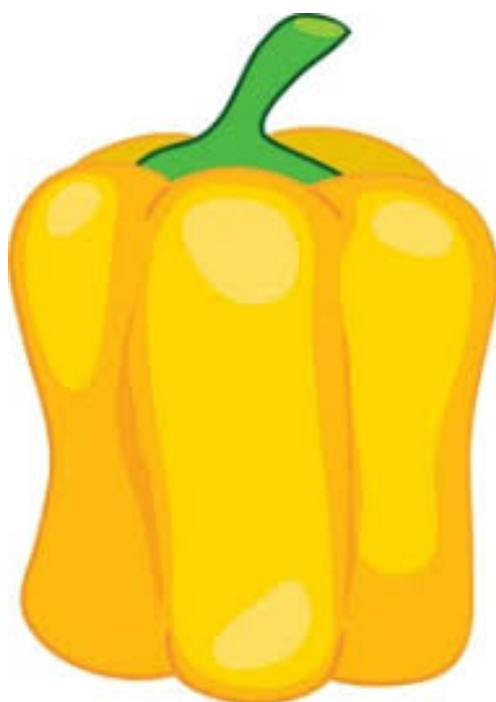
- Each square will have a food item
- Children will toss the rock and then hop to the number/ food item
- They will scoop up the rock and then identify what food item is on their square and what food group it belongs to.
- Once they get the food item correct, they will hop back!



1



2



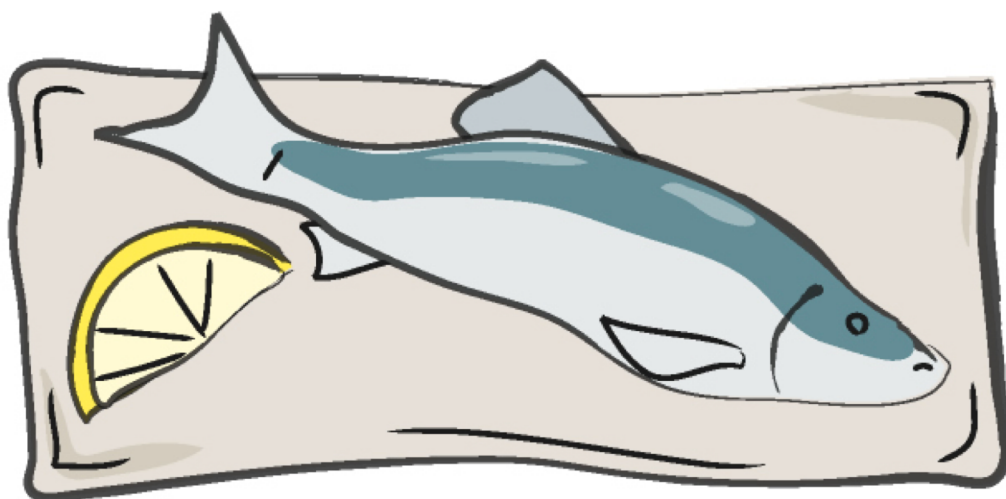
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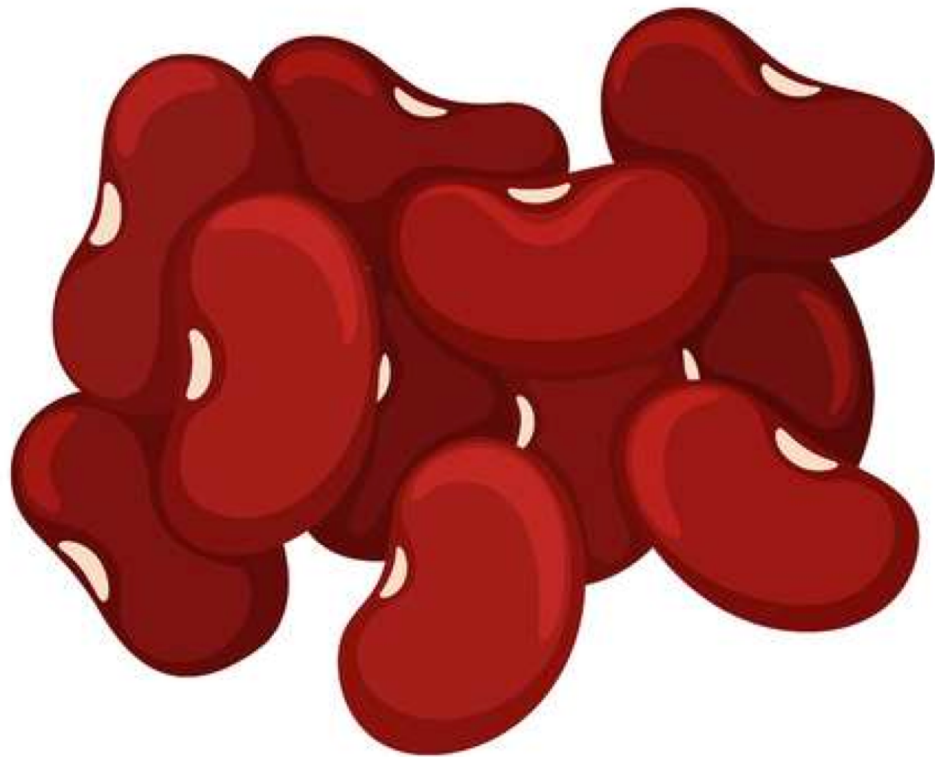
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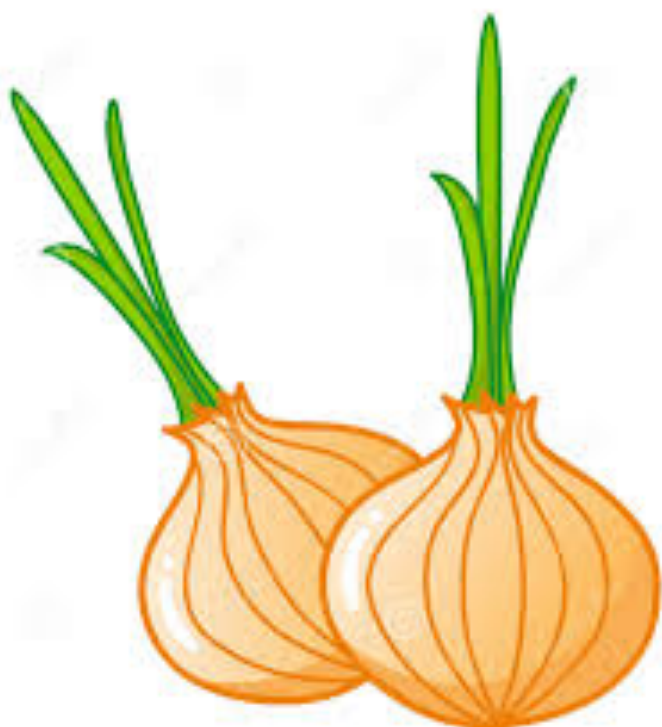
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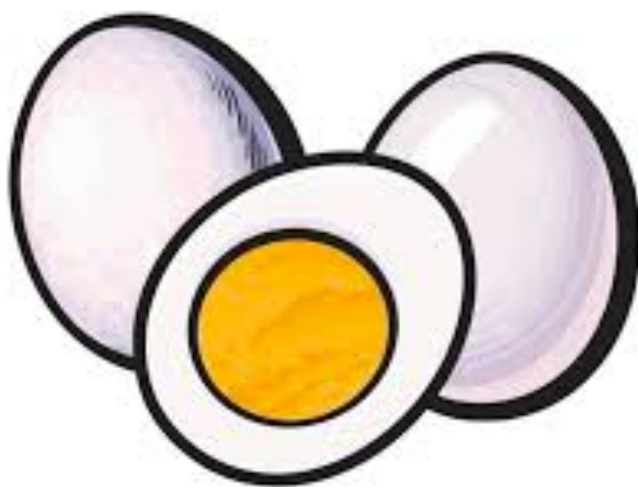
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